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- Современные технологии управления организацией;
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GEOGRAFIK KASHFIYOTLARNI O ‘RGANISHDA ZAMONAVIY PEDAGOGIK TEXNOLOGIYALARDAN FOYDALANISH

Annotatsiya. *Maqolada mahalliy allomalarning tabiiy fanlarga qo`shgan ilmiy meroslari va ular tomonidan amalga oshirilgan kashfiyotlari haqida bayon etilgan. Muallif tomonidan maktab o`quvchilarga darsliklarida berilgan ma`lumotlarni tushunarli va oson o`zlashtirish uchun zamonaviy pedagogik texnologiyalar asosida mashg`ulotni olib borish haqida tavsiyalar berilgan.*

Kalit so`zlar: *ilmiy meros, kashfiyot, pedagogik texnologiya, sayyoh allomalar, ekspeditsiya, koordinata, globus, karta.*

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THE USE OF MODERN PEDAGOGICAL TECHNOLOGIES IN THE ORGANIZATION OF GEOGRAPHICAL RESEARCH

Annotation. *The article describes the scientific heritage that local scientists have contributed to the natural sciences and the discoveries they have made. The author gives students recommendations on how to conduct training based on modern pedagogical technologies for an understandable and easy assimilation of the information presented in their textbooks.*

Keywords. *scientific heritage, discovery, pedagogical technology, tourist scientists, expedition, coordinate, globe, map.*

Kirish.

O‘tmishda dunyoviy bilimlar beshigini tebratgan va o‘lkamizda tabiiy fanlar qatori geografiya fanining amaliy jihatdan rivojiga katta hissa qo‘shgan allomalarimiz M.Xorazmiy, A.Farg‘oniy, Balxiy, Jayhoniy, Ibn Sino, M.Qoshg‘ariy kabi mutafakkirlarning ishlari alohida ahamiyatga ega. Kelajak avlodga allomalarimizni bizga qoldirgan bitmas-tuganmas ilmiy meroslarini yetkazib berish va o‘quvchilar ongiga singdirish muhim ahamiyatga ega. Maktabda geografiya fanida O‘rta Osiyodan yetishib chiqqan allomalarning ilmiy merosidan foydalanish katta samara beradi.

Asosiy qism.

Geografiya-eng qadimiy fanlardan biridir. Ibtidoiy jamoa davrlaridayoq geografik dunyoqarash kurtaklari paydo bo`lgan. Bu ko`hna ilm insoniyat ilmiy

tafakkurining birinchilaridan bo`lib shakllangan yo`nalishlaridan biri ekanligi hech kim shubha qilmaydi. Kishilik jamiyati tarixida ko`pchilik fanlarning asoschisi bo`lganligi uchun ”birinchi muallim” deb e`tirof etiladigan Aristotel (Arastu) ham, butun Sharqda Aristoteldan so`ng ”ikkinchi muallim” nomi bilan mashhur bo`lgan Forobiy ham, matematika, astronomiya va boshqa fanlarning asoschisi deb tan olingan.

Yangi texnalogiyalardan foydalanishning asosini o`quvchilarni faollashtiruvchi va jadallashtiruvchi faoliyat tashkil etadi. Geografiya dars jarayonida zamonaviy yangi pedagogik texnologiyalardan foydalanish yaxshi natija beradi. Dars o`tishda metod to`g`ri tanlanmasa, o`qituvchining bilimi yuqori darajada bo`lishidan qat`iy nazar, kutilgan natijani bermasligi mumkin. Geografiya fanni o`rganishda ”Geografik kashfiyotlar va hozirgi zamon geografiyasi” 7-sinf darsligining 1-bob 2- mavzusida muhim o`rin tutadi. Biz ushbu metodlarni amalda qo`llab ko`rish uchun Ko`kdala tumanidagi 12-sonli umumo`rta ta’lim maktabida tabiiy fanlardan 7 «a» va 7«b» sinf o`quvchilarini yoshini hisobga olib yangi pedagogik texnalogiyalarini tanlashga harakat qildik. Yuqoridagi mavzuni o`tishda "Men kimman" texnologiyasini qo`llab ko`rdik. Bundan tashqari xuddi shu sinf o`quvchilari bilan boshqa mavzularni o`rganishda ham bir nechta yangi pedagogik texnalogiyalardan foydalandik. Bunday darslar odatdagi an’anaviy darsdan ko`ra o`z samarasini bermoqda. Misol tariqasida 1 soatlik dars jarayonini keltirishimiz mumkin.

"Men kimman" texnologiyasi. Bu metod 7 sinf 3§ "Yer yuzining kashf etilishi va o`rganilishi" mavzusini o`tishda qo`llanildi. Ushbu texnologiya o`quvchilarning dars jarayonida mustaqil fikrlashiga, o`z fikrlarini erkin bayon etishiga hamda ularda o`zini namoyon qilish madaniyatini tarbiyalashga qaratilgan bo`lib, odatda, bunday mashg`ulot o`quvchilarni kichik guruhlarga ajratgan holda o`tkaziladi.

Bu texnologiyaning maqsadi shundan iboratki, o`quvchilarni o`z o`zini boshqarishda, imkoniyatlaridan foydalanishda samaralidir. Ayniqsa, o`quvchilarni mahalliy allomalar haqidagi boy meroslari o`rganib, bilim olishlarini ta’minlash, ular haqidagi ma`lumotlarni yaxshi o`rganish va esda saqlash imkoniyatlarini oshirish maqsadida qo`llasa bo`ladi

"Men kimman" **t**exnologiyasi amaliy, laboratoriya, fakultativ mashg`ulotlarda va darsdan tashqari vaqtda o`tkaziladigan tarbiyaviy soatlarda qo`llanishi mumkin bo`lib, mashg`ulot jamoa va kichik guruh shaklida o`quv auditoriyasida yoki tabiat qo`ynida o`tkazilsa katta samara beradi.

Mashg`ulotda foydalaniladigan vositalar. O`qituvchi o`quvchilarga o`tilgan mavzu bo`yicha oldindan tayyorlab qo`ygan materiallari, ya’ni sayohatchi olimlar rasmlarini ko`rsatib, ularni hayoti va qilgan ishlari haqida ma’lumot beradi. Bu ma’lumotlarni o`quvchilar eshitgach, "Men kimman" savoliga javob berishadi.

1.Dunyoning birinchi xaritasini tuzganman. Mening xaritamda Janubiy Yevropa, Shimoliy Afrika va Osiyoning g`arbiy qismlari tasvirlangan. Men kimman? (Eratosfen)

2.Eramizning II asrida dunyo xaritasini ancha mukammalroq tuzganman. Unda Yevropa va Osiyoning katta qismi xamda Afrikaning shimoli tasvirlangan. Men kimman? (Ptolomey)

3.O`rta Osiyolikman. 1004-1088 yillarda yashab o`tganman. Janubiy G`arbiy Osiyo va Shimoliy Sharqiy Afrikada sayohat qilib, juda ko`p geografik ma'lumotlar to`planganman. Yetti yil davom etgan ikkita sayohatim davomida 15 ming kilometrdan ortiq yo`lni bosib o`tganman. Men kimman? (N. Xisrov)

4.1492 yilda ekspeditsiya Hindistonga boshchiligimda dengiz orqali yo`l topish maqsadida Ispaniyadan g`arbga tomon suzib ketdik. Biz Atlantika okeanini kesib o`tib, Amerika qirg`oqlariga yetib bordik. Portugallar taxminan shu vaqtda Afrikani aylanib, Hindistonga borishdi. Men kimman? (X. Kolumb)

5.1519-1522 yillarda Dunyoni g`arbdan sharqda tomon aylanib chiqdik. Yerning sharsimonligi isbotlandik. Yer yuzining katta qismi suvdan iboratligini aniqlandim. Tinch okeanini kesib o`tdik. Men kimman? (F. Magellan)

6.Men 1483-1522 yillarda yashab o`tgan, tarixnavis, geograf, etnograf, mashhur shoir va adolatli shohman. Farg`ona, Af`g`oniston, Hindiston tabiati haqida ko`plab ma'lumotlar keltirib, o`z kitobimni yozganman. Men kimman? (Z. M. Bobur)

7.VIII asr oxiri IX asr boshida yashab, ijod qilgan mashhur matematik, astrom va geografman.Yerning sharsimon ekanligini aytib berganman. Yer yuzasidagi 525 ta geografik punkt, jumladan 200 dan ortiq tog`larning tafsiloti, mamlakatlar, okeanlar, dengizlar, daryolar, ko`llar haqida ma`lumotlar keltirganman, geografik obyektlarning aniq koordinatalarini berganman va «Surat al-arz» asari muallifiman. Men kimman? (M. Xorazmiy)

8. X asr oxiri XI asrning birinchi yarmida yashaganman. Yerning birinchi modeli globusni yasaganman va asarlarimda Yer sharining narigi tomonida xam quruqlik borligi haqida yozib qoldirganman. Dunyo xaritasini tuzganman. Men kimman? (A. R. Beruniy)

9.Men XI asrda yashaganman. "Devonu lugatit turk" asarimda ko`plab geografik joy nomlari va terminlarga izoh yozganman, dunyo xaritasini tuzganman. Men kimman? (M. Qoshgariy).

10.O`rta Osiyo tabiiy geografiyasining rivojiga katta hissa qo`shgan, buyuk astranom, sayyoh, geograf va geografiyaga oid `lchov asboblarini yaratganman, «Astronomiyaga kirish» kitobini muallifiman. Men kimman? (A. Farg`oniy).

11.“Sharq Arastusi” nomini olgan, matematik, astronom, buyuk faylasuf, musiqashunos, tabib, tabiiy va ijtimoiy fanlarga tegishli 160 dan ortiq ishlar muallifiman. Men kimman? (Farobiy).

O`quvchilar M.Xorazmiy, R. Beruniy, Z. M. Bobur, M. Qoshgariy, N. Xisrovlar haqida ma'lumotlar oladilar. Bunda o`quvchilarda eslab qolish qobiliyati katta rol o`ynaydi. Shu kabi sayohatchi va olimlar, allomalar hayotiga tegishli ma'lumotlar berilgandan so`ng o`quvchilar ularning kimligini aytishlari kerak. Ularning qilgan ishlaridan, geografiyaga qo`shgan hissalari haqida bilib oladilar.

Ularda ham ijodkorlik xislatlarini ortishi va fanga qiziqishi, bobokalonlarimiz, olimlarimiz qilgan ishlaridan faxrlanishlari ortadi.

Bu usulni boshqacharoq qilib o`tkazilsa ham bo`ladi, ya'ni o`quvchilarni guruhlarga ajratib, har bir guruhga bittadan olim haqida ma'lumot tanlab beriladi. Guruh a'zolari o`zlari o`rgangan ma'lumotlarni bir-biriga berib ularni kimligini topish orqali ham o`tkazilsa bo`ladi. Masalan, bir guruh a'zosida Farobiy, ikkinchi guruh a'zosida esa Xorazmiy, yana bir guruh a'zosida Bobur, to`rtinchi guruh a'zosida esa Beruniy, beshinchisida Farg`oniy va boshqa guruhdarda ham shunday ma'lumotlar bo`ladi.

Mashg`ulot davomida har bir guruh a'zolaridan bir o`quvchi chiqib, ma'lumotni ifodali o`qiydi va boshqa guruhdarga "Men kimman" savolini tashlaydi. Savolga javobini bilgan guruh javob beradi va bu jarayon barcha guruhlar o`zlarini ma'lumotlarini o`quvchilarga yetkazgungacha davom etadi.

Bu usullarni afzal tomoni shundaki, o`quvchilar oz vaqt ichida olimlar haqida o`zlari mustaqil ravishda, o`qituvchi nutqi yordamisiz ko`plab ma'lumotga ega bo`libgina qolmasdan, ular o`rtasida bir-birini eshitish, eslab qolish va bo`layotgan jarayonga befarq bo`lmaslikni shakllantiradi. O`quvchi olimlar, sayohatchilarning xayotlarini o`qib berish bilan ifodali o`qishni o`rganadi. Bu orqali u o`zini shu olim deb tasavvur etib faxrlanib o`qiydi. Natijada unda nutq yanada rivojlanadi, o`zini ko`pchilik orasida tutishni o`rganadi. Boshqa eshitayotgan o`quvchilar esa darsni tinglashadi, shoshma-shosharlikka yo`l qo`ymaydi, chunki birgina e'tiborsizlik bilan xato javob berib qo`yishi mumkin bo`ladi. Shuning uchun ular darsni diqqat bilan tinglashlari kerak bo`ladi. Gurux a`zolarining bittasi ham darsga e'tiborsiz bo`lmaydi.

Xulosa.

Jamoa bo`lib ishlash o`quvchidan, o`zidan boshqalariga nisbatan hurmatni, ularni eshita bilishni, tahlil qilishni va o`z ustida ishlashni taqozo etadi. Yana shuni ham aytish mumkinki, o`quvchilar o`zlariga xam "men kimman" degan savolni beradilar. Chunki ular qolgan ishlari tufayli barchani yodida qolishlari, ular haqida faxrlanib gapirishlari uchun "men nima qildim", "hozir qanday o`qiyapman", "kelajakda kim bo`laman" degan savollarni o`zlariga berishadi. Bunda mazkur metod tarbiyaviy rol o`ynaydi. Kashfiyotlar qilgan dunyodagi mashxur geograf olimlar, sayyohlar qatori mahalliy allomalarimiz boy ilmiy meroslaridan geografiya darsida foydalanish vatanparvarlik g`oyalarini shakllantirishda eng muhim omil bo`lib hisoblanadi.

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REDUCING STRESS AND ENHANCING MENTAL STABILITY AMONG MEDICAL STUDENTS THROUGH SPORTS ACTIVITIES

Abstract: *Stress is a common challenge among medical students due to rigorous academic schedules, clinical rotations, and high expectations. This study investigates the impact of regular sports activities on stress reduction and mental stability. Evidence shows that consistent physical exercise reduces cortisol levels, enhances mood, and strengthens emotional resilience. Participation in team and individual sports also improves concentration, social interaction, and academic performance. Physiological benefits include improved cardiovascular health, better sleep quality, and optimized stress hormone regulation. The findings emphasize the importance of integrating structured sports programs into medical education to support students' mental and emotional well-being.*

Keywords: *Medical students, physical activity, stress reduction, mental stability, emotional resilience, sports participation, academic performance, cardiovascular health.*

Introduction

Stress is a significant challenge for students pursuing higher education, particularly in demanding fields such as medicine. Medical students often face long hours of study, clinical rotations, and high academic expectations, which can lead to chronic stress, fatigue, and decreased mental well-being. Recent research highlights the importance of physical activity in mitigating stress and enhancing psychological resilience. Regular participation in sports activities has been shown to reduce cortisol levels, improve mood, and increase overall emotional stability. Beyond the physiological benefits, engaging in structured exercise promotes better concentration, cognitive performance, and social interaction, which are crucial for academic success. This article aims to explore the role of sports activities in reducing stress and enhancing mental stability among medical students, emphasizing the scientific mechanisms through which physical exercise influences both physiological and psychological health. Understanding these effects is essential to developing effective wellness programs within medical education that support students' mental and emotional well-being.

Relevance

Medical education is widely recognized as one of the most demanding academic paths, often exposing students to high levels of stress that can negatively impact their mental and physical health. Chronic stress among medical students is associated with burnout, decreased academic performance, and a higher risk of anxiety and depression. Incorporating sports activities into their routine has

emerged as a scientifically supported strategy to counteract these negative effects. Regular physical exercise not only improves cardiovascular and muscular health but also plays a critical role in regulating stress hormones, enhancing mood, and promoting emotional resilience. Studying the impact of sports on stress reduction and mental stability is therefore highly relevant, as it provides evidence-based insights that can guide the development of wellness programs aimed at improving both the health and academic performance of future medical professionals.

Objective

The objective of this study is to examine how sports activities reduce stress and enhance mental stability among medical students, improve mood, emotional resilience, and support academic performance.

Main part

Medical education is widely acknowledged as one of the most stressful academic paths. Students face a combination of rigorous coursework, clinical responsibilities, and high expectations, which can lead to chronic stress and burnout. Stress affects not only academic performance but also emotional stability, cognitive functioning, and physical health. Research indicates that prolonged stress exposure increases cortisol levels, disrupts sleep patterns, and reduces attention span. Medical students often report anxiety, fatigue, and decreased motivation as a consequence of high academic pressure. Understanding the sources and effects of stress is crucial to developing interventions that can mitigate its negative impact. Sports and physical activity have emerged as effective strategies to manage stress in demanding educational environments. Regular exercise supports cardiovascular health, enhances mood, and provides students with a structured outlet for tension release. The integration of sports programs within medical curricula can help students achieve a balance between academic obligations and mental well-being. Identifying the psychological and physiological mechanisms by which exercise reduces stress is essential for optimizing these interventions. The role of peer support and social interaction in sports settings further contributes to emotional resilience. This section sets the stage for exploring how sports activities can serve as a preventive and restorative measure against stress in medical students.

Physical activity triggers multiple physiological responses that counteract stress. Exercise stimulates endorphin release, which acts as a natural mood enhancer and reduces perception of pain. Regular aerobic and anaerobic exercises regulate cortisol secretion, thereby controlling stress hormone levels. Improved cardiovascular function through consistent activity enhances oxygen delivery to the brain, supporting cognitive functions such as memory and attention. Muscular activity during exercise promotes relaxation and reduces physical tension, alleviating the somatic symptoms of stress. Studies have demonstrated that physically active students show lower resting heart rates and reduced blood pressure compared to sedentary peers. Exercise also improves sleep quality, which is critical for emotional regulation and recovery from stress. In addition, physical activity enhances neuroplasticity, increasing resilience to stress-related

neurological changes. Regular engagement in sports strengthens the hypothalamic-pituitary-adrenal (HPA) axis, optimizing stress response mechanisms. Through these physiological adaptations, exercise provides both immediate and long-term benefits for stress management.

Engaging in sports has significant psychological advantages for medical students. Physical activity reduces anxiety, mitigates depressive symptoms, and enhances overall mood. Participation in team sports fosters social support and a sense of community, which strengthens coping mechanisms. Structured exercise improves self-efficacy, giving students confidence in their ability to handle academic and personal challenges. Sports also enhance concentration and attention, leading to improved academic performance. The predictability and routine associated with regular exercise provide psychological stability, reducing feelings of uncertainty and overwhelm. Mind-body exercises, such as yoga and Pilates, have been shown to improve mindfulness and emotional regulation. Participation in sports cultivates resilience by encouraging goal-setting, persistence, and problem-solving. Moreover, overcoming physical challenges during exercise builds mental toughness and adaptability. Collectively, these psychological benefits contribute to greater emotional balance, decreased stress perception, and improved overall mental health.

Different types of sports have unique effects on stress and mental stability. Aerobic exercises such as running, swimming, and cycling improve cardiovascular health and promote endorphin release. Anaerobic exercises, including resistance training, enhance muscular strength and contribute to stress hormone regulation. Mind-body activities such as yoga, Tai Chi, and Pilates integrate breathing techniques and meditation, which are particularly effective in reducing anxiety and enhancing mindfulness. Team sports like football, basketball, and volleyball promote social interaction, cooperation, and communication skills, which indirectly reduce stress levels. Individual sports allow for self-paced improvement and personal goal achievement, fostering a sense of autonomy and self-confidence. Combining various types of sports maximizes both physiological and psychological benefits. Tailoring exercise programs to individual preferences and abilities ensures sustained engagement and long-term stress management. This comprehensive approach helps medical students develop well-rounded coping mechanisms for both academic and personal challenges.

Research indicates a positive correlation between regular physical activity and academic achievement. Exercise enhances cerebral blood flow and oxygen delivery, supporting cognitive functions such as memory, focus, and executive functioning. Students who participate in consistent sports activities report higher attention spans, better problem-solving skills, and improved exam performance. Physical activity reduces fatigue and increases energy levels, allowing for more effective study sessions. Participation in structured sports also encourages time management and discipline, which are critical for balancing rigorous academic workloads. By mitigating stress, exercise indirectly prevents burnout and supports sustained academic engagement. Studies highlight that students with regular

exercise habits exhibit better retention of information and higher grades. Implementing exercise routines into daily schedules provides both short-term and long-term cognitive benefits. Overall, integrating physical activity into the academic lifestyle enhances learning efficiency and mental clarity.

Despite the benefits, medical students often face barriers to regular sports participation. High academic workloads and demanding clinical schedules limit available time for exercise. Lack of access to sports facilities, inadequate peer support, and low motivation are additional challenges. Mental fatigue and stress themselves can reduce the willingness to engage in physical activity. Some students may perceive sports as secondary to academic obligations, underestimating its impact on mental health. Gender, cultural factors, and prior experience with sports also influence participation rates. Addressing these barriers requires institutional support, including flexible scheduling, accessible facilities, and awareness programs. Encouraging group activities and promoting the social aspects of sports can enhance motivation. Identifying and mitigating these obstacles is crucial to ensure that students can benefit from exercise-based stress reduction strategies.

To maximize the benefits of sports for stress reduction, medical institutions should implement structured wellness programs. These programs may include mandatory or optional physical education classes, intramural sports leagues, and fitness workshops. Time-efficient exercise routines, such as short high-intensity interval training (HIIT) sessions, can accommodate busy schedules. Providing accessible sports facilities and safe environments encourages participation. Collaboration with trained coaches and wellness professionals ensures that exercises are safe and effective. Peer-led sports initiatives and group challenges can enhance social support and engagement. Incorporating mind-body practices like yoga and meditation further enhances mental resilience. Regular assessment of student stress levels and feedback on program effectiveness ensures continuous improvement. Such integrative strategies foster a culture of well-being within medical schools, promoting both mental and physical health.

Sports activities play a critical role in reducing stress and enhancing mental stability among medical students. Regular exercise provides physiological benefits, including hormonal regulation, improved cardiovascular health, and better sleep quality. Psychologically, it enhances mood, resilience, concentration, and social connectedness. To fully realize these benefits, medical institutions should address barriers to participation and implement comprehensive, accessible, and engaging physical activity programs. Future research may focus on optimizing exercise types, durations, and intensities specifically for medical students, as well as assessing long-term effects on mental health and academic performance. Promoting a culture of physical activity within medical education not only improves individual well-being but also contributes to the development of resilient, focused, and emotionally balanced future healthcare professionals.

Discussion

The findings demonstrate that sports activities serve as an effective intervention for stress reduction and mental stability in medical students. Physical exercise stimulates endorphin release and optimizes the hypothalamic-pituitary-adrenal (HPA) axis, resulting in decreased stress hormone levels. Psychological benefits include enhanced mood, resilience, self-efficacy, and social support, which collectively improve students' ability to cope with academic pressures. Barriers such as time constraints, lack of motivation, and limited access to facilities may reduce participation; however, institutional support and structured programs can mitigate these challenges. Integrating short-duration high-intensity exercises, team activities, and mind-body practices into the curriculum ensures consistent engagement and long-term benefits. Additionally, promoting peer-led initiatives and wellness education enhances students' awareness of the importance of physical activity for mental health. The study underscores the necessity of a holistic approach that combines physiological, psychological, and social elements to maximize stress reduction outcomes.

Results

The analysis indicates a strong correlation between regular participation in sports activities and reduced stress levels among medical students. Students engaging in aerobic and anaerobic exercises report significantly lower cortisol levels compared to inactive peers. Mind-body exercises such as yoga and Pilates are particularly effective in improving emotional regulation and reducing anxiety. Social interaction in team sports contributes to enhanced coping mechanisms and increased feelings of belonging. Students participating in structured physical activity also show improved concentration, memory retention, and academic performance. Physiological markers, including heart rate variability and sleep quality, improve consistently among physically active students. Regular sports participation further promotes positive lifestyle habits, such as balanced nutrition and time management. Overall, both mental and physical health indicators are positively influenced by engagement in sports activities, highlighting their multifaceted benefits.

Conclusion

Sports activities play a critical role in promoting mental stability and reducing stress among medical students. Regular engagement in physical exercise improves physiological markers, including cardiovascular health, sleep quality, and hormonal balance, while simultaneously enhancing psychological well-being, emotional resilience, and academic performance. To achieve sustainable results, medical institutions should implement structured, accessible, and diverse physical activity programs that accommodate students' schedules and preferences. Future research should focus on optimizing exercise types, durations, and frequencies for medical students and assessing long-term mental and academic benefits. Encouraging consistent sports participation is essential for cultivating resilient, focused, and emotionally balanced future healthcare professionals.

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COMMUNICATIVE ROLE OF CONNOTATION AND ADDRESS FORMS IN UZBEK WOMEN'S LANGUAGE

Annotation: *The article analyzes the manifestation of connotation in Uzbek women's speech, focusing on the positive and negative evaluations expressed through forms of address, as well as the speech-pragmatic functions of emotional and expressive means. Based on oral and written examples taken from Uzbek women's speech, the article reveals the communicative functions of address units, their connotative-semantic features, and their expressive potential carrying socio-psychological significance.*

Keywords: *connotation, women's speech, forms of address, pragmatic purpose, evaluation, emotional-expressive meaning, addresser, addressee.*

INTRODUCTION

The connotative meaning of a word (emotive, emotional-expressive meaning in some literature [1,28]) can have a positive or negative emotional-expressive coloring.

In addition to the direct, lexical meaning of an additional meaning or word associated with a concept, the additional meaning is called **connotation** in linguistics. It is known that the concept of connotation (Latin cin.con - together, notare - to designate) [2,51-52] is a pragmatic phenomenon reflecting the expressive nature of language units, expressing the addresser's subjective attitude towards the subject, objects and events, the addressee to the situation in the process of communication. Connotation is formed by means of linguistic and extralinguistic means. [3, 25]

Connection is a universal phenomenon observed in all languages. Connotation, in a narrow sense, reflects the expressive-emotional possibilities of language in practical application. The emergence of connotation in connection with the subject of speech in the process of practical application of language, its connection with context shows that it is the object of research of pragmalinguistics. [4, 161]

MATERIALS AND METHODS

In linguistics, from the end of the 19th century, *the term connotation* began to be studied in connection with the pragmatic aspect of speech. In modern linguistics, there are many definitions *of connotation.* This term is interpreted in different ways.

In particular, V.N. Telia, summarizing the views of various authors on

connotation, divides the study of this problem into three directions.

1.*The semiotic direction* considers connotation as the content served by the denotative seme, and this content itself can be determined as a result of "removing" it from the text. The works of L. Yelmslev, R. Bart can also be included in this direction. R. Bart [6] introduces the term "connotative system" and divides it into such groups as connotative and denotative systems.

2. The *psycholinguistic direction* of the study of connotation is related to the organization of associative and emotional speech. In this direction, connotation is considered in connection with the peculiarities of speech perception. [7]

3. Linguistic direction includes several branches:

a. In the methodological approach, connotation refers to additional elements of a certain type of word meaning. These are: expressive, stylistic, evaluative.

The stylistic concept of connotation is related *to pragmatics*, which implies the recording of the addressee's attitude to what the content of the sentence is about. For example, I.A. Sternin describes the "connotative semantic component" and believes that it "expresses the speaker's attitude towards the subject in the form of feelings and evaluation"[8].

Y.D.Apresyan believes that "connotation reflects cultural concepts and traditions associated with the word, the practice of using the relevant thing that prevails in a particular society, and other linguistic factors." Nevertheless, he uses the term "semantic association" in relation to this concept. [9]

E.M.Vereshchagin and V.G.Kostomarov associate connotation with the concept of "additional information", which is associated with the national-cultural specificity of the word. [10]

The concept of connotation is clear and unclear, and this term is interpreted differently. Linguists have considered stylistic, emotional, cultural, pragmatic, associative, and other aspects of connotation. Connotation seis a macrocomponent of the logic that determines the expressiveness bebebebebein the naming process. [11]

E.V.Yerofeeva [12] separates micro and macroidiom components, *macroidiom components of connotation* indicate the belonging of the word to the macroidioms of the language - literary language, colloquial language, vernacular, dialect. *Microidiomic components* connotations indicate that the word belongs to microidioms (socielects) - jargon, slang, etc.

Often, the components of a connotation intersect, as if superimposed on each other. The connotative components of each word can be different in different communicative conditions. Depending on the context, communicative situation, one or another element comes to the forefront, which can be interpreted differently. For example, the words *айланай, ўргилай* are simultaneously stylistic, evaluative, and emotional. They not only express a certain attitude and assessment of the speaker towards what is being called, but are also related to the conditions of speech communication.

Connection occurs on the basis of the communicative goal of the speaker. Even lexical units with a connotative seme are introduced into speech by the speaker with a specific purpose. [4, 176]

The terms encountered in research, such as “stylistic meaning”, “expressiveness”, “pragmatic content”, “semantic association”, and others, are the main components of connotation.

A connection represents a system of interconnected elements. The presence of certain connotative elements in a word is related to its evaluation by the speaker in certain areas, social groups, and the communicative situation as a whole. Each word - according to the function it performs and the conditions of communication - actualizes one or another component of connotation. A specific pragmatic goal is pursued in achieving the effectiveness and imagery of speech through connotation. This goal includes not only conveying the information reflected in the text to the listener in an impressive and figurative way, but also having a speech impact on them in this way. [4, 167]

Connotation means something other than what the word itself describes. In addition to their meanings, words also have cultural and emotional associations or meanings. Through connotation, such artistic devices as metaphor, simile, symbolism, and personification are used in fiction.

RESULT AND DISCUSSION

Connotative meaning is always variable and it is difficult to accurately measure. Connotative meaning, unlike denotative meaning, does not depend on the structure of speech or words. This feature is independent of the language system and makes the connotative meaning more difficult to define, more complex and difficult to define, while the denotative meaning expresses the original meaning of the word.

Connotation in women's speech, as in any other type of speech, expresses additional meanings associated with the main meaning of a word or phrase. These values can be:

- application of diminutive and affectionate suffixes that give special coloring to speech;
– expression of feelings, mood, attitude to the subject of speech (for example, using exclamatory sentences, emotionally colored vocabulary);
- expressing a positive or negative assessment (e.g., using the words *“wonderful”, “terrible”*);
- increasing the effectiveness of speech (for example, using hyperbole, rhetorical interrogative sentences from metaphors, reinforcing particles);
- intonation: evaluative tones such as surprise, surprise, anger can be more expressed in women's speech;
– Nonverbal means: facial expressions, gestures can semantically complement and strengthen thoughts.

1. Phonetic formation of connotative meaning in women's speech. In women's speech, speech effectiveness is achieved by extending vowel sounds

through a phonetic method in which connotation is associated with vowels and consonants in words.

- *What?* ***E-e-e,*** *curse your jokes! - Sister Oychechak turned her face toward the wall.* (Ulug'bek Hamdam. "Father")

– ***Ha-a-a****, "Is it Saltanatkhon?" he said*. (Cho'lpon. "Night and Day")

In many languages, including Uzbek, the elongated pronunciation of vowels performs a certain expressive function. Due to the fact that vowels consist of a pure voice, they have a strong melodiousness, and their prosodic (highness of tone in speech, duration) features cause the emergence of connotative meanings such as joy, happiness, good mood; surprise, surprise, anguish, regret; anger, sadness, strong excitement. [13]

Example: *"I'll go into the house, and I'll take care of your child."*

Here, the prolonged repetition of the consonant "z" connotatively creates several meanings: the form "ko'zingni" rather than "ko'zingni" increases the expressiveness of the spoken word. Although the content of the sentence itself is a threat, with the lengthening of the voice, the speaker's inner anger, impatience, and hatred are felt more strongly. Although this sentence actually has a warning, threatening meaning, as a result of the prolonged pronunciation of the consonant sound, a sharply negative assessment of the content of the sentence is imposed. In this speech unit, the prolonged repetition of the consonant "z" serves as a pragmalinguistic tool that further strengthens the main communicative goal (threat) of the sentence. The elongation of the "Z" sound evokes negative connotations in the listener, such as fear, danger, and anxiety. On the basis of a certain pragmatic goal, one consonant in the word is doubled, that is, it is reduced to a double consonant in pronunciation. As a result, the meaning of the word is emphasized, and the effectiveness of the speech increases. This phonetic phenomenon, observed in speech, is referred to in sources by such terms as "double consonant", "doubling", "doubled consonant", "gemination", "layering of consonants." [4]

This creates a strategy of psychological influence that is often found in women's speech. Formation of connotative meaning in the lexico-semantic method in women's speech.

1.By using exclamatory words.

- ***Ho****, - Nilufar threw herself back. - Give it first!* (O'. Hoshimov "Between Two Doors") The interjection "ho" in this sentence expresses the speaker's mood of surprise, surprise, and some dissatisfaction. With prolonged pronunciation, it develops a reproachful and dissatisfied connotation.

– ***Oh*** *, I'm dying! Will I drink vodka? Don't talk!* (Cho'lpon. "Night and Day") Here, "voy" is used as a refusal mixed with surprise and anger, while "o'laqolay" is used as an expression of oath and confidence in truth.

– **By repeatedly using words or sentences.** For example, ***-Take, take!-*** *said Gulshan, loosening the cloak, you will die!* (A. Qodiriy. "Scorpion from the Altar") In this case, along with the content of encouraging the listener to act faster, the meaning of dissatisfaction is understood.

– ***Shukur, shukur****, come to our courtyard.* (A.Qodiriy. “Scorpion from the Altar”) Repeated “*thank you, thank you*” expresses the speaker's satisfaction, joy, and gratitude.

2. It is formed by adding particles to words and sentences.

“What did the poor soul see in this world,” he said, biting his trembling lips. “This is the state of humankind, it has no value. In this case, the particle “-ю”creates a connotation of emphasis and pity.

*Keep your behavior normal-**a**? What will I tell your father?* (O'. Hoshimov “Between Two Doors”) In this sentence, the particle “-a” creates a strong connotation of disapproval, scolding, and anger. The particle “-a” added sharpness, a reprimand tone to the speech.

– *Oysha, there's no news from your brother-**well**!* (X. To'xtaboyev “Riding the Yellow Giant”) In this example, the particle “-ku” conveys unexpectedness, anxiety, and anguish.

3. By distorting a word. E.g., *aumin, oblo akbar:*

*My dear child, my dear child, **Allah** entrust you,*

*My sighs **Allah** didn't reach, I submitted you to the earth* (O'. Hashimov “Between Two Doors”)

In this example, the form “Olloga” is a distorted pronunciation of the original word “Allohga”. Through this change, the woman's mental state, suffering, and helplessness are felt even more deeply. Also, distorted pronunciation adds a connotation of sincerity and naturalness to the speech.

Consequently, the unit of address is not a simple exclamation, but also expresses the emotional and evaluative attitude of the addressee to the addressee.

In the speech of Uzbek women, connotation is an actively occurring pragmatic phenomenon. It is visible in all layers of language. Phonetic phenomena, repetition of syllables, elongation of vowels, and separated pronunciation of consonants also manifest connotation. In addition, semantic transfers such as similes, metonymy, synecdoche, and lexically colored words are also leading in the emergence of this meaning.

In communication, units of address are used for such purposes as attracting the listener's attention, exclamation, and encouragement. Address units are also used to express communicative relations between the addressee and the addressee, such as closeness, respect, trust; distance (subordination), disrespect, distrust. “Appeal units in speech perform appellative (beginning communication through address and appeal), connotative (attitude towards the subject - expression of negative and positive attitudes), and emotive (emotional attitude) functions”.[14, 16-17]

This phenomenon reveals the psychological and aesthetic aspect of connotation in women's speech. There is also an inextricable link between the expression of the relationship between connotation and evaluation. It is known that the category of evaluation is a category that reflects the attitude of the speaker to the object. Through evaluation, a positive or negative attitude towards reality is expressed. In other words, the speaker's attitude to reality manifests itself in the

form of an evaluation. In the process of expressing the price, the task of influencing the addressee is also performed. [4, 173]

CONCLUSION

Connotation is an important pragmatic phenomenon expressing the emotional-expressive, evaluative, and cultural aspects of language units. In the speech of Uzbek women, connotation is actively expressed through addressing units, affixes, emotional vocabulary, and intonation. This situation serves to express various relationships in Uzbek family communication, such as social norms, respect, affection, distance, or dissatisfaction. Different interpretations of connotation in different communicative situations further demonstrate its pragmatic nature.

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THE FORMATION OF THE ANCIENT KHOREZM BUILDING CULTURE (IN THE EXAMPLE OF AYAZ KALA)

Abstract. *This article discusses the formation of ancient and early medieval construction culture in the region, using Ayaz Kala – one of the main architectural structures of Khorezm – as an example. It also describes the primary building materials used in Ancient Khorezm, their methods of application, and their influence on the development of architecture in later periods.*

Key words: *building materials, clay, adobe, Khorezm, fortress wall, Ayaz Kala, sand, graphic reconstruction*

Introduction.

Ayaz Kala is located in the desert region of Ellik Kala district on the eastern side of the Sultan-Uvays Mountains. In the first millennium BC, this area was an oasis irrigated by the waters of the Akcha River flowing from the south. Ayaz Kala Lake, formerly considered one of the tributaries of the Akcha River, is located north of the monument. It consists of three main fortresses built between the 7th and 8th centuries[1]. These are:

Ayaz Kala 1 – a defensive fortification located on the top of a flat hill, believed to date back to the 4th or early 3rd century BC;

Ayaz Kala 2 – a feudal castle that may date back to the 6th–8th centuries AD;

Ayaz Kala 3 – It is a fortified garrison and refuge, dating mainly to the 1st–2nd centuries AD.

All three monuments were studied in 1937, in the early days of the Khorezm archaeological expedition. Excavations at Ayaz Kala 3 were carried out in 1939. The founder of the Khorezm archaeological expedition, S.P.Tolstov, who first studied the monument, provided detailed information about the construction of the monument in his scientific works[2]. In the late 1960s, Y.Manilov conducted an in-depth study of Ayaz Kala 1. As a result of his research, the building materials, dimensions, and structural elements used in the buildings were analysed in detail [3]. S.N.Agapitov, Y.A.Rapaport presented technical analyses of Khorezm architecture and construction technology of Ayaz Kala structures [4]. Also, the monuments were included in the list of candidates as cultural heritage sites of the "UNESCO Silk Roads Project" under the name "Desert Fortresses of Ancient Khorezm" (in 2008). One of the main reasons for the great attention paid to the monument is that the construction of its constituent buildings covers different

periods of development and activity. Therefore, Ayaz Kala is of great importance in the formation of the ancient and early medieval architectural culture of Khorezm and the style characteristic of the region.

Purpose.

According to research, the monuments of Ayaz Kala date back to the 4th–1st centuries BC and the 1st–8th centuries AD, providing examples that provide in-depth information about its building materials, structures, and cultural significance, further demonstrating its role in the formation of Khorezm architecture. The raw brick and baked brick used in Ayaz Kala were selected in accordance with the specific climate and natural resources of Khorezm. For example, raw brick was used in the construction of Ayaz Kala 1, the dimensions of which were usually 40x40x10 cm [8]. Such bricks were dried in the sun, and depending on the location, almost all walls were restored with this material. The construction techniques made of raw bricks found during excavations at the monuments indicate the connection between social and cultural spheres in architectural architecture. For example, the walls were double-layered, with a mixture of sand and earth placed between the outer and inner layers, and a portico construction was used in the corridor between the fortress walls[3]. The main purpose here was to enhance protection and insulation.



Figure 1. General view of Ayaz Kala I and Ayaz Kala II. Photographs by the author.

Ayaz Kala consists of three monuments, each with its own unique features. Each of them reflects the architecture and defence systems of different periods. For example, Ayaz Kala 1 (Main Fortress) is the largest and most important of the Ayaz Kala. It is located in the upper reaches of the Amu Darya and occupies a strategically important place. The fortress has its own strong walls and gates, the walls of which were very thick, from 2.2 to 2.5 m (sometimes almost 3 m) [2] (Fig. 1). In most cases, two the walls were filled with a mixture of sand and soil. The towers were built for military and defensive purposes, with semi-circular or right-angled corners. Ayaz Kala 1 was located on a high, flat hill, which also served as a natural defence. The rooms were relatively small, and the ceilings were not high to ensure air circulation inside. The ceilings were often reinforced with wooden elements with a column-beam structure. The main entrance had a complex system, built in a way that ensured that attackers would not be hindered

[3]. The castle had two large gates, each based on different defensive systems [2]. Entry and exit processes were controlled through these gates, that is, they played a major role in protecting the areas around the castle. The castle area was small, but very strong and served as a defence. The defensive technologies and approaches used by this castle were typical of its time.

Ayaz Kala 2 (Small Castle) is smaller and was built near the larger castle, but as an additional defensive system in the early medieval period to protect it. The uniqueness of Ayaz Kala 2 is that its structure was used more for defensive purposes. Although small, it has thick walls and specific structures designed to protect villages or local areas, and the castle had watchtowers and defensive walls built in a clear way. Despite the smaller size of the castle, its architectural strength and defensive systems played an important role in its time.

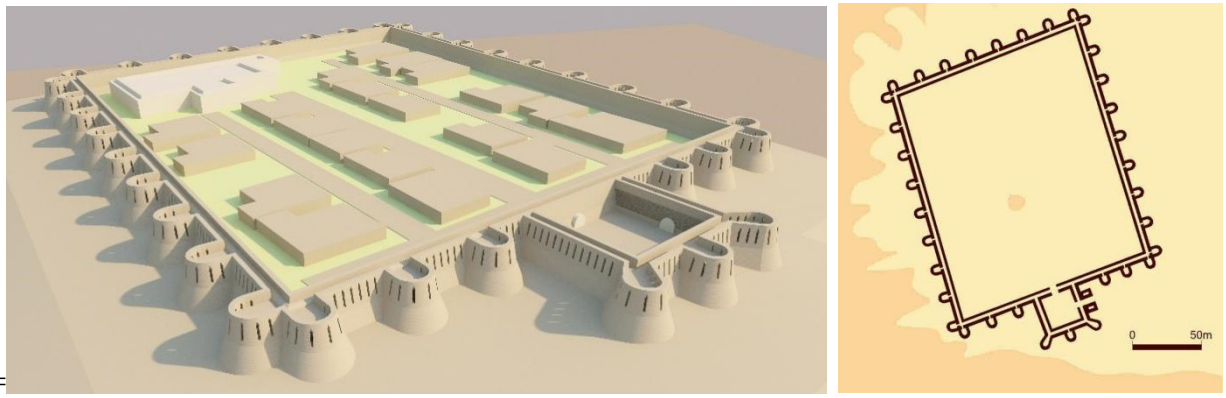


Figure 2. Author's graphic reconstruction of the general view of Ayaz Kala 1 and plan (from book of Bendakir M., Gandreau D. Practical training workshop on conservation of earthen structures in Central Asia and Afghanistan and Preventive conservation work. pp. 22.)

The last, Ayaz Kala 3 (Fortress of Memories), is usually the third, smallest and most distant part of the Ayaz Kala system. It was probably used for additional protection of the area. Despite its architecturally less developed nature, Ayaz Kala 3 is of great historical importance, since it was distinguished from the rest of the forts by its high strength. The outer walls of Ayaz Kala 3, depending on the state of preservation, have a foundation height of 2 to 2.2 m, and the foundation structure is not uniform. From the inside, a 2 m wide wall is attached to its main mass . The width of the foundation of the fort wall is 9.5 m, later, the brick walls of the inner corridor were built on this foundation [5]. Many castles a mudbrick corridor inside the wall can be clearly observed along almost the entire perimeter of the defensive walls. In the southern part of Ayaz Kala 3, the walls of the 3 m wide corridor are made of mudbrick measuring 40 x 40 x 12 cm (39 x 40 x 10 cm; 42 x 40 x 12 cm)[5]. It follows that, The fortress had a strong defensive system, forming a defensive network connected to the two previous fortresses. There were connections between the fortresses, which were used to strengthen each other.

This fortress system was probably used as an additional defence or observation monument. Its structure is less developed compared to other fortresses, and over time it has gained value as a monument.

Results.

Thus, the construction technologies and building materials of the Ayaz Kala are important cultural heritage, not only as an architectural monument of that era, but also influenced the formation of the architecture of subsequent periods. All Ayaz Kalas are based on a defensive system, they were one of the central defence points in their time. Wide walls, gates, towers, bastions and various defensive elements made these fortresses strategically important. The main purpose of the Ayaz fortresses was to protect the territory, manage and control the surrounding lands. Each fortress, with its own place and function, played an important role in the historical period.

The Ayaz Kala occupies an incomparable place in the formation of ancient Khorezm architecture, in terms of its construction methods, art and social significance. Through this monument, we can study the social and cultural life of Khorezm, as well as how architectural traditions developed. However, by now, due to climatic conditions, time and human influence, the building has lost its original appearance, even its appearance at the time of archaeological excavations. Therefore, creating its graphic reconstruction will not only give an idea of its original appearance, but also greatly help in studying the artistic compositional solution of the building, which arose under the influence of the building materials and structures used in it. All information is easily perceived due to the integrity and clear concentration of the image[6]. Therefore, the article proposes a graphic reconstruction of Ayaz Kala 1 using the data collected as a result of the research conducted by S.P.Tolstov, Y.Manilov, S.N.A.Gapitov, Y.A.Rapaport (Fig. 2).

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TURIZM SOHASIDA TADBIRKORLIK MUHITINI SHAKLLANTIRISH VA RIVOJLANTIRISH OMILLARI

Annotasiya: *Mazkur maqolada turizm sohasida tadbirkorlik muhitini shakllantirish va rivojlantirish uchun zarur bo‘lgan asosiy omillar tahlil qilinadi. Xususan, turizm sanoatining rivojlanishiga ta’sir etuvchi iqtisodiy, ijtimoiy, huquqiy va texnologik omillarni o‘rganish orqali, turizm sohasidagi tadbirkorlik faoliyatining samaradorligini oshirishga qaratilgan tavsiyalar beriladi. Turizm sanoatida muvaffaqiyatli tadbirkorlik muhitini yaratish uchun infratuzilma, hukumat siyosati, investitsiya va marketing strategiyalarining ahamiyati ko‘rsatiladi.*

Kalit so‘zlar: *Turizm, tadbirkorlik muhiti, iqtisodiy omillar, ijtimoiy omillar, huquqiy asoslar, investitsiyalar, marketing*

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FACTORS INFLUENCING THE FORMATION AND DEVELOPMENT OF THE ENTREPRENEURIAL ENVIRONMENT IN THE TOURISM SECTOR

Annotation: *This article analyzes the main factors necessary for the formation and development of the entrepreneurial environment in the field of tourism. In particular, by studying the economic, social, legal, and technological factors affecting the development of the tourism industry, recommendations are provided to improve the efficiency of entrepreneurial activities in this sector. The importance of infrastructure, government policy, investment, and marketing strategies in creating a successful entrepreneurial environment in the tourism industry is also highlighted.*

Keywords: *Tourism, entrepreneurial environment, economic factors, social factors, legal framework, investments, marketing.*

Bugungi kunda turizm sohasi butun dunyo iqtisodiyotida muhim o‘rin egallab kelmoqda. Turizm nafaqat iqtisodiy o‘sish, balki madaniy, ijtimoiy va

ekologik sohalarda ham katta ahamiyat kasb etadi. Ayniqsa, so‘nggi yillarda global miqyosda turizm sanoatiga bo‘lgan talabning ortishi, bu sohadagi tadbirkorlik faoliyatining kengayishiga olib kelmoqda. Turizmni rivojlantirish uchun zarur bo‘lgan muvaffaqiyatli tadbirkorlik muhiti, nafaqat mamlakat ichidagi iqtisodiy, balki siyosiy va ijtimoiy barqarorlikni ta’minlashga ham yordam beradi. Bunday muhitni yaratish va rivojlantirish uchun esa ko‘plab omillarni hisobga olish zarur. Tadbirkorlik muhiti deganda, ma’lum bir soha yoki hududda biznesni yuritish uchun zarur bo‘lgan barcha tashkiliy, iqtisodiy va huquqiy sharoitlar tushuniladi. Turizm sohasidagi tadbirkorlik muhitini shakllantirish va rivojlantirish, iqtisodiy barqarorlik, soliq tizimi, investitsiyalarni jalb qilish, infratuzilma va marketing strategiyalarini samarali joriy etish bilan bevosita bog‘liqdir. Shu bilan birga, turizm sanoatida muvaffaqiyatli tadbirkorlik muhitini yaratish uchun davlat tomonidan samarali siyosat va boshqaruv mexanizmlari, shuningdek, ilg‘or texnologiyalardan foydalanish ham muhim o‘rin tutadi.

Turizm sohasida tadbirkorlik muhitini rivojlantirishga ta’sir etuvchi omillarni tahlil qilish, nafaqat ushbu soha uchun, balki butun iqtisodiyotning barqaror o‘sishi va yangi ish o‘rinlari yaratishda ham katta ahamiyatga ega. Shuningdek, turizmga oid resurslar va xizmatlar sohasida raqobatbardoshlikni oshirish, xalqaro turizm bozorida o‘z o‘rnini topish, mahalliy aholi daromadlarini oshirishga yordam beradi. Bunday rivojlanish iqtisodiy o‘sishni rag‘batlantiradi va uzoq muddatli barqarorlikni ta’minlashga imkon yaratadi. Shu maqsadda, mamlakatlarning turizm sohasini rivojlantirishga qaratilgan strategiyalari, infratuzilmaning modernizatsiyasi, ta’lim va malaka oshirish dasturlarini amalga oshirish va turistik brendlarni yaratish kabi elementlar asosiy o‘rin tutadi. Turizm sohasida muvaffaqiyatli tadbirkorlik muhiti nafaqat iqtisodiy, balki ijtimoiy va madaniy omillar bilan ham bog‘liq. Aholining turizmga bo‘lgan qiziqishi, uning ehtiyojlari, ta’lim darajasi va mehnat bozoridagi o‘zgarishlar bu sohaning rivojlanishiga to‘g‘ridan-to‘g‘ri ta’sir ko‘rsatadi. Shuningdek, global miqyosda ijtimoiy va madaniy turizmga bo‘lgan talabning ortishi, turizm sohasining diversifikatsiyasiga imkon yaratadi. Bunday omillarni hisobga olgan holda, turizmda tadbirkorlik muhitini muvaffaqiyatli shakllantirish va rivojlantirishga erishish mumkin. Mazkur maqolada turizm sohasida tadbirkorlik muhitini shakllantirish va rivojlantirish uchun zarur bo‘lgan asosiy iqtisodiy, ijtimoiy, huquqiy va texnologik omillar tahlil qilinadi. Shu bilan birga, turizm sohasida muvaffaqiyatli tadbirkorlik muhitini yaratish uchun hukumat, biznes va jamiyatning o‘zaro hamkorligi zarurligi ko‘rsatiladi. Ushbu tahlil orqali, turizm sohasidagi tadbirkorlik muhitining samarali rivojlanishiga yo‘l ochadigan tavsiyalar ishlab chiqiladi.

Turizm sohasida tadbirkorlik muhitini shakllantirish va rivojlantirish masalalari bir qator ilmiy izlanishlarda o‘rganilgan bo‘lib, turizm sanoatining iqtisodiy, ijtimoiy, huquqiy va texnologik omillarini tahlil qiluvchi ishlar mavjud. Ushbu bo‘limda turizm sohasidagi tadbirkorlik muhiti rivojlanishining turli omillari, shuningdek, soha tadqiqotlari natijalari tahlil qilinadi. Birinchi o‘rinda, iqtisodiy omillar turizm sohasining rivojlanishiga bevosita ta’sir ko‘rsatadi.

Shuningdek, turizm sanoatiga investitsiya kiritish, infratuzilma va marketing strategiyalarining ahamiyati katta. Maqolalar va tadqiqotlar ko‘rsatadiki, iqtisodiy barqarorlik, xususan, soliq siyosati va iqtisodiy strategiyalar, turizm sohasida tadbirkorlik muhitining rivojlanishiga ta’sir qiladi. Shu ma’noda, X. Xolmuhammedov (2018) o‘z tadqiqotida turizmni rivojlantirish uchun hukumatning qo‘llab-quvvatlovchi siyosati, soliq imtiyozlari va investitsiya jalb qilishda ta’sir etuvchi asosiy omillarni tahlil qiladi. Ularning fikricha, davlat tomonidan yaratgan qulay iqtisodiy sharoitlar va soliq imtiyozlari turizm biznesining rivojlanishiga yordam beradi va investitsiya muhitini yaxshilaydi [1].

Bundan tashqari, A. Rasulov (2020) o‘z izlanishlarida turizmda tadbirkorlik faoliyatining muvaffaqiyatini iqtisodiy o‘sish bilan bog‘laydi. U, ayniqsa, kichik va o‘rta biznesning rivojlanishini ta’kidlab, bu sohada davlatning ko‘mak dasturlari va kichik biznesga yo‘naltirilgan kreditlar mavjudligini tahlil qiladi. Rasulovning fikriga ko‘ra, investitsiyalar va iqtisodiy o‘sish iqtisodiyotning boshqa sohalari bilan bog‘liq ravishda turizmda tadbirkorlikni rivojlantirish uchun zarur bo‘lgan asosiy elementlardir [2]. Ijtimoiy omillarni o‘rganish turizm sohasidagi tadbirkorlik muhitining rivojlanishiga ta’sir etuvchi muhim faktorlardan biridir. O‘zbekiston kabi rivojlanayotgan mamlakatlarda turizmning ijtimoiy aspektlari, masalan, aholining turizmga bo‘lgan qiziqishi va ularning ehtiyojlarini qondirish, ijtimoiy barqarorlikni ta’minlashga imkon yaratadi. S. Tursunov (2017) o‘z tadqiqotida turizmning ijtimoiy ta’sirlarini va aholi turizmga bo‘lgan ehtiyojlarini o‘rganib, jamiyatda turizm sohasiga bo‘lgan qiziqishning oshishi natijasida yangi turistik yo‘nalishlar va xizmatlar paydo bo‘lishi mumkinligini ta’kidlaydi. Tursunovning fikriga ko‘ra, turizmning ijtimoiy omillari jamiyatda turizmga bo‘lgan qiziqishni oshirish, yangi xizmatlar yaratish va mahalliy aholi uchun iqtisodiy imkoniyatlar yaratish nuqtai nazaridan muhim [3].

Turizm sohasining huquqiy asoslari ham tadbirkorlik muhiti shakllanishida katta o‘rin tutadi. Turizm sohasida soliq va qonuniy jihatlar, litsenziyalash tizimi, ekologik xavfsizlik me’yorlari, shuningdek, davlat tomonidan qo‘llaniladigan qonunlar va reglamentlar muhim o‘rin tutadi. A. Jorayev (2019) o‘z izlanishlarida turizmda huquqiy tizimning roli haqida so‘z yuritadi. U, ayniqsa, turizmni tartibga soluvchi davlat qonunlarining kuchaytirilganligini, shu jumladan soliq va ekologik tartiblarni tahlil qiladi. Jorayevning fikricha, turizm sohasidagi huquqiy muammolarni hal etish va yangi qonunlarni ishlab chiqish tadbirkorlik muhitini yanada rivojlantirishga xizmat qiladi [4]. Texnologik omillar ham turizm sohasidagi tadbirkorlik muhitining rivojlanishiga katta ta’sir ko‘rsatadi. Yangi texnologiyalar, ayniqsa raqamli texnologiyalar va onlayn platformalar, turizmni rivojlantirishda katta ahamiyatga ega. A. Murodov (2021) o‘z tadqiqotida turizmda yangi texnologiyalarning joriy etilishi, onlayn turistik xizmatlar va raqamli marketingning o‘sishini ko‘rsatadi. U, shuningdek, turizmni raqamlashtirish va onlayn xizmatlarning rivojlanishi, turizm sohasining global miqyosda raqobatbardoshligini oshiradi, degan xulosaga keladi. Murodovning izlanishlariga ko‘ra, raqamli texnologiyalar yordamida turizm xizmatlari ko‘proq

mijozlarga yetib boradi va shunday qilib, tadbirkorlik muhiti yanada samarali bo‘ladi [5].

Turizm sohasida tadbirkorlik muhitini shakllantirish va rivojlantirishda bir qator muammolar mavjud bo‘lib, ularning har biri o‘ziga xos yechimlarni talab etadi. Ushbu muammolarni yechish uchun iqtisodiy, ijtimoiy, huquqiy va texnologik jihatlardan kompleks yondashuvni amalga oshirish zarur. Keling, har bir muammo va uning yechimlarini kengroq ko‘rib chiqamiz, shuningdek, statistik ma’lumotlar bilan ta’minlaymiz.

Iqtisodiy muammolar va investitsiya taqchilligi:

Turizm sohasining rivojlanishi uchun investitsiya muhitining yaxshi tashkil etilishi zarur. Dunyo bo‘yicha turizm sohasiga kiritilgan investitsiyalar har yili o‘sib bormoqda, ammo rivojlanayotgan mamlakatlar, xususan, O‘zbekiston kabi mamlakatlar hali ham past darajadagi investitsiyalarga ega. Masalan, Jahon Turizm Tashkiloti (UNWTO) 2023 yilgi statistik ma’lumotlariga ko‘ra, global turizmga kiritilgan investitsiyalar o‘tgan yilda 7,3% ga oshgan bo‘lsa, o‘rtacha investitsiya yillik 1,5 trillion dollarni tashkil etgan. Biroq, bu investitsiyalarning 40% dan ortig‘i faqatgina rivojlangan mamlakatlarga to‘g‘ri keladi. O‘zbekiston kabi rivojlanayotgan mamlakatlar uchun investitsiya jalb qilishda hali ham katta muammolar mavjud.

Soliq siyosatini soddalashtirish:

Soliq imtiyozlari va soddalashtirilgan tizimlar orqali kichik va o‘rta biznesga investitsiya jalb qilishni rag‘batlantirish. Masalan, turizm infratuzilmasi uchun davlat tomonidan ajratilayotgan subsidiyalarni oshirish va imtiyozli kreditlar tizimini kengaytirish.

Davlat-xususiy sheriklik (PPP):

Turizm infratuzilmasini rivojlantirishda davlat-xususiy sheriklikni (PPP) kengaytirish, bu orqali xususiy sektorni jalb qilish va investitsiya muhitini yaxshilash.

Ijtimoiy muammolar va aholi turizmga bo‘lgan qiziqishining pasayishi: Aholining turizmga bo‘lgan qiziqishi va ehtiyojlari o‘zgarib bormoqda. 2022 yilda dunyo bo‘yicha turizmni ta’minlovchi xizmatlardan foydalangan aholi soni 1,4 milliardga yetdi, ammo COVID-19 pandemiyasi natijasida 2020 yilda bu raqam 73% ga kamaygan edi. Shuningdek, ijtimoiy omillar, masalan, turizmga bo‘lgan qiziqishni oshirish, ta’lim va madaniyatning roli, aholi ehtiyojlariga mos xizmatlar taqdim etishda muammolar mavjud. O‘zbekistonning turizm bozorida ham, ayniqsa, mahalliy turistlar orasida turizmga bo‘lgan qiziqishning kamayishi sezilmoqda.

Ta’lim va malaka oshirish dasturlari:

Turizm sohasida mutaxassislarni tayyorlash va ularga yangi texnologiyalarni o‘rgatish, xizmatlar sifatini oshirishga yordam beradi. Masalan, O‘zbekiston hukumati tomonidan amalga oshirilgan "Turizmni rivojlantirish strategiyasi" doirasida turizm bo‘yicha 50 dan ortiq ta’lim kurslari tashkil etildi.

Ijtimoiy marketing va targ‘ibot: Aholi orasida turizmni targ‘ib qilish va uning foydalari haqida ma’lumotlarni oshirish, turizmga bo‘lgan qiziqishni qayta

tiklash uchun xalqaro miqyosda reklama va marketing kampaniyalarini tashkil etish zarur. O‘zbekiston turizmni targ‘ib qilish uchun ijtimoiy tarmoqlarda samarali reklama kampaniyalarini o‘tkazmoqda.

Huquqiy muammolar va qonunlararo tartibni rivojlantirish:

Turizmni tartibga soluvchi qonunlar va me’yoriy hujjatlar ko‘pincha samarali bajarilmaydi. Masalan, O‘zbekiston turizm sohasidagi huquqiy asoslarni takomillashtirishni davom ettirmoqda, ammo amaldagi soliq va ekologik qonunlar yetarli darajada ishlamayapti. Jahon Turizm Tashkiloti (UNWTO) 2022 yilgi hisobotida ko‘rsatganidek, ko‘pgina davlatlarda turizmni tartibga soluvchi qonunlarning yomon bajarilishi, turistlar xavfsizligi va sifatli xizmatlarning taqdim etilishi bilan bog‘liq muammolar mavjud.

Huquqiy tizimni takomillashtirish:

Turizm sohasidagi qonunlar va reglamentlarni yangilash va ularni to‘g‘ri bajarilishini ta’minlash. Masalan, O‘zbekistonda turizmni rivojlantirish bo‘yicha qabul qilingan yangi qonunlarni amaliyotga tatbiq etish.

Ekologik tartib va xavfsizlikni kuchaytirish:

Ekologik xavfsizlikni ta’minlash, yashil turizmni rivojlantirish va atrof-muhitni muhofaza qilishni kuchaytirish zarur.

Texnologik muammolar va raqamli infrastrukturani rivojlantirish: Turizm sohasida raqamli texnologiyalarni joriy etish, xizmatlarni onlayn ko‘rsatish va marketing vositalarini optimallashtirish muhim. Dunyo bo‘yicha turizmda raqamli texnologiyalarning o‘sishi sezilarli bo‘lmoqda. Masalan, 2023 yil oxiriga borib, onlayn sayohat platformalari orqali sayohat qilishning 50% dan ortig‘i amalga oshirildi. Biroq, ko‘plab mamlakatlarda raqamli infratuzilma hali ham rivojlanmagan, ayniqsa kichik va o‘rta biznes uchun.

Raqamli transformatsiya:

Onlayn xizmatlar va mobil ilovalarni joriy etish, raqamli marketing strategiyalarini rivojlantirish. Misol uchun, O‘zbekistonning turistik xizmatlarining raqamli platformalari ishlab chiqilishi va turistlar uchun mobil ilovalar yaratish muhim.

Smart texnologiyalar:

Aqlli mehmonxona xizmatlari, raqamli kartalar va avtomatlashtirilgan turizm xizmatlarini joriy etish orqali turistlarga yanada qulay va innovatsion xizmatlar taqdim etish.

Marketing va brendingni rivojlantirish:

Turizmni targ‘ib qilish va brend yaratish uchun marketing strategiyalarini yanada kuchaytirish zarur. Turizmni global miqyosda samarali targ‘ib qilish uchun mustahkam brend yaratish va xalqaro miqyosda reklama qilish muhimdir. Jahon Turizm Tashkiloti (UNWTO)ning ma’lumotlariga ko‘ra, har yili global turizm uchun marketing xarajatlari 400 milliard dollarga yetmoqda. Ammo ko‘plab rivojlanayotgan mamlakatlar bu jarayonda yetarlicha faoliyat yuritmayapti.

Xalqaro reklama va brend yaratish: Turizm sohasidagi marketing strategiyalarini yaxshilash va yangi turistik yo‘nalishlar yaratish. Masalan,

O‘zbekistonning “Uzbekistan. Go Turizm!” brendi asosida xalqaro miqyosda reklama kampaniyalarini tashkil etish.

Raqobatbardosh marketing strategiyalari:

Turizmni onlayn va ijtimoiy tarmoqlar orqali samarali targ‘ib qilish, sayohatchilar uchun maxsus turistik paketlar yaratish.

Xulosa

Turizm sohasidagi tadbirkorlik muhitini shakllantirish va rivojlantirishda mavjud bo‘lgan muammolarni samarali yechish uchun bir qator iqtisodiy, ijtimoiy, huquqiy va texnologik yondoshuvlarni amalga oshirish zarur. Global miqyosda turizm sanoati sezilarli darajada o‘sishda davom etayotgan bo‘lsa-da, ko‘plab rivojlanayotgan mamlakatlar, jumladan O‘zbekiston, bu jarayonda hali ham ba’zi qiyinchiliklarga duch kelmoqda. Iqtisodiy investitsiyalarning yetarli emasligi, ijtimoiy omillar tufayli aholi orasida turizmga bo‘lgan qiziqishning pasayishi, huquqiy tizimning zaifligi va texnologik infratuzilmaning rivojlanmaganligi kabi muammolar turizm sohasining to‘liq potensialini amalga oshirishga to‘sqinlik qilmoqda. Biroq, bu muammolarni samarali yechish uchun ko‘plab imkoniyatlar mavjud. Soliq siyosatini soddalashtirish va investitsiyalarni rag‘batlantirish orqali iqtisodiy muhitni yaxshilash, ijtimoiy marketing va turizm ta’limini rivojlantirish orqali aholi orasida turizmga bo‘lgan qiziqishni oshirish, huquqiy tizimni takomillashtirish va ekologik xavfsizlikni kuchaytirish, raqamli transformatsiya va smart texnologiyalarni joriy etish orqali texnologik imkoniyatlarni kengaytirish zarur. Shuningdek, turizmni xalqaro miqyosda samarali targ‘ib qilish va brend yaratish uchun marketing strategiyalarini kuchaytirish ham muhimdir. Turizm sanoati nafaqat iqtisodiy o‘sish, balki ijtimoiy farovonlikni oshirish, ish o‘rinlari yaratish va madaniy merosni saqlashda ham katta ahamiyatga ega. Shu bois, mamlakatlar turizm sohasini rivojlantirishga qaratilgan kompleks yondashuvlarni amalga oshirishi zarur. O‘zbekiston kabi mamlakatlar uchun bu sohani rivojlantirish, nafaqat milliy iqtisodiyotni diversifikatsiya qilish, balki xalqaro turizm bozorida o‘z o‘rnini mustahkamlash imkonini beradi.

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XORIJIY MAMLAKATLARDAGI TASHLANDIQ KARYER HUDUDLARI ARXITEKTURA MUHITINI QAYTA TASHKIL ETISH JARAYONI TAHLILI

Annotatsiya: *Mazkur maqolada ish faoliyati tugatilgan karyer hududlarini ekologik, ijtimoiy va estetik jihatdan qayta tiklash masalalari yoritilgan. Xorijiy mamlalatlardagi tashlandiq karyer hududlarini arxitektura muhitini qayta tashkil etish jarayonlari tahlil qilinib, ularning ekologik va arxitektura yondashuvlari o'rganiladi.*

Kalit so'zlar: *karyer, landshaft dizayni, rekultivatsiya, ekologiya, rekreatsiya.*

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ANALYSIS OF THE REORGANIZATION PROCESS OF ARCHITECTURAL ENVIRONMENTS IN ABANDONED QUARRY AREAS IN FOREIGN COUNTRIES

Annotation: *This article addresses the issues of ecological, social, and aesthetic rehabilitation of abandoned quarry sites. It analyzes the processes of reorganizing the architectural environment based on international examples and explores ecological and architectural approaches applied in the transformation of such areas.*

Key words: *quarry, landscape design, reclamation, ecology, recreation.*

Kirish.

So‘nggi yilliklarda dunyo miqiyosida yiliga 150 mlrd tonna mineral xom-ashyo qazib olinmoqda. Tabiiy nurash oqibatida dengiz va okeanlarga daryolar orqali yiliga 15 mlrd tonna tog’ jinslari oqib qo‘shilmoqda va 3-4 mlrd tonna tog’ jinslari atmosfera havosiga ko‘tarilmoqda. Inson o‘z ehtiyojlarini qondirish maqsadida yiliga 1500-2000 mlrd tonna tog’ jinslarini bir joydan ikkinchi joyga ko‘chiradi. BMT (Birlashgan Millatlar Tashkiloti) ning ma’lumotlariga qaraganda, yiliga dunyoda 2,6 mlrd tonna neft, 3,6 mlrd tonna xrom ma’dani, 3-4 mlrd tonna qo‘rg’oshin ma’dani, 6 mlrd tonna temir ma’dani, 7,3 mlrd tonna mis ma’dani, 32 mlrd tonna ko‘mir, 1,2 mln tonna uran, simob, molibden, kumush, oltin va platina ma’danlari, 120 mln tonna fosfatlar va 159 mln tonna tuz qazib olinmoqda [1].

Urbanizatsiya va sanoat rivojlanishi oqibatida tabiiy landshaftlar, xususan, foydali qazilmalar qazib olingan karyerlar katta ekologik va vizual degradatsiyaga uchramoqda. Dastlab sanoat maqsadlarida foydalanilgan ushbu hududlar vaqt o‘tishi bilan o‘z funksional ahamiyatini yo‘qotib, tashlandiq va xavfli joylarga aylanishi mumkin. Biroq, zamonaviy arxitektura va landshaft dizayni yondashuvlari bunday hududlarni qayta tiklash orqali ularni jamiyat uchun foydali makonlarga aylantirish imkonini yaratmoqda [2].

Mazkur maqolada karyer hududlarini ekologik, ijtimoiy va estetik jihatdan qayta tiklash masalalari o‘rganiladi. Jumladan, Yevropa va Osiyo mamlakatlari tajribasida arxitektura muhitini qayta tashkil etish jarayonlari tahlil qilinadi. Karyerlarni yashil hududlarga aylantirish, rekreatsion zonalar tashkil etish, urbanistik va agroekologik ehtiyojlarga moslashtirish orqali ularning iqtisodiy va ijtimoiy ahamiyatini tiklash yo‘llari yoritiladi.

Asosiy qism.

Bugungi kunda tabiiy resurslardan foydalanish natijasida hosil bo‘lgan sanoat chiqindilari va buzilgan yerlar ekologik holatini tiklash asosiy muammolardan biri hisoblanadi. Jumladan, tog‘ sanoatida faoliyat yuritgan, ammo hozirda tark etilgan karyer hududlari tabiiy landshaftga salbiy ta’sir ko‘rsatmoqda. Ushbu hududlarni ekologik jihatdan xavfsiz, estetik jozibali va ijtimoiy foydali makonlarga aylantirish zarurati ortib bormoqda [3].

Hozirda postindustrial hududlarning qayta tiklanishi global arxitektura va landshaft me’morchiligida asosiy yo‘nalishlardan biri bo‘lib qolmoqda. Ayniqsa, tashlandiq karyerlar kabi tabiiy va sun’iy muhit o‘rtasidagi nozik muvozanat buzilgan joylarda bu jarayon ikki tomonlama maqsadga xizmat qiladi: bir tomondan, ekologik tiklanish; ikkinchi tomondan, jamiyat uchun funksional va estetik makon yaratish. Turli xorijiy mamlakatlar tajribasi bu borada katta ahamiyatga ega bo‘lib, ularni tahlil qilish orqali O‘zbekiston sharoitida ham shunga o‘xshash loyihalarni ishlab chiqish imkoniyati vujudga keladi.

Xitoyning Shanxay shahrida joylashgan Chenshan botanika bog‘i postindustrial landshaftni qayta tiklashda eng yirik namunalar sirasiga kiradi. Bu yerda 2005-yilda tashlandiq kon maydonida ekologik va madaniy xotirani saqlagan holda botanika bog‘i barpo etildi (1-rasm). Dizaynerlar mavjud tabiiy tosh strukturani saqlab qolgan holda, zanglagan po‘lat, qo‘pol tosh kabi

postindustrial materiallardan foydalanib, joyning tarixiy qiyofasini yetkazishga muvaffaq bo‘lishgan. Hovuzlar, ekologik ko‘priklar va suv o‘simliklari orqali mikroiqlim boshqaruvi amalga oshirilib, landshaftning estetik va ekologik yaxlitligi ta’minlangan [4].

Shuningdek, bog‘ uchta asosiy zonaga ajratilgan: Szinxu, Taypin va Shentan. Har bir zona o‘ziga xos funksional va dizayn yondashuvlariga ega bo‘lib, hududning morfologik xususiyatlarini inobatga olgan holda ishlab chiqilgan. Masalan, Shentan tumani egri po‘lat yo‘laklar, ponton ko‘priklar va tunnel elementlari orqali tashrif buyuruvchilarga turli burchaklardan kon landshaftini ko‘rish imkonini beradi. Bu orqali me’moriy muhit bilan tabiiy landshaft o‘rtasida silliq integratsiya yuzaga keladi.

Yana bir namuna sidatida Rossiyaning Ruskeala tog‘ parki diqqatga sazovor. Kareliyadagi marmar karyeri asosida tashkil etilgan ushbu bog‘ 2005-yilda jamoatchilik uchun ochilgan bo‘lib, qadimiy sanoat landshaftini saqlab qolgan holda turizm va madaniy faoliyat bilan boyitilgan (2-rasm). Karerlar aditlar bilan bog‘langan bo‘lib, marmar kanyonlar suv bilan to‘lib, tabiiy landshaft elementiga aylangan. Yevropada benazir bo‘lgan bu loyiha sanoat merosi va tabiat muvozanatining namunasi sifatida qimmatlidir [5].

Avstraliyadagi Brickpit Ring Walk loyihasi esa tabiiy ekologik muhitni saqlash va sanoat landshaftini qayta qurishdagi yondashuvlarning kombinatsiyasidir. Bu joy ilgari g‘isht ishlab chiqariladigan kon bo‘lgan bo‘lsa, 1992-yilda yo‘qolib ketish xavfi ostida bo‘lgan Yashil va Oltin qo‘ng‘iroq qurbaqalarining topilishi tufayli bu yer yovvoyi tabiatga qaytarilgan. 2006-yilda qurilgan 20 metr balandlikdagi aylana yo‘lak orqali tashrif buyuruvchilar bu hududning tarixiy va ekologik qiymatini ko‘zdan kechira oladi (3-rasm). Bu loyiha ekologik dizayn va inson aralashuvi chegarasini qat’iy belgilagan holda, tabiatni ustuvor qilgan yondashuvdir [6].

Gollandiyada joylashgan Zanderij Crailoo tabiat ko‘prigi esa butunlay boshqacha — hayvonlar va insonlar uchun xavfsiz ekotizim aloqasini yaratishga qaratilgan. 65 gektarlik sobiq qum kareri bugun yashil yo‘lak sifatida faoliyat yuritmoqda (4-rasm). 800 metr uzunlikdagi bu ekodukt yovvoyi tabiat, piyodalar, velosipedchilar va otliq yo‘lovchilar uchun ko‘p funksiyali infratuzilma bo‘lib xizmat qiladi. U yovvoyi tabiatni temiryo‘l va avtomobil yo‘llaridan xavfsiz o‘tish imkonini yaratadi [7].

Australiyadagi yana bir loyiha — Kranbern Qirollik botanika bog‘i (2013) sobiq qum chuquri o‘rnida yaratilgan ekologik markaz bo‘lib, 40 gektar maydonni egallaydi. Bu bog‘ ekologiya, san’at va madaniyatni birlashtirgan holda Avstraliya florasiga bag‘ishlangan eng yirik landshaft majmuasiga aylangan (5-rasm). Loyiha jamoasi joyga yangi tuproq olib kelish o‘rniga, mavjud resurslar bilan moslashuvchan ekologik yondashuvni tanlagan va 1700 turdagi o‘simliklar ekilgan. Suv, tosh va tabiiy elementlar orasidagi muvozanat bu yerning landshaft shaklini butunlay o‘zgartirgan [8].

Shuningdek, Ispaniyada joylashgan Pedra Da Ra kuzatuvi tabiiy shakllar, tarixiy arxeologik izlar va ekologik landshaftni uyg‘unlashtirgan holda sobiq

karerni sayyohlik nuqtasiga aylantirgan (6-rasm). U yerda mavjud tosh strukturalar qayta ishlatilib, hududga xos fazoviy identitet yaratilgan. Bu yondashuv resurslarni tejash va tarixiy xotirani saqlashga xizmat qilgan [9].

Xitoydagi Nankin-Tangshan kon parki esa texnik va ekologik tiklanishning yuksak namunasi hisoblanadi. Bir vaqtlar Longquan karyeri sifatida faoliyat yuritgan bu joy bugungi kunda "shaharni ikki karra rekonstruksiya qilish" konsepsiyasi doirasida yangidan barpo etilgan (7-rasm). Dizaynerlar mavjud relyef, tarixiy kon elementlari va biologik xilma-xillikni hisobga olgan holda maydonni 6 ta funksional zonaga ajratishgan. Suv resurslarini boshqarish, tuproqni qayta ishlash, mahalliy o‘simliklarni tiklash kabi chora-tadbirlar bu joyni nafaqat dam olish, balki ekologik ta’lim maydoniga aylantirgan [10].

Xitoyda yana bir qiziqarli loyiha — InterContinental Shanghai Wonderland mehmonxonasi bo‘lib, u Shanxay yaqinidagi karyer ichida joylashgan 16 qavatli yer osti mehmonxonasi sifatida qurilgan (8-rasm). Mehmonxonaning g‘ayrioddiy dizayni tabiat bilan uyg‘unlashgan holda, jarlik ichida noyob arxitektura namunasini taqdim etadi [11]. InterContinental Shanghai Wonderland — faqat noyob arxitekturasi va dizayni bilan emas, balki ekologik mas'ul yondoshuvi bilan ham ajralib turadi. Sobiq karerni qayta tiklash orqali san’at, turizm va tabiatning uyg‘unligini yaratgan bu loyiha zamonaviy landshaft arxitekturasi va postindustrial landshaftni qayta ijtimoiy-hayotga jalb qilishning yuqori darajadagi namunasi hisoblanadi.



1-rasm.Shanxay Chenshan kon bog'i.



2-rasm. “Ruskeala tog' parki”, Resp. Kareliya, Rossiya



3-rasm. Brickpit Ring, Sydney.



4-rasm. Natuurbrug Zanderij Crailoo, Shimoliy Gollandiya



5-rasm. Qirollik botanika bog'i, Avstraliya.



6-rasm. Pedra Da Ra kuzatuvi markazi, Ispaniya



7-rasm. Nankin-Tangshan kon parki, Xitoy.



8-rasm. InterContinental Shanghai Wonderland , Xitoy

Xulosa va takliflar.

Xulosa qilib aytganda, tashlandiq karerlarni ekologik va madaniy jihatdan qayta tiklash nafaqat atrof-muhitni saqlash, balki madaniy meros va jamoat

manfaatlariga xizmat qiluvchi noyob landshaftlarni yaratishda muhim rol o‘ynaydi. Maqolada ta’kidlanganidek, Xitoy, Rossiya, Avstraliya, Ispaniya, Gollandiya kabi davlatlarning ilg‘or tajribalari shuni ko‘rsatadiki, tashlandiq sanoat maydonlarini rekreatsion zonalarga, botanika bog‘lariga, ekologik ko‘priklar va sayyohlik maskanlariga aylantirish orqali ularning iqtisodiy, ekologik va ijtimoiy qiymati sezilarli darajada oshirilmoqda. Nanning Garden Expo Park loyihasi va boshqa misollar ko‘rsatganidek, tabiiy hududlarning murakkab relyefi va noyob landshaft xususiyatlaridan foydalanish orqali nafaqat ekologik muvozanat tiklanadi, balki yangi turistik, madaniy va ijtimoiy maydonlar yaratiladi. Chenshan botanika bog‘i (Xitoy), Ruskeala marmar parki (Rossiya), Brickpit Ring Walk (Avstraliya), Zanderij Crailoo ekodukti (Gollandiya) va InterContinental Shanghai Wonderland mehmonxonasi kabi loyihalar bu yondashuvning amaliy misollaridir.

Bu tajribalar asosida shuni xulosa qilish mumkinki, postindustrial landshaftlarni tiklashda kompleks va kontekstual yondashuv zarur. Ya’ni, har bir hududning tabiiy morfologiyasi, madaniy tarixi va ekologik ehtiyojlari hisobga olingan holda, ularni estetik va funksional jihatdan jamoat ehtiyojlariga moslashtirish mumkin. O‘zbekiston sharoitida ham, mavjud kon va karyer hududlarini ana shunday ilg‘or yondashuvlar asosida qayta tiklab, ularni turizm, madaniyat, ta’lim yoki ekologik markazlarga aylantirish orqali yangi ijtimoiy-iqtisodiy imkoniyatlar yaratish mumkin.

Shunday qilib, sanoat merosini ekologik va madaniy kontekstda qayta ishlash nafaqat muhitni tiklash, balki inson va tabiat o‘rtasidagi uyg‘unlikni ta’minlashga xizmat qiluvchi zamonaviy strategiyadir. Zamonaviy arxitektura va ekologik dizayn yondoshuvlari ushbu hududlarni jonlantirishda muhim vosita bo‘lib xizmat qiladi.

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INTERCULTURAL COMMUNICATION BETWEEN STUDENTS AND TEACHERS: PROBLEMS AND SOLUTIONS

Abstract: *The article describes the problem of intercultural communication in a polyethnic group, and I also teach it. The author analyzes driving problems, some of the causes of their occurrence, recommendations for prevention and solution of these problems, and effective communication.*

Keywords: *intercultural communication, linguistic culture, polyethnic group, ethnicity, language, skills.*

Introduction

Solving the challenges facing intercultural education today largely depends on effective communication. The purpose of this article is to examine the characteristics of intercultural communication between representatives of different cultures in an educational context and to demonstrate their role in the development of successful intercultural education.

Discussion

Communication allows participants to express some external to the participants themselves information, internal emotional state and status roles, in which they are relative to each other. From the history of cross-cultural communication. The term “intercultural communication” in the narrow sense, appeared in the literature in the 1970s [1]. By this time, it was formed and scientific direction, the core of which was the study of communication failures and their consequences in situations of intercultural communication. By 1972 and formed the scientific direction, the core of which was the study of communication failures and their consequences in situations of intercultural communication. Subsequently, there was an extension of the concept of intercultural communication in areas such as the theory of translation, foreign language teaching, comparative cultural studies, and others.

In recent years, the number of international studies and articles devoted to the ethno-oriented approach to teaching English, both in and outside of the language environment, has increased. The linguodidactic foundations of ethno-oriented teaching for representatives of individual ethnic groups are reflected in the works of T. M. Balykhina, T. A. Krotova, E. I. Elagina, E. V. Nevmerzhitskaya, N. V. Pomortseva, V. N. Wagner, I. A. Pugacheva, O. A. Bezhenar, Abdklfatah Jomaa N. Massoud, Abbas Yasin, Ali Anwar, Dao Nguyen Tguy, and others. The relevance of research in this area is growing, as practice

already demonstrates the effectiveness of the ethno-oriented approach in teaching foreign languages. However, research on the application of this approach outside of the language environment is insufficient.

Analysis and results

Teaching within an ethno-oriented approach takes into account and builds on the ethnopsychological, linguistic, and ethnocultural characteristics of a particular student population, as well as the linguacultural characteristics of their native and target languages. However, implementing this approach is challenging when working with multi-ethnic groups, which, unlike mono-ethnic groups, include students from two or more ethnic groups. In the modern world, teachers in schools, universities, and language courses often find themselves working with multi-ethnic groups. These groups often include students from ethnic groups with polarized characteristics, and sometimes even aggressive attitudes toward students from other ethnic groups, which hinders effective intercultural communication. Under these conditions, teachers, particularly those at universities or specialized courses, must, within a short timeframe, not only develop specific communication skills (including linguistic, sociocultural, discursive, sociolinguistic, strategic, and social components) in an audience that is not necessarily inclined to learn foreign languages, but also teach students the language of their specialization. Challenges also arise when teaching students in multi-ethnic groups on short-term courses in various fields.

In addition to the historical and political background, communication and joint study may be hindered by existing hetero- and auto-stereotypes among these students and differences in the set of attributes characterizing the same concept (e.g., time, sun, death, etc.) among these ethnic groups. Differing sociocultural and discursive phenomena in ethnic cultures create obstacles and disruptions in intercultural communication. These can only be overcome through targeted study of the communicative behavior and background knowledge of representatives of a different cultural society. “As a consequence of cultural dialogue, linguacultural interference arises when each participant in communication is based on their own culture, using a common language of communication” [4]. In intercultural communication, the opposition of “us” and “them” is clearly evident when the participants in the dialogue represent different cultures. In this case, they understand each other from the perspective of their own cultures, which differ significantly from one another. The main reasons for failures lie in cultural differences, in different worldviews - that is, in different attitudes toward the world and other people. And this applies not only to communication between students but also between students and teachers.

The example above concerns students from different countries who were born and raised as part of their social communities with their characteristic linguacultural and psychosocial characteristics. However, it sometimes happens that students come from the same country or from different countries but with the same official language. It may seem that these students are united by language, a shared set of cultural values, and a common religion. The teacher thinks they are

working with a monoethnic group and expects no problems in communication or learning. However, problems arise. Why? Let's look at some examples again.

The practical acquisition and use of language tools to create one's own worldview and communicate with other native speakers, a linguistic identity is formed; language reflects the world and culture of its speakers. Uzbeks also vary greatly in their cultural and everyday traditions.

Thus, we were able to identify some of the problems of intercultural communication in multi-ethnic groups and their causes. What are the possible solutions? As mentioned above, obstacles and disruptions in intercultural communication (both between students and between students and teachers) can be prevented and overcome through targeted study of the communicative behavior and background knowledge of representatives of different cultural backgrounds. The main thing is not to neglect an ethno-oriented approach and to consider the linguistic and cultural aspects and ethno-oriented components when planning lessons.

Recommendations:

- Find out which ethnic groups will be represented and what their relationships are like: in general/in their own country (if from the same country);
- Find information and become familiar with the country the students are coming from;
- Study the ethnic and linguistic situation in the country;
- Study the ethnopsychological and cultural characteristics of the students;
- Study the linguacultural characteristics of the students' native language;
- Find out the academic communication style in the student's country, decide on the teaching style and clothing for classes;
- Note "sensitive" topics;
- Pay attention to intercultural homonymy - both words and speech characteristics, gestures - and try to avoid using words at the beginner level that are considered normative in Uzbek, but in the students' language, these words or words with similar sounds are considered obscene;
- anticipate linguistic and cultural interference to create conditions for interaction that fosters a harmonious dialogue between cultures;
- select additional material that will allow students to become familiar with each other without...

based on the recommendations above, plan and develop activities to foster team spirit within the group.

Conclusion

There is a lot of researchs on these issues, but it is important to remember that this contributes to the development of effective intercultural communication, and, consequently, effective learning.

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ZAMONAVIY QURILISH KONSTRUKSIYALARIDA ENERGIYA TEJAMKOR NANO-SEMENT MODIFIKATSIYASINING AFZALLIKLARI

Anotatsiya: *Maqolada zamonaviy qurilish konstruksiyalarida klinker, gips, mikrokremniy va qum asosidagi nano sement kompozitsiyalarining fazaviy tarkibi va mustahkamligi o‘rganildi. Natijalar klinker miqdori kamaytirilsa ham yuqori mustahkamlikka erishilishini ko‘rsatdi. Bu qum va mikrokremniy ta’sirida qo‘shimcha C–S–H bog’ hosil bo‘lishi bilan izohlanadi. Modifikatsiya sementning erta gidratatsiyasini tezlashtiradi va tosh tuzilishini zichlashtiradi. Olingan ma’lumotlar energiya tejamkor nano sement ishlab chiqarishga ilmiy asos yaratadi.*

Kalit so’zlar: *Nano sement, qum, Mikrokremniy, Gidratatsiya, C–S–H bog’, konstruksiya, Energiya tejamkor materiallar.*

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ADVANTAGES OF ENERGY-SAVING NANO-CEMENT MODIFICATION IN MODERN BUILDING STRUCTURES

***Abstract**: The article studies the phase composition and strength of nano-cement composites based on clinker, gypsum, microsilica, and sand used in modern building structures. The results show that even with a reduced amount of clinker, high strength can be achieved. This is explained by the formation of additional C–S–H bonds under the influence of sand and microsilica. The modification accelerates early cement hydration and densifies the stone structure. The obtained data provide a scientific basis for the production of energy-saving nano-cement.*

***Keywords:** nano-cement, sand, microsilica, hydration, C–S–H bond, structure, energy-saving materials.*

Kirish.

Qurilish sohasi jadal rivojlanib borayotgan sharoitda zamonaviy qurilish konstruksiya materiallar ishlab chiqarish hajmining ortishi katta energiya sarfini talab qilmoqda. Ayniqsa, zamonaviy konstruksiyalar uchun yuqori mustahkamlikdagi sement ishlab chiqarish jarayonida xom ashyoni kuydirish, maydalash va quritish bosqichlari yuqori issiqlik va elektr energiyasi iste'moli bilan ajralib turadi. Statistik ma'lumotlarga ko'ra, dunyo bo'yicha sement sanoati umumiy energiya iste'molining 10–12 % ini tashkil etadi va atmosferaga chiqariladigan karbonat angidrid gazining asosiy manbalaridan biri hisoblanadi. [1, 2].

Energiya tejamkorlik masalasi nafaqat ishlab chiqarish xarajatlarini kamaytirish, balki ekologik muammolarni hal qilish uchun ham dolzarbdir. Shu bois, ilmiy tadqiqotlarda sement tarkibiga mineral va kimyoviy qo'shimchalar kiritish orqali klinker sarfini kamaytirish, shu bilan birga, sementning mustahkamligi va chidamliligini saqlab qolish masalasi alohida e'tiborda turibdi [2].

Modifikatorlardan foydalanish sementning gidratatsiya jarayonini jadallashtiradi, interfaza zonasini mustahkamlaydi va betonning ishlash xossalarini yaxshilaydi. Natijada, qurilish materiallarida energiya tejamkorlik muammosiga samarali yechim topish imkoniyati yuzaga keladi. [1]

Sement ishlab chiqarishda yuqori energiya sarfi va ekologik yuklama Sement sanoati qurilish materiallari ichida eng ko'p energiya talab qiladigan sohalardan biridir. Ayniqsa, klinker ishlab chiqarish jarayonida xom ashyoni 1400–1500 °C haroratda kuydirish katta miqdorda issiqlik energiyasi sarflanishiga olib keladi. Bir tonna portlandsement ishlab chiqarishda o'rtacha 4–5 kj issiqlik energiyasi va 100–120 kVt·soat elektr energiyasi sarflanadi. [2]

Bundan tashqari, sement sanoati global ekologik yuklamaning asosiy manbalaridan biri hisoblanadi. Har bir tonna klinker kuydirish jarayonida taxminan 0,8–0,9 tonna CO_2 atmosferaga chiqariladi. Shu sababli sement ishlab chiqarish dunyo bo'yicha umumiy karbonat angidrid emissiyasining 7–8 % ini tashkil etadi. Bu ko'rsatkich sement sanoatini iqlim o'zgarishi va global isish muammolarida asosiy omillardan biriga aylantiradi. [3]

Shunday ekan, energiya sarfini kamaytirish, atrof-muhitga chiqariladigan zararli gazlarni kamaytirish hamda ishlab chiqarishda tejamkor texnologiyalarni joriy etish zamonaviy ilmiy tadqiqotlarning asosiy vazifasiga aylanmoqda. [3]

Tadqiqot mavzusining dolzarbligi Bugungi kunda qurilish materiallari sanoati oldida turgan asosiy muammolardan biri — energiya tejamkor texnologiyalarni joriy etish va ekologik yuklamani kamaytirishdir. Sement ishlab chiqarishning yuqori energiya sarfi va CO_2 chiqindilari global miqyosda iqlim o‘zgarishiga sezilarli ta’sir ko‘rsatmoqda. Shu sababli sement tarkibini modifikatsiyalash orqali kamroq klinker sarflab, sementning fizik-mexanik xossalarini yaxshilash, ishlab chiqarish xarajatlarini kamaytirish va ekologik barqarorlikni ta’minlash dolzarb dolzabligicha qolmoqda. [4]

Maqsad. Ushbu tadqiqotning asosiy maqsadi — O‘zbekistonda ishlab chiqarilayotgan portlandsement klinkerlari, mahalliy kimyoviy modifikatorlar, mineral qo‘shimchalar hamda sanoat chiqindilaridan kompleks foydalanish asosida nano-sement ishlab chiqarishning ilmiy asoslangan texnologik parametrlarini ishlab chiqishdan iborat.

Shunday qilib, tadqiqot nafaqat sementning sifat ko‘rsatkichlarini yaxshilash, balki energiya sarfini kamaytirish, sanoat chiqindilaridan samarali foydalanish va atrof-muhit yuklamasini pasaytirishga qaratilgan. [2]

Materiallar va usullar

Tadqiqotda Nano-sement olishda Toshkent viloyati Ohangaron tumanida ACCERMAN sement zavodi ishlab chiqariladigan portlandsement klinkeri ishlatildi. [4;5] Klinkerning kimyoviy va mineralogik tarkibi (1-jadval)

1-jadval

Portlanndtsement klinkerining mineralogik tarkibi

Mineralogik tarkibi, %			
C_3S	C_2S	C_3A	C_4AF
58,8	19,1	7,8	14,3

1-jadvalda Klinker tarkibida asosiy fazani C_3S tashkil etadi, bu esa sementning erta davrdagi mustahkamligini ta’minlaydi. C_2S uzoq muddatli chidamlilikni oshiradi. C_3A qotish jarayoniga faol ta’sir ko‘rsatadi, C_4AF esa ikkilamchi rol o‘ynab, sementning rangini belgilaydi. Bunday mineralogik tarkib sementning tez va barqaror qotishini hamda yaxshi fizik-mexanik xossalarini ta’minlaydi. [4;5]

Nano-sement olishda Qoraqalpog‘iston Respublikasi Amudaryo tumanidagi cho‘l zonalaridan olingan barxan qumi qo‘llanildi. U shamol ta’sirida shakllangan cho‘kindi jins bo‘lib, mineralogik va granulometrik tarkibi, zarracha shakli va yuzasi bilan boshqa qum turlaridan farq qiladi. [7]

2-jadval

Barxan qumining mineralogik tarkibi

№	Mineral nomi	Belgilanashi	Miqdori, %
1	Kvarts	SiO_2	70
2	Dalachspat (feldshpat)	$(Na,K)AlSi_3O_8$	22
3	Temir oksidlari	Fe_2O_3	2
4	Biotit	$K(Mg,Fe)_3(AlSi_3O_{10})(OH)_2$	3
5	Smektit (gil minerali)	$(Ca,Na)_{0.3}(Al,Mg)_2Si_4O_{10}(OH)_2 \cdot nH_2O$	3

Modifikator va uning komponentlari Nano-sement olish uchun modifikator ikki asosiy komponentdan iborat: mikrokremniyzyom va polikarboksilat asosidagi superplastifikator. [6]

Modifikator tayyorlash jarayoni: Mikrokremniyzyom va polikarboksilat belgilangan nisbatda aralashtirilib, 15–20 daqiqa davomida bir jinsli massa hosil qilindi. Hosil bo‘lgan aralashma quritish barabanida 40–45 daqiqa davomida 80 °C dan oshmagan haroratda quritildi. Natijada zarrachalari bir tekis taqsimlangan, yuqori faol kompozitsiya olindi. [6]

Mikrokremniyzyom: Toshkent viloyatidagi Ohangaron zavodidan olingan sanoat chiqindisi hisoblanadi. Tarkibi: SiO_2 – 87 %, Fe_2O_3 – 2 %, Al_2O_3 – 1 %, CaO – 1 %. Zarracha o‘lchami 0,1–1,0 mkm, sirt yuzasi ~21 000 m^2/kg. U sement tarkibida $Ca(OH)_2$ bilan reaksiyaga kirishib qo‘shimcha C–S–H gel hosil qiladi va sementning mustahkamligi hamda korroziyaga chidamliligini oshiradi.

Polikarboksilat superplastifikatori (KDJ-3): Poliakrilonitril asosida sintez qilinib, suvda eruvchan oq kukun ko‘rinishida olingan. Sintez jarayonida poliakrilonitril NaOH eritmasida qizdirilib, neytrallash va cho‘ktirish orqali natriy poliakrilat hamda erkin poliakril kislota hosil qilindi. [5]

Usullar Tajriba jarayonida barcha xom ashyolar belgilangan massaviy nisbatlarda aniq o‘lchab olindi. Klinker, barxan qumi va modifikator komponentlari sharli tegirmonda 4500–5000 sm^2/g (Blaine bo‘yicha) o‘rtacha sirt yuzasigacha maydalanib, nanozarrachalargacha tuyildi. (3-jadval) Olingan nano-sement tarkiblari laboratoriya sharoitida GOST 310.4–81 va GOST 310.1–76 standartlari asosida qorishmaga tayyorlandi. [8]

3-jadval

Nano sement uchun qo’llanilgan materiallar sarfi

№	Barcha xom asho umumiy massaga nisbatan olindi %				Maydalash vaqti minut	Maydalik darajasi g/sm^2
	Klinker	Gips toshi	Modifikator	Qum		
1	95	5	-	-	80	4645
2	60	5	10	20	80	4605
3	40	5	10	40	80	4550
4	25	5	10	60	80	4500

3-jadvalda turli tarkiblarda klinker, gips, modifikator va qumning massaviy ulushi berilgan hamda maydalash natijasida olingan maydalik darajalari keltirilgan.

Tahlildan ko‘rinib turibdiki, barcha tarkiblar 80 minut maydalash jarayonida 4500–4650 g/sm² oralig‘ida maydalik darajasiga erishgan. Klinker ulushi kamayib, qo‘shimcha materiallar (modifikator va qum) miqdori ortgani sari maydalik darajasi asta-sekin pasaygan. [9]

Umuman olganda, barcha tarkiblarda nano-sement olish uchun zarur bo‘lgan 4500 g/sm² dan yuqori sirt yuzasi ta’minlandi.

Olingan barcha tarkibdagi namuna uchun qorishmalar qo’lda 3 daqiqa bir xil konsistensiyaga kelgunicha aralashtirildi va standart 4x4x16 mm li qoliplarga joylashtirildi. Qoliplardagi namunalar 20±2 °C haroratda 12 soat davomida saqlangach, qoliplardan chiqarilib, suv muhitida belgilangan muddat (3, 7,va 28) kunlik mustahkamliklari gdravlik pers yordamida GOST 31108–2020 ga muvofiq sinalib olingan natijalar 4-jadvalga yozib borildi.

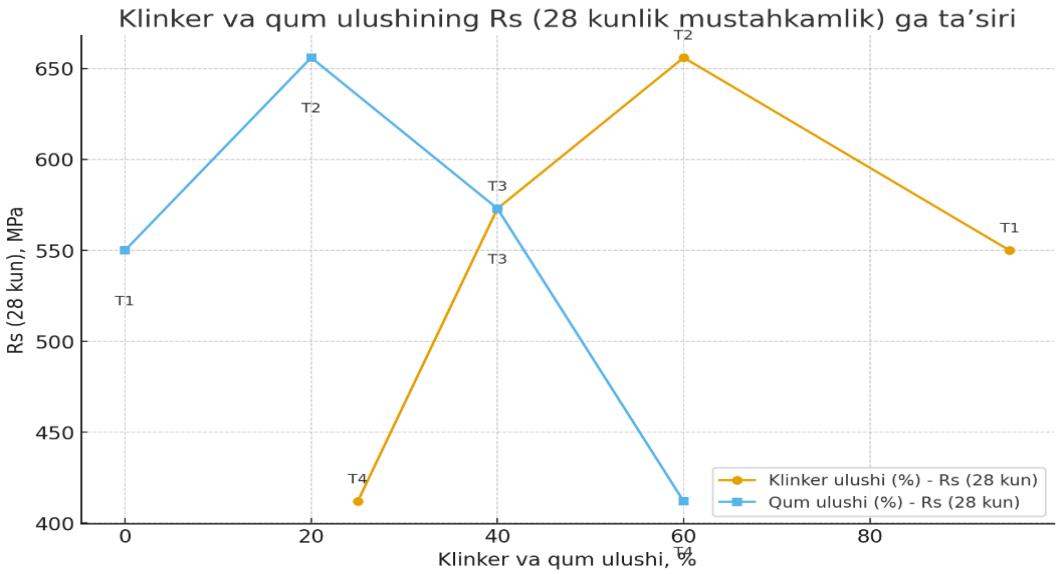
4-jadval

Nano sementning fizik mexanik mustahkamligi

№	S/S	Yoyilishin mm	Mustahkamlik, MPa					
			Reg			Rs		
			3 kun	7 kun	28 kun	3 kun	7 kun	28 kun
1	0.38	110	7.0	9.7	17.6		358	550
2	0.27	111	7.4	10.4	14.9	382	518	656
3	0.265	109	7.2	11.2	14.4	346	452	573
4	0.26	107	4.9	8.7	10.1	228	329	412

4-jadvalda 1-tarkib: Klinker yuqori bo‘lgani uchun mustahkamlik ham yuqori (Rs = 550 MPa), 2-tarkibda qum va modifikator qo‘shilganda eng yaxshi natija olindi (Rs = 656 MPa). Mikrokremniy qo‘shimcha C–S–H gel hosil qildi, barxan qumi nanozarrachalari nano-kapsulyatsiya jarayonini kuchaytirdi, polikarboksilat esa g‘ovaklikni kamaytirdi, 3-tarkibda mustahkamlik barqaror, lekin 2-tarkibdan past (Rs = 573 MPa). Klinker kamayishi sababli $Ca(OH)_2$ yetarli bo‘lmadi.

4-tarkibda esa klinker juda kam bo‘lishiga qaramay mustahkamlik 412 kg/sm^2 ni taminladi bundan ko’rinadiki sement tarkibiga qo‘shilgan barxan qumi nano zarrachalargacha tuyilgani tufayli u sement matritsasida bir tekis taqsimlandi. Bunda modifikator va klinker zarrachalari qumning nanozarrachalari bilan o‘zaro ta’sirlashib, nano-kapsulyatsiya jarayonini yuzaga keltirdi. Natijada sement toshida yuqori zichlikka ega interfaza hosil bo‘lib, zarrachalararo bog‘lanish mustahkamlandi. Shu sababli sementning umumiy mexanik xossalari, xususan, bosimga mustahkamlik ko‘rsatkichlari yuqori darajada oshdi. (1-grafik)



1-grafikdan ko‘rinib turibdiki, sement tarkibidagi klinker va qum nisbatlari mustahkamlikka bevosita ta’sir ko‘rsatadi. Rasmda ko‘rib turgan “T1, T2, T3, T4” yozuvlari — bu tarkib raqamlarini bildiradi.

Ya’ni:

T1 – 1-tarkib (95 % klinker, qum yo‘q, Rs = 550 MPa)

T2 – 2-tarkib (60 % klinker, 20 % qum, Rs = 656 MPa)

T3 – 3-tarkib (40 % klinker, 40 % qum, Rs = 573 MPa)

T4 – 4-tarkib (25 % klinker, 60 % qum, Rs = 412 MPa)

1-tarkib (95 % klinker, qum yo‘q): 28 kunlik Rs 550 MPa bo‘lib, nazorat tarkibi sifatida yuqori natija qayd etilgan.

2-tarkib (60 % klinker, 20 % qum): Mustahkamlik eng yuqori darajaga ko‘tarilib, Rs = 656 MPa ni tashkil etdi. Bu modifikator va nanozarrachagacha tuyilgan barxan qumining sement matritsasida to‘ldirgich va puzolanik ta’sir ko‘rsatganidan dalolat beradi.3-tarkib (40 % klinker, 40 % qum): Rs 573 MPa gacha kamaygan. Bunda klinker ulushi qisqarganligi sababli gidratatsiya uchun zarur $Ca(OH)_2$ miqdori yetishmaydi va qo‘shimcha reaksiyalar to‘liq kechmaydi.

4-tarkib (25 % klinker, 60 % qum): Mustahkamlik eng past qiymatga tushib, Rs = 412 MPa bo‘ldi. Bu holat klinker mineral fazalari juda kam bo‘lib, qo‘shimchalar ularning o‘rnini to‘liq bosolmaganini ko‘rsatadi.

Natijalar.

Olingan natijalar tahlili shuni ko‘rsatdiki, sement tizimiga nano-o‘lchamli qo‘shimchalar, xususan mikrokremniy va yuqori darajada tuyilgan qum zarrachalarini kiritish sement toshining erta davrdagi (3–7 kunlik) mustahkamligini sezilarli darajada oshiradi. Ushbu hodisa, bir tomondan, zarrachalararo interfaza zichligining ortishi va yuzalararo bog‘lanishlarning faollashuvi bilan izohlanadi. Bunda nano-qum zarrachalari klassik inert plomba sifatida emas, balki aktiv yadro-hosil qiluvchi markaz sifatida namoyon bo‘lib, sement klinkerining gidratatsiya jarayonini tezlashtiruvchi qo‘shimcha bog’lar yaratadi.

Shuningdek, mikrokremniyning yuqori dispersligi natijasida puzzolanik reaksiyalar erta bosqichdanoq faollashib, portlandit ($Ca(OH)_2$)ning bir qismi ikkilamchi C–S–H fazasiga aylanishi kuzatildi. Bu jarayon sement toshining kapillyar g'ovaklarni kamaytiradi, natijada suv o'tkazuvchanlik pasayib, silikat matritsasi yanada ixcham va mustahkam tuzilishga ega bo'ladi.

Qiziqarli jihatlardan biri shundaki, klinker miqdori kamaytirilgan tarkiblarda ham mustahkamlik yuqori bo'lib chiqdi. Bu holat, bir tomondan, modifikatorlar va nano-zarrachalarning sinergik ta'siri bilan, ikkinchi tomondan, gidratatsiya mahsulotlarining nano-kapsulyatsiya effekti orqali tushuntiriladi. Shunday qilib, "klinker kam, ammo Rs yuqori" natijasi energiya tejamkor sement kompozitsiyalari yaratish uchun muhim ilmiy asos bo'lib xizmat qiladi.

Umuman olganda, o'tkazilgan tadqiqotlar sement toshining strukturaviy mustahkamligini oshirishda nano-miqyosdagi modifikatsiya va puzzolanik reaksiyalarning uyg'unlashuvi asosiy omil ekanini ko'rsatdi. Bu yondashuv nafaqat yuqori mustahkamlik, balki energiyani tejash va CO_2 chiqindilarini kamaytirish nuqtai nazaridan ham amaliy ahamiyatga ega bo'lib, barqaror qurilish materiallarini ishlab chiqishda istiqbolli yo'nalish hisoblanadi.

Xulosa.

Tadqiqotlar natijasida klinker, gips, mikrokremniy va qum asosida tayyorlangan Nano-sement kompozitsiyalarining strukturaviy va mexanik xossalari tahlil qilindi. Olingan ma'lumotlar shuni ko'rsatdiki, klinker ulushi kamaytirilgan tarkiblarda ham yuqori mustahkamlikka erishish mumkin. Bunga qumning zarracha tuzilishi tufayli sement matritsasida qo'shimcha zichlik hosil qilishi va mikrokremniyning portlandit bilan reaksiyaga kirishib qo'shimcha C–S–H bog' shakllantirishi sabab bo'ldi. Natijada sement toshi ixchamroq tuzilishga ega bo'lib, erta davrdagi mustahkamlik sezilarli darajada oshdi. Ushbu yondashuv sement ishlab chiqarishda klinker sarfini kamaytirish, energiya samaradorligini oshirish va ekologik barqarorlikni ta'minlash uchun muhim ilmiy-amaliy asos yaratadi.

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“SHAHAR KO‘CHA VA YO‘LLARI” FANIDA “REZYUME” METODIDAN FOYDALANISH

Annotatsiya: *Ushbu maqolada “Rezyume” pedagogik texnologiyasining afzalliklari uni qo‘llanish tartibi, qo‘llashda talab etiladigan qonun qoidalar va ushbu texnologiyadan samarali foydalanishni shahar ko‘cha va yo‘llari fanida qo‘llash keltirilgan. Shuningdek, “Rezyume” pedagogik texnologiyasini amalda oliy ta’lim bosqich talabalariga qo‘llash jarayoni tasvirlab berilgan.*

Kalit so‘zlar: *avtomobil yo‘li arxitekturasi, faollik, ko‘rgazmalilik, tushunarlilik, ilmiylik, bilimlarni qo‘llash, natijalarni mustahkamlash.*

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USING THE “SUMMARY” METHOD IN THE DISCIPLINE “URBAN STREETS AND ROADS”

Abstract: *This article discusses the advantages of the pedagogical technology “Summary,” the procedure for its application, the necessary rules for its use, as well as effective ways of implementing this method in the discipline “Urban Streets and Roads.” In addition, the process of practical application of the “Summary” method for higher education students is described.*

Keywords: *road architecture, activity, visualization, clarity, scientific approach, application of knowledge, consolidation of results.*

Asosiy qism

Bizga ma’lumki, bugungi kunda rivojlanib borayotgan mamlaktimizda ta’lim sohasiga bo‘lgan e’tiborning o‘rni beqiyosdir. Shu jumladan, oliy ta’lim muassasalarida maxsus muhandislik fanlarni o‘qitishda ta’lim texnologiyalardan foydalangan holda mashg‘ulotlar olib borish, qolaversa, xorijiy pedagogik texnologiyalardan foydalanish zamonamizning ustuvor yo‘nalishlariga aylanib, imkoniyatlar eshiklarini keng ochmoqda. Shahar ko‘cha va yo‘llari fanini o‘qitishda yangi innavatsion texnologiyalardan foydalanib, dars-mashg‘ulotlarni olib borishda samarali natijalarga erishilmoqda.

Hududni shaharsozlik nuqtai nazaridan baholash, avvalombor, joyning tabiiy jarayonlar ta’sirida shakllangan tabiiy relyef xususiyatlari va shakliga bog‘liqdir. (1-rasm)



1-rasm. Shaharlar loyiha ko‘rinishi



2-rasm. Vertikal rejalashtirish

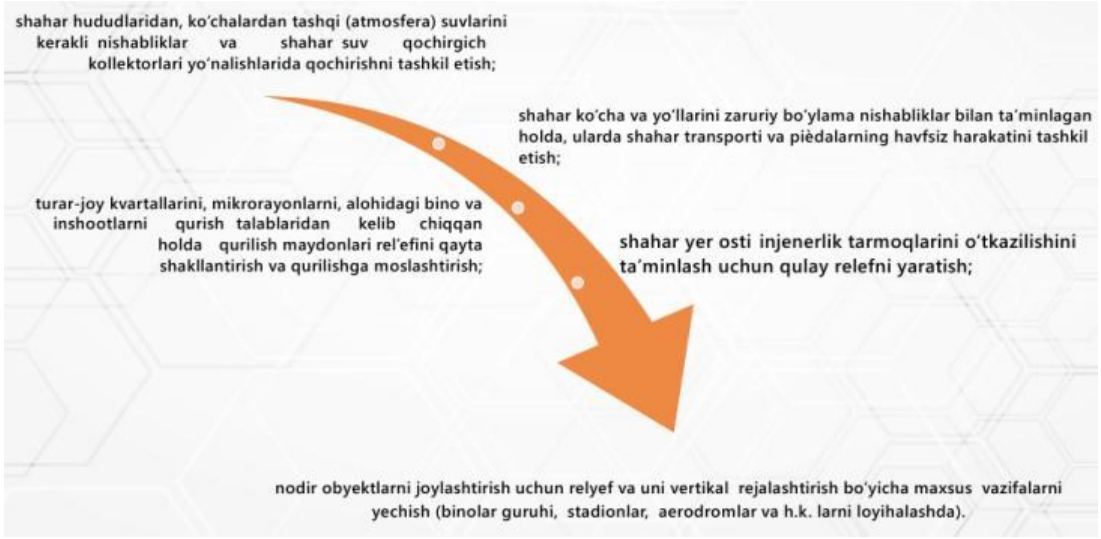
Vertikal rejalashtirishning asosiy maqsadi qurilish va injenerlik obodonlashtirish talablarini qoniqtiradigan shahar hududlarini yaratishdan iboratdir.(2-rasm)

Bugungi kunda O‘zekiston ko‘chalariga 700 mingdan ortiq yoritish uskunalari o‘rnatilgan Milliy statistika qo‘mitasi ma’lumotiga ko‘ra, 2025-yil boshiga qadar O‘zbekiston ko’chalarida 700,2 mingta yoritish uskunalari faoliyat yuritmoqda. Bu o‘tgan yilga nisbatan 2,3 foizga ko‘proq.(3-rasm)



3-rasm. Shahar yoritish chiroqlari

Vertikal rejalashtirishning asosiy vazifalariga quyidagilar kiradi:



Darhaqiqat, ta’lim borasida so‘z borar ekan, birinchi o‘rinda ta’lim tamoyillariga to’xtalamiz; **ta’lim tamoyillari** bu - pedagogning faoliyatini va talabalar tomonidan ilmiy bilimlarning o‘zlashtirilishi tegishli ko’nikma va malakalar hosil qilishning asosiy qonun va yo‘l yo‘riqlarini o‘z ichiga oladi. Ko‘p yillik izlanishlar natijasida aslida pedagogikada umumiy tamoyillar ishlab chiqilgan;

- onglilik va faollik tamoyili - bilimni talabalar tomonidan ongli ravishda va faol qatnashib egallashlik;
- ko‘rgazmalilik tamoyili - “yuz marotaba eshitgandan bir marotaba ko‘rgan afzal” tamyilidan kelib chiqib, bilim berishda turli tuman ko‘rgazmali qurollardan foydalanish;
- mustahkamlilik – bilimni tushunarli tilda qayta - qayta takrorlash yo‘li bilan berish;
- tushunarlilik – bilimni hammaga tushunarli va hammabop qilib berish;
- ilmiylik - bilimni talabalrga avvaldan mavjud bilimlarga asoslanib va ulardan kelib chiqqan holda berish;
- nazariya va amaliyot birligi - bilim berishda nazariy bilimlarning amaliyotda ishlashini, ya’ni uni hayot bilan, amaliyot bilan bog’likligini ko’rsatib berish.

Ta’lim tamoyillari bilan tanishib chiqar ekanmiz,bunda eng samarali ta’lim uchun pedagogik texnologiyalarni ta’lim jarayonida qo‘llashni taqozo etadi.

Pedagogik texnologiya - bu kafolatli ta’lim tarbiya maqsadga erishish bilan ahamiyatli va dolzarbdir. Shuning uchun maqsadning aniqligi unga mos mazmun, maqsadga bosqichma-bosqich erishishda tarbiyalanuvchining tarbiyachi faoliyatining uyg’unligi pedagogik texnologiyaning talablaridan hisoblanadi. Hozirgi vaqtda dars o‘tishdan asosiy maqsad tayyor bilimni o‘zlashtirish emas, eng asosiysi talabalarning intelektual qobiliyatlarini rivojlantirish, mustaqil tanlash

va qaror qabul qilish ko‘nikmasini shakllantirishdir. Bu maqsadni amalga oshirish ko‘p jihatdan dars o‘tish metodlarini tanlashga bog’liq.

Darhaqiqat, Respublikamiz oliy ta’lim muassasalarida bugungi kunda ta’lim texnologiyalaridan maxsus fanlarni o‘qitishda “Rezyume” metodi keng qo‘llanilib kelmoqda. Ushbu texnologiya murakkab, ko’p tarmoqli, mumkin qadar muammoli mavzularni o‘rganishga qaratilgan hisoblanadi. Texnologiyaning mohiyati shundan iboratki, bunda bir yo‘la mavzuning turli tarmoqlari bo‘yicha axborot beriladi. Ayni paytda ularning har biri alohida nuqtalardan muhokama etiladi. Masalan, ijobiy va salbiy tomonlari, afzallik va kamchiliklari, foyda va zararlari belgilanadi(1-ilova).

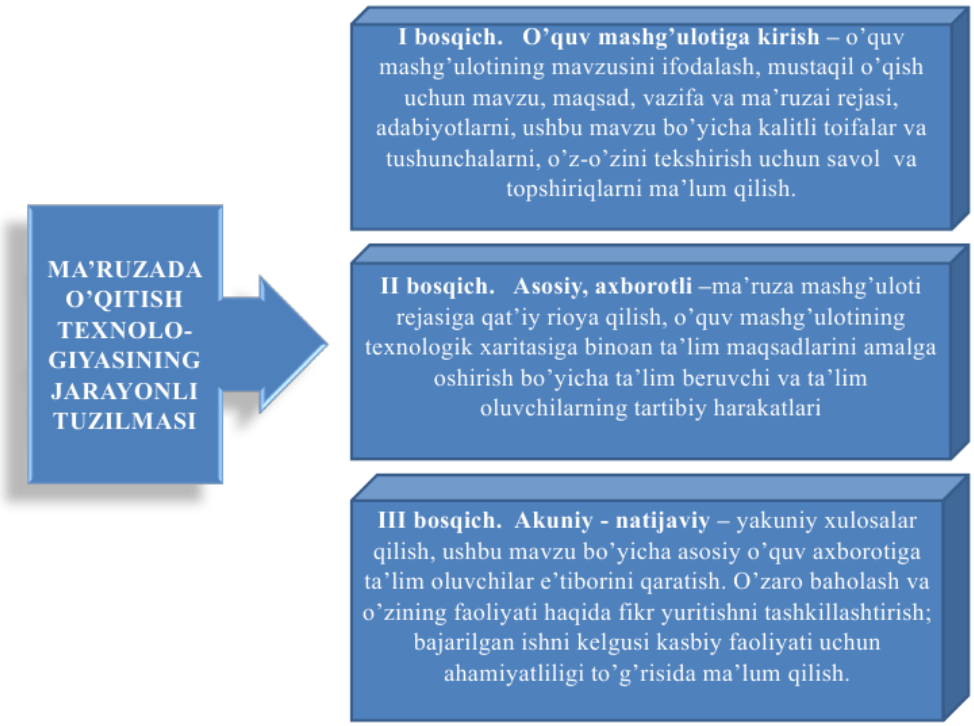
Texnolagiyaning maqsadi: Talaba (yoki o’quvchi)larni erkin, tanqidiy fikrlashga, jamoa bo‘lib ishlashga, izlashga, fikrlarni jamlab taqqoslash uslubi yordamida mavzudan kelib chiqqan holda uning muammosini yechimini topishga hamda kerakli xulosa yoki qaror qabul qilishga, jamoaga o‘z fikri bilan ta’sir o‘tkazishga, uni ma’qullashga, shuningdek berilgan muammoni yechishda, mavzuga umumiy tushuncha berishda o‘tilgan mavzulvrrdan egallagan bilimlarni qo‘llay olishga o‘rgatadi.

Texnologiyaning qo‘llanishi**:** Ma’ruza darslarida (imkoniyat va sharoit bo‘lsa), seminar, amaliy va labaratoriya mashg‘ulotlarida yakka (yoki kichik guruhlar ajratilgan) tartibda o‘tkazish, shuningdek, uyga vazifa berishda ham qo‘llash mumkin.

1-ilova:

savolnoma	
ijobiy	**salbiy**
Baholash:	

Bugungi kunda “Rezyume” texnologiyasini qo‘llashda misol qilib, Avtomobil yo‘llari muhandisligi fakultetini olishimiz mumkin. Ushbu texnologiya “avtomobil yo‘llarini ekspluatatsiya qilish” fanida qo‘lllanildi va yaxshi samara berganligi sababli universitet miqyosida qo‘llanilib kelmoqda.Ushbu texnologiyaning samarasi shundan iborat bo‘ldiki, talabalarni uyga vazifalarni bajarishda qolaversa, ma’ruza, seminar darslarida aktiv faol ishtroki, mavzu borasida shaxsan ijobiy va salbiy fikrlarini bayon etishda har tomonlama mavzuning maqsad-mazmunini anglab yetish imkonini berdi.



"Rezyume" texnologiyasini qo'llash tartibi:

- dars jarayonida yangi mavzu o'qituvchi tomonidan tushuntirib beriladi;
- talabalarga o'qituvchi tomonidan tayyorlangan yangi mavzuga doir tarqatma savollar (1-ilova) har bir talabaga beriladi; (bundan ko'zlangan maqsad yangi mavzuni talaba qay darajada tushunib yetganligini bilib olish);
- talaba savolning javobini ijobiy va salbiy tomonlarini yozgan holda javob berishi lozim bo'ladi (bunda ko'zlangan maqsad talabaning mavzuga doir fikr mulohazalarini ijobiy hamda salbiy tomonlarini bilib olish);
- nihoyat so'nggi bosqichda talaba o'qituvchi tomonidan baholanadi;

"Rezyume" texnologiyasini qo'llashda baholash me'zoni:

- "5" baho - talaba berilgan savolga to'liq yetarlicha javob yozishi;
- "4" baho – talaba berilgan savolga javobni deyarli to'g'ri yozishi;
- "3" baho – talaba berilgan savolga javobni noto'g'ri yozishi;
- "2" baho – talaba berilgan savolga javob yozolmaganligi;

Dars jarayonida talabalarga "Shahar ko'cha va yo'llari tasnifi" mavzusi bo'yicha tushunchalar berildi hamda talabalarga savol tarqatmalar tarqatildi (bunda 10 minut vaqt bilan chegaralandi). Talabalar chegaralangan vaqt mobaynida savollarga javobni salbiy va ijobiy tomonlarini yoritib yozishdi. Nihoyat o'qituvchi tomonidan talabalar o'zaro fikr yuritib yetarlicha baholanishdi. Bundan ko'rinib turibdiki olingan natija talabaning fikrlash qobilyatini ravon qilishga, masalaning ijobiy va salbiy tomonlarini yechishda samarali ekanligini bildirdi.

Xulosa shundan iboratki, oliy ta'lim muassasalarida dars jarayonida mavzularni yoritishda "Rezyume" texnologiyasini qo'llash ijobiy sog'lom muhitni yaratish, talabalarning dunyoqarashi, tafakkuri, mustaqil mushohada qilish va xulosalar chiqarish qobiliyatlarini rivojlantirishga zamin yaratadi. Qolaversa,

mavzuning ijobiy hamda salbiy tomonlarini bilishda o‘z ifodasini ko‘rsatadi. O‘qituvchi tomonidan kafolatlangan natijaga erishish ko‘zda tutiladi.

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9 METHODS OF USING EDUCATIONAL TECHNOLOGIES IN TEACHING ENGINEERING SUBJECTS Amanova Nozima Shavkatovna Assistant, Termez State University of Engineering and Agrotechnology

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YEVROPA CHIM O‘TLI TOMLAR

Annotatsiya Mazkur maqolada Norvegiya va Rossiyada keng tarqalgan chim o‘t bilan yopilgan tomlar texnologiyasi o‘rganiladi. Norvegiyada qadimdan shakllangan maysali tomlar bugungi kunda nafaqat xususiy uylar, balki jamoat binolari, mehmonxonalar va hatto transport bekatlarida ham qo‘llanmoqda. Bunday tomlar nafaqat ekologik jihatdan toza va estetik ko‘rinishga ega, balki issiqlik va gidroizolyatsiya xususiyatlarini ham ta’minlaydi.

Kalit so‘zlar: *Yer tom, yer-chopon tom, issiqlik izolyatsiyasi, gidroizolyatsiya, an’anaviy me’morchilik, yashil tom.*

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EUROPEAN TURF ROOFS

Abstract *This article examines the technology of turf-covered roofs widely used in Norway and Russia. In Norway, traditional grass roofs are still applied not only in private houses but also in public buildings, hotels, and even bus stops. These roofs are not only environmentally friendly and aesthetically pleasing but also provide reliable thermal and waterproof insulation.*

Keywords: *Earthen roof, sod roof, thermal insulation, waterproofing, traditional architecture, green roof.*

Kirish.

Bugungi kunda qurilish sohasi jadal rivojlanib borar ekan, ekologik muammolar va energiya tejamkorlik masalalari global miqyosda dolzarb bo‘lib qolmoqda. An’anaviy qurilish materiallari va texnologiyalari atrof-muhitga salbiy ta’sir ko‘rsatib, katta miqdorda chiqindilar va issiqxona gazlari ajralishiga sabab bo‘lmoqda. Shu bois so‘nggi yillarda barqaror rivojlanish tamoyillariga asoslangan “yashil me’morchilik” konsepsiyasi keng joriy etilmoqda. Shunday innovatsion yondashuvlardan biri – qadimiy ildizlarga ega bo‘lgan, ammo bugungi kunda zamonaviy texnologiyalar bilan uyg‘unlashgan chim o‘t bilan yopilgan tomlar tizimidir. Ushbu tomlar Norvegiya, Islandiya va Rossiya kabi sovuq iqlimli hududlarda keng tarqalgan bo‘lib, ular nafaqat estetik jozibadorlikka, balki issiqlikni saqlash, namlikni muvozanatlash va tabiiy muhofaza vazifasini bajarish xususiyatlariga ega .Tadqiqotlar shuni ko‘rsatadiki, chim tomlar issiqlik o‘tkazuvchanlik ko‘rsatkichlari bo‘yicha an’anaviy tom yopma materiallaridan ustun turadi. Ularning tabiiy qatlamlari binoda issiqlik yo‘qotilishini 20–30 foizgacha kamaytirishi mumkin . Shu bilan birga, bu turdagi tomlar mahalliy tabiiy resurslardan foydalanish imkonini beradi, energiya sarfini qisqartiradi

hamda turar-joy va jamoat binolarining yashil energiyaga asoslangan barqaror rivojlanishiga xizmat qiladi. Shu sababli mazkur maqolada chim tomlar texnologiyasi, ularning ekologik va iqtisodiy tahlili hamda amaliy qo‘llanish imkoniyatlari yoritiladi.

Asosiy qism.

Norvegiyada cherepitsa o‘rniga maysa (gazoni) bilan yopilgan tomlar qo‘shni xalqlar orasida afsonaga aylangan. Hazilkash shvedlar allaqachon norvegiyaliklarni soch o‘rniga boshida o‘t bilan chizib kelishadi. Jozibali maysazor-tomlar bugun turistlar orasida mashhur bo‘lgan mamlakat ramziga aylangan — xuddi fyorlar, trollar va losos baliqlari kabi. Maysali tomlar Norvegiyada va Farer orollarida qadim zamonlardan paydo bo‘lgan. Bu qulay va arzon edi: qurilish materiali qo‘l ostida, bunday tomlar alohida parvarish talab qilmas, uzoq xizmat qilardi, ustiga-ustak dushmandan yashirinishga ham yordam bergan.

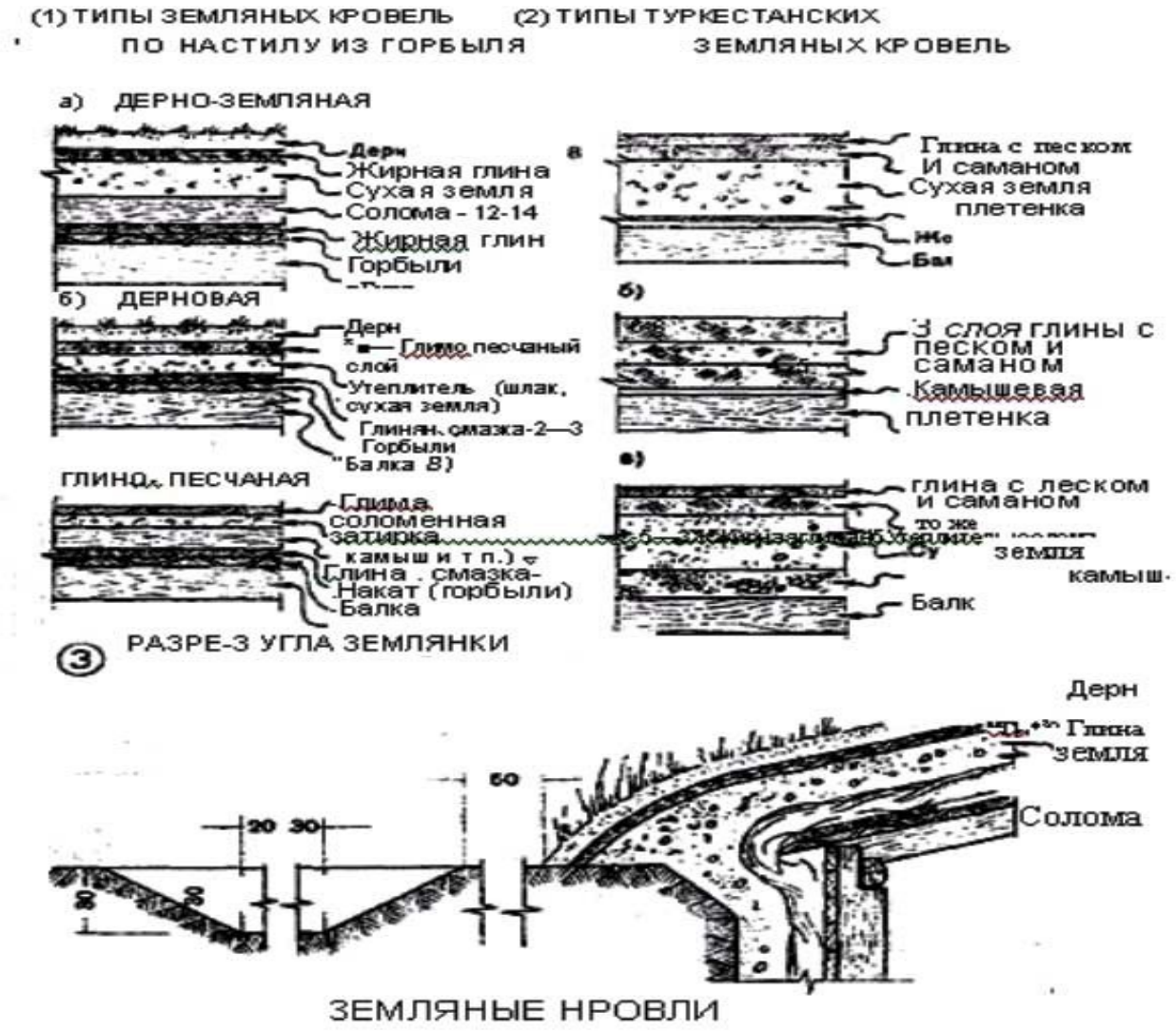



1-sur’at Norvegiya o’rmon xo’jaligi
2-sur’at Turar joy Norvegiya

Tabiiyki, an’analarni asrashga e’tibor beradigan norvegiyaliklar bunday tomlarni hozir ham qurishmoqda — maysali tomlarni zamonaviy mehmonxonalarda va restoranlarda, xususiy uylarda, hattoki jamoat transporti bekatlarida ham ko‘rish mumkin. Ba’zi qishloqlarda tomlarning deyarli yarmi shamolda tebranayotgan yashil to‘lqinlarga o‘xshaydi. Aytishlaricha, ular mikroiqlimni yaxshilaydi, ishonchli issiqlik va gidroizolyatsiyani ta’minlaydi, uy ichidagi haroratni barqarorlashtiradi. Ko‘plab usta-hunar egalari bunday tomlarni o‘zlari mustaqil ravishda qurishadi. Texnologiya Internetda batafsil bayon etilgan. Norvegiyada bu xizmatni taklif etuvchi bir nechta xususiy firmalar ham mavjud. Garchi maysali tomlarni yotqizishda yangi asbob-uskunalar qo‘llanayotgan bo‘lsa-da, asosida hanuz qadimiy texnologiya va ko‘p qo‘l mehnati yotadi. Shu sababli bunday tomlar ondulin tomlardan biroz qimmatroq turadi. Avvalo, bir necha qatlam quruq po‘stloq yotqiziladi. Uni suv o‘tkazmas qilish uchun qo‘y yog‘i yoki qon bilan shimdirish mumkin. Ustiga esa torf, somon, mox va boshqa materiallar solinadi. Ko‘plar Vikinglar uslubida, tomida landshaft dizayni bo‘lgan kottej qurishni orzu qilishadi. Aytilishicha: «Tasavvur qiling, agar tom — ona zamin

bo‘lsa, qanday xotirjam uxlay olasiz?» Gap shundaki, norveg tomida o‘zining uyg‘un muvozanatidagi haqiqiy biozenoz mavjud. Bunday tom albatta nam bo‘lishi kerak, shu namlikdan maysa (hatto buta va daraxtlar ham), shuningdek, tirik torfli tuproqdagi barcha mikroorganizmlar oziqlanadi. Shu bilan birga, u mehnatkash parvarishni talab qilmaydi — bu faqat Norvegiyaning noyob iqlim xususiyatlari tufayli mumkin. Yomg‘irlarning qayerdan kelishini ham tushunish oson. Norvegiyaga Golfstrim uriladi. Iliq bug‘lar tog‘ tizmasiga urilib, soviydi va yomg‘irga aylanadi (Bergenda men quyoshli, aslida yaxshi kunda ham besh marta soyabon ochishga majbur bo‘lganman!). Norvegiyada suv aylanishi dunyodagi eng intensiv hisoblanadi**.** Shuning uchun ham ularning 80 foiz energiyasi gidroenergetikadan olinadi va hatto ortiqcha energiyani Yevropa bilan bemalol bo‘lishadi. Eng qadrli jihati shundaki, neftdan farqli ravishda bu — qayta tiklanuvchi, aniqrog‘i, tugamaydigan resurs! Mana shunday fizika. Shu bois, norveg tomining asosiy xususiyati — u butun funksionalligiga qaramay, tirik va hosildor bo‘lishidadir! Ammo Norvegiyaning sharqiy qismida, tog‘ tizmasidan narida, iqlim quruqroq bo‘lgani uchun maysali tomlar ancha kam uchraydi. Rossiya yer va yer-choponli tom qurilishi. Rossiyaning o‘rta va shimoliy mintaqalarida yer tomlar asosan vaqtincha yashash uchun mo‘ljallangan turar-joylarda (yer uylar yoki yarim yer uylar) yoki xo‘jalik binolarida qo‘llaniladi. Janubiy hududlarda esa, bunday yer tomlar alohida yakka tartibdagi turar-joy binolarida ishlatiladi. Yer tomning tarkibiy qismlari quyidagilardan iborat: Yuqori qoplama qatlami—yomg‘ir suvidan yemirilishning oldini oluvchi himoya qatlami; Bitta yoki ikkita gidroizolyatsion qatlam; Issiqlik izolatsiyasi qatlami, u kichik suv oqish holatlarida suvni shimib olish vazifasini ham bajaradi; Yuk ko‘taruvchi konstruksiya. Yuqori himoya qatlami sifatida chopon (qalin ildizli maysazor) yoki maysa ekilgan o‘simlikli tuproq ishlatiladi. Maysa suv oqimini to‘xtatmaydigan, past bo‘yli va rivojlangan ildiz tizimiga ega bo‘lishi lozim. Baland bo‘yli o‘tlar esa tez-tez o‘rib turishga yaroqli, ammo bundan qurib qolmaydigan bo‘lishi kerak (masalan, beda, poyaning bir turi yoki bog‘ maysazorlari).Gidroizolyatsiya qatlami — yog‘li loydan tayyorlanib, uning tarkibiga yorig‘larning oldini olish uchun tolali materiallar va qum qo‘shiladi: somon bo‘lakchalari, poxol, qattiq qoramol go‘ngi, torf changi va somon aralashmalari. Suvni shimuvchi qatlam sifatida quruq va elangan tuproq ishlatiladi. Issiqlik izolyatori — bu ham tuproq, shlak, qamish, somon va shunga o‘xshash materiallar bo‘lishi mumkin. Rasm 1 va 3 da ko‘rsatilgan qoplamalar qattiq qish sharoitida vaqtinchalik yer uylar va yarim yer uylari uchun muvaffaqiyatli qo‘llaniladi. Yer tomli uylar Rasm 1a va 1b da ko‘rsatilgan yer tom turlari shlak va boshqa issiqlik izolatsiya materiallari mavjud bo‘lganda ishlatiladi, ularning qalinligi hisob-kitoblarga ko‘ra belgilanadi. Agar chopon mavjud bo‘lmasa, rasm 1v dagi tipdan foydalaniladi; bu tip janubiy hududlardagi yer uylari uchun ham mos keladi. Yer-chopon tomlarining nishabi — 17° (30%) gacha bo‘lishi mumkin. Tom tagida esa suv chiqishi uchun kengligi kamida 0,2 m, chuqurligi kamida 0,3 m bo‘lgan ariqcha qaziladi. 5-surat. Issiqlik izolyatsiyasi va, agar zamin nam bo‘lsa, gidroizolyatsiya qatlamlari tom chiqib turuvchi qismlarni aylanib o‘tib, devor izolyatsiya qatlami bilan birlashtiriladi.

Tomning loy-somonli yuqori qatlami nishabi esa 1/10 dan oshmasligi kerak. Turkiston mintaqasida qadimdan yer tomlarning shu turdagi turlari (2-rasm) qo‘llanilgan. Xuddi shu usul hozirgi kunda ham Kavkaz va Zakaspiy o‘rmon kam bo‘lgan hududlarida qo‘llanmoqda. Bunday yashil tomlar sathi 1/20 nishablikda tekislanadi va suv tomdan bir necha nuqtaga yo‘naltiriladi, bu nuqtalarga yog‘och novlar qo‘yilib, suv tomdan chiqarib yuboriladi. Bunday tomlar doimiy parvarish talab qiladi va yomg‘irdan keyin yuzaga kelgan nosozliklarni zudlik bilan bartaraf etish lozim. Kam uchraydigan tom konstruksiyasi: kir tomlari. Kir — tabiiy zahiralarda asfalt bitumi bilan to‘yingan qumtosh (uning koni Ozarbayjonda mavjud). Moskva sharoitidagi tomlarda kir asfaltidan foydalanish shuni ko‘rsatdiki, qattiq qish sovuqlarida bu material yorilib, mayda bo‘laklarga parchalanib ketadi. Biroq konlarga yaqin hududlarda bunday shikastlanish kuzatilmaydi va kir asfalt tekis tomlarni suvdan himoyalash uchun muvaffaqiyatli ishlatiladi. Kir asfalt qoplamasini yotqizish usullari:



3-sur’at Yer qatlami tom

a) Qalin qatlam bilan to‘g‘ridan-to‘g‘ri tom taxtasiga (bu holda u issiqlik izolatsiyasi va suv o‘tkazmaydigan qatlam vazifasini bajaradi); **b)** Tekis yer tom sathiga 2–3 sm qalinlikda. Birinchi usul oddiy qishloq qurilishlarida, ikkinchisi esa shaharlarda qo‘llaniladi. Kir tomlarining nishabi — 1/10 gacha. Suv oqimlari tom perimetri bo‘ylab o‘rnatilgan ariqchalar tomon yo‘naltiriladi. Suv chiqarish uchun ariqchaga teshiklar ochilib, ularga temir yoki yog‘och novlar qo‘yiladi. Teshiklar yon tomoni ham kir bilan suvaladi. Janubiy quyosh ta’sirida kir yumshab, nishab joylarda quyilib tushadi; harorat keskin tushganda esa unda yoriqlar hosil bo‘ladi. Shuning uchun kir bilan qoplangan tomlar doimiy kuzatuv talab qiladi: yoriqlar va quyilishni vaqtida bartaraf etish lozim. Sovuqda hosil bo‘lgan yoriqlar iliq ob-havoda kichik valik yordamida yanchib to‘g‘rilanadi. Hozirda bunday tom konstruktsiyalari retro uslub deb qaraladi va juda kam ishlatiladi. Tabiiyki, an’analarni asrashga e’tibor beradigan norveglar bugungi kunda ham bu tomlarni qurishda davom etishmoqda — maysali tomlarni zamonaviy mehmonxonalar va restoranlarda, shaxsiy uylarda, hatto jamoat transporti bekatlarida ham uchratish mumkin. Ba’zi qishloqlarda deyarli har ikkinchi tom shamolda to‘lqinsimon tebranib turgan yashil maysaga burkangan. Aytishlaricha, bunday tomlar mikroiqlimni yaxshilaydi, ishonchli issiqlik va suv izolatsiyasini ta’minlaydi, uy ichidagi haroratni barqaror ushlab turishga yordam beradi.





4-sur’at Kir yopmali tom
5-sur’at Tom yopish uslubi

Rossiyada esa yer va yer-chopon tomlar keng qo‘llanilgan bo‘lib, ularning tarkibiy qismlari quyidagicha: yuqori himoya qatlami (ildizli maysazor yoki tuproq), gidroizolyatsiya qatlami (yog‘li loy va somon aralashmasi), issiqlik izolyatsiyasi (somon, qamish, shlak) va yuk ko‘taruvchi konstruksiya. Ushbu tizim qattiq iqlim sharoitida uylarni issiq tutish va yog‘in-sochindan himoyalash imkonini beradi. Qurilishda ishlatiladigan tuproq, somon, torf va maysa kabi materiallar tabiiy, qayta tiklanuvchi va atrof-muhitga zarar yetkazmaydi. Bu turdagi tomlar CO_2 chiqindilarini kamaytirishga yordam beradi va tabiiy shamollatish hamda issiqlik saqlash xususiyatlari bilan energiya sarfini kamaytiradi. Iqtisodiy nuqtai nazardan, dastlabki qurilish xarajatlari odatiy

tomlarga qaraganda qimmatroq bo‘lishi mumkin. Paxsa — bu qadimda qurilishda ishlatilgan bosilgan loy. Tadqiqotchi Voronin uni “Markaziy Osiyo qadimiy qurilishining betoni” deb atagan. Umuman olganda, bu atrof-muhitda keng tarqalgan loyning eng sodda va bevosita qo‘llanilishi bo‘lgan: binolar to‘g‘ridan-to‘g‘ri shu loydan qurilgan, qolip ishlatilmagan. Qurilish uchun yer avval maxsus tayyorlov bosqichidan o‘tgan. Qadim zamonlarda loy qanday tayyorlangani aniq noma’lum. Ammo aralashma tarkibi o‘ziga xos bo‘lib, vaqt o‘tishi bilan unutib yuborilgan bo‘lishi mumkin — bunga saqlanib qolgan inshootlar misol bo‘la oladi. Qadimdan loy tomlar O’zbekiston hududida keng foydanilgan. Tomlar ilk bahor oylarida maysa va lolaqizgaldoqlar unib chiqqan va juda go’zal manzara hosil bo’lgan.





6-sur’at Lolaqizg’aldoq Yakkaxon qishlog’i.
7-sur’at Gulchexra Ilchibayeva

Xulosa.

O‘zbekistonning quruq va keskin kontinental iqlim zonalarida yashil tomlar (vegetativ qoplamali tom konstruksiyalari)ni joriy etish istiqbollari alohida dolzarblik kasb etadi. Ayni paytda mazkur texnologiya ko‘proq yakka tartibdagi turar-joylarda kuzatilsa-da, uni ko‘p qavatli turar-joy massivlari, ofis majmualari hamda jamoat inshootlarida integratsiya qilish me’moriy-amaliy yechim sifatida maqsadga muvofiqdir. Xususan, qavatlararo terassalarning yashil tom sifatida tashkil etilishi nafaqat vizual-estetik muhitni yaxshilaydi, balki shahar atmosferasining ekologik-gigiyenik sifat ko‘rsatkichlarini optimallashtirishga ham xizmat qiladi. Yashil tomlar texnologiyasining funksional va ekologik afzalliklari quyidagi jihatlarda namoyon bo‘ladi: urban muhitda havoning aeratsion va kimyoviy tarkibini barqarorlashtirish, antropogen ifloslanishni kamaytirish; qurilish jarayonida qayta tiklanadigan va tabiiy resurslardan foydalanish orqali ekologik xavfsizlikni ta’minlash;gidrotermik tartibga solish va mikroiqlim parametrlarini me’yorlashtirish; energetik samaradorlikni oshirish hamda ekspluatatsion xarajatlarni minimallashtirish; milliy me’morchilik an’analarini zamonaviy innovatsion texnologiyalar bilan sintezlash. Shu boisdan, yashil tomlar konsepsiyasini O‘zbekiston sharoitida keng joriy etish urbanizatsiya jarayonida yuzaga kelayotgan ekologik muammolarni bartaraf etishda strategik ahamiyatga ega. Ushbu texnologiya barqaror rivojlanish paradigmasiga mos ravishda energiya

tejovchi, estetik va funksional jihatdan mukammal arxitektura ob’ektlarini barpo etish imkoniyatini yaratadi hamda kelgusida “bio-arxitektura” konsepsiyasining shakllanishiga zamin hozirlaydi.



8-sur’at Prestige Garden turar- joy kompleksi

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EFFECTIVENESS OF INTEGRATING SPORTS ACTIVITIES INTO MEDICAL EDUCATION TO ENHANCE STUDENT ENGAGEMENT

Abstract: *Medical students are frequently exposed to high levels of academic stress and mental pressure, which can negatively impact both physical health and academic performance. Integrating sports activities into medical curricula has emerged as an effective approach to promote physical fitness, psychological resilience, and student engagement. This study investigates the effects of structured sports programs on medical students' physical health, mental well-being, social skills, and academic performance. Findings indicate that participation in team-based and individual exercises improves cardiovascular fitness, muscular strength, flexibility, emotional stability, and concentration. Students reported enhanced motivation, social interaction, and overall satisfaction with the educational experience. Institutional support and program accessibility were crucial factors in achieving high engagement. The study highlights the importance of combining physical, mental, and social aspects through sports integration to foster holistic development and enhance student outcomes.*

Keywords: *Medical students, sports integration, physical activity, stress reduction, student engagement, mental resilience, academic performance.*

Introduction

Medical education is widely recognized as one of the most demanding academic paths, requiring students to balance rigorous coursework, clinical rotations, and research responsibilities. High levels of stress, fatigue, and mental pressure can negatively affect both academic performance and overall well-being. In recent years, integrating sports activities into medical curricula has gained attention as an effective strategy to promote physical health, mental resilience, and student engagement. Regular participation in structured physical exercises not only improves cardiovascular and muscular fitness but also enhances cognitive functions, concentration, and emotional stability. Team-based and individual sports activities provide opportunities for social interaction, collaboration, and leadership development, fostering a supportive and cohesive learning environment. By embedding sports programs into the academic schedule, medical institutions can create a balanced framework that encourages active lifestyles, reduces stress, and strengthens students' motivation and commitment to learning. This approach aligns with holistic educational models, emphasizing the interconnection between physical activity, mental well-being, and academic achievement. The current study explores the effectiveness of integrating sports

activities into medical education and evaluates their impact on student engagement, overall health, and academic performance.

Relevance

Medical students are frequently exposed to high levels of academic stress, fatigue, and mental pressure, which can negatively impact their physical health, emotional well-being, and academic performance. The incorporation of sports activities into medical curricula has emerged as a contemporary approach to address these challenges. Regular physical activity has been scientifically proven to reduce stress, enhance mental resilience, improve concentration, and foster social interaction. Integrating structured sports programs into medical education not only supports holistic student development but also promotes a healthier, more balanced lifestyle. This approach is highly relevant in modern medical education, as it aligns with the goals of nurturing competent, physically active, and psychologically resilient future healthcare professionals.

Aim

The primary aim of this study is to evaluate the effectiveness of integrating sports activities into medical education in enhancing student engagement, physical fitness, and mental well-being. The study seeks to examine how structured sports programs influence academic motivation, stress reduction, cognitive function, and social collaboration among medical students. By understanding these impacts, the research aims to provide evidence-based recommendations for the inclusion of sports initiatives within medical curricula to promote a healthier, more productive learning environment.

Main part

Integrating sports activities into medical education significantly improves students' physical health. Regular aerobic, strength, and flexibility exercises enhance cardiovascular endurance, muscle strength, and joint mobility. Medical students often experience prolonged sitting during lectures and clinical duties, which can lead to musculoskeletal problems and reduced physical fitness. Structured sports programs counteract these effects by promoting circulation, maintaining healthy body weight, and improving metabolic efficiency. Improved physical health directly contributes to energy levels, stamina, and the ability to engage in demanding academic tasks. Participation in sports also strengthens the immune system, reducing susceptibility to illnesses that may disrupt studies. Furthermore, physical activity improves posture, balance, and coordination, which are essential for clinical practice. Exercise routines embedded into the academic schedule encourage consistency and adherence. Students who engage in structured sports report lower fatigue levels and better recovery after physical and mental exertion. Enhancing physical health through sports promotes holistic well-being and supports sustained academic performance. Regular evaluation of physical improvements ensures the program's effectiveness. The program can be tailored to include individual preferences and fitness levels. Inclusion of warm-up and cool-down routines prevents injuries and enhances exercise outcomes. Group exercises foster social support, while individual exercises develop self-discipline. The

structured approach ensures students gain maximum health benefits. Integration of physical activity within medical education cultivates lifelong healthy habits. Overall, improved physical health positively affects both personal and professional development of medical students.

Sports activities provide substantial psychological benefits for medical students. High academic stress often leads to anxiety, depression, and burnout. Regular participation in structured sports reduces cortisol and other stress hormones, enhancing emotional stability. Team-based sports promote social support, teamwork, and peer interaction, reducing feelings of isolation. Individual exercises allow students to focus on personal growth, goal achievement, and self-confidence. Studies indicate that physical activity improves mood, mental resilience, and overall psychological well-being. Sports programs also enhance cognitive functions such as concentration, memory, and problem-solving, which are critical for medical education. Participation encourages mindfulness and stress-coping strategies, improving students' ability to handle academic pressure. Improved mental health contributes to higher motivation, engagement, and satisfaction in studies. Regular physical activity supports sleep quality, which further enhances mental recovery and alertness. Psychological benefits are maximized when exercise is consistent and varied. Incorporating reflection and discussion sessions after sports activities reinforces mental resilience. Mind-body exercises like yoga or tai chi add relaxation and focus components. Positive mental outcomes also increase academic performance and reduce dropout risk. Students develop leadership and communication skills through collaborative sports activities. Program effectiveness can be assessed through psychological surveys and feedback. Overall, sports integration fosters a balanced mind, enhancing learning and personal growth.

Integrating sports activities within medical curricula improves students' academic engagement. Active participation in sports increases energy, alertness, and motivation to attend classes and complete assignments. Exercise enhances neurocognitive function, leading to better concentration, memory retention, and information processing. Sports participation develops time management skills, encouraging students to allocate sufficient time for both physical and academic activities. Collaborative sports promote peer interaction, mentorship, and supportive learning environments. Engagement in structured physical activities reduces absenteeism and enhances participation in academic discussions. Students report higher satisfaction with their studies when involved in sports programs. Physical activity breaks during long study hours help refresh the mind and prevent cognitive fatigue. Integration of sports programs ensures a holistic approach to learning, combining physical, mental, and social development. Encouraging students to set measurable goals in sports improves self-discipline and persistence, which translates into academic diligence. Gamification and competition aspects motivate students to excel both in sports and studies. Faculty support and institutional incentives increase participation and engagement. Academic performance is positively correlated with consistent exercise routines. Integration

promotes a culture of well-being and productivity. Monitoring and feedback ensure continued effectiveness. Active students develop resilience, adaptability, and critical thinking. Overall, sports programs enhance learning efficiency and academic commitment.

Sports integration enhances social interaction and teamwork among medical students. Team-based sports activities encourage cooperation, communication, and mutual support. Collaborative sports develop leadership and conflict-resolution skills. Students learn to trust peers and work collectively toward shared goals. Social bonds formed during sports create supportive networks that reduce academic stress. Group exercises foster inclusivity and peer mentoring opportunities. Participation in competitions and tournaments strengthens camaraderie and healthy competition. Team sports improve students' ability to function in clinical teams, simulating professional healthcare environments. Social engagement through sports reduces feelings of isolation and loneliness. Students develop empathy, patience, and understanding through collaborative activities. Positive social interactions improve overall satisfaction with university life. Sports events provide informal learning environments where students share experiences and insights. Structured team-building exercises enhance communication, problem-solving, and coordination. Integration of social aspects into sports ensures holistic development. Peer motivation encourages consistent participation and commitment. Evaluation through surveys measures improvements in teamwork and collaboration. Social skill development complements academic performance. Sports-related social experiences increase resilience and coping mechanisms. Overall, team sports contribute to personal, social, and professional growth.

Sports programs are critical in managing stress and preventing burnout among medical students. Chronic academic stress leads to physical and psychological exhaustion. Regular physical activity reduces cortisol levels and stimulates endorphin production, improving mood and reducing anxiety. Sports participation provides a healthy outlet for emotional tension and mental fatigue. Mind-body exercises like yoga and Pilates enhance relaxation and mental focus. Structured routines ensure consistent engagement, mitigating stress accumulation. Active participation improves students' coping strategies and resilience. Exercise breaks during academic schedules reduce mental overload and enhance productivity. Sports programs promote mindfulness and self-awareness, supporting emotional regulation. Physical activity encourages positive lifestyle choices, including better sleep, nutrition, and time management. Stress reduction improves motivation, academic performance, and interpersonal relationships. Early intervention through sports can prevent long-term burnout and psychological disorders. Program effectiveness is measurable through psychological assessments and feedback. Incorporation of relaxation techniques complements physical activity benefits. Active students report higher satisfaction with their academic and personal lives. Sports participation fosters adaptive coping skills in challenging

situations. Overall, stress management through sports enhances mental health and academic success.

Successful integration of sports into medical education requires thoughtful curriculum design. Programs must align with academic schedules to avoid conflicts and ensure consistent participation. Sports activities should include a balance of aerobic, strength, endurance, and mind-body exercises. Facilities, equipment, and trained instructors are essential for program effectiveness. Flexibility allows students with different fitness levels to participate comfortably. Incorporating feedback mechanisms ensures continuous improvement and engagement. Collaboration with faculty encourages recognition and support of student participation. Incentives, competitions, and certifications can motivate active involvement. Program duration and frequency should be scientifically designed for maximum health benefits. Integration promotes a culture of wellness within the academic environment. Monitoring participation rates helps identify barriers and improve accessibility. Interdisciplinary collaboration enhances program quality and relevance. Curriculum should address both physical and psychological outcomes. Combining individual and group exercises ensures comprehensive benefits. Evaluation metrics should include health, psychological, and academic indicators. Sustainability requires institutional commitment and resources. Overall, structured curriculum integration ensures long-term positive impact.

Sports integration contributes to students' academic and professional growth. Regular physical activity enhances cognitive performance, focus, and problem-solving abilities. Team sports simulate clinical teamwork and patient management, improving professional competencies. Leadership, communication, and time management skills gained through sports are transferable to medical practice. Sports participation encourages discipline, resilience, and persistence, which are critical for medical careers. Students develop self-confidence and adaptability through challenging activities. Collaborative experiences enhance empathy and interpersonal skills. Physical fitness supports energy levels for demanding clinical duties. Participation in organized sports fosters accountability, motivation, and goal-setting. Engagement improves stress management, preventing burnout during intensive training. Academic performance benefits from improved concentration and mental alertness. Skills acquired through sports complement medical education and future clinical responsibilities. Professional networking and peer support emerge from group activities. Integrating sports strengthens both personal and professional competencies. Overall, wellness programs contribute to well-rounded, competent future physicians.

Evaluating sports programs ensures their long-term effectiveness and relevance. Metrics include physical health indicators, psychological assessments, academic performance, and student engagement. Surveys and feedback assess satisfaction, motivation, and perceived benefits. Longitudinal studies track improvements over time and guide program adjustments. Institutional reporting ensures accountability and sustainability. Monitoring injury rates and adherence

supports safe participation. Analysis of social and collaborative outcomes highlights benefits in teamwork and communication. Program evaluation identifies gaps and areas for improvement. Integration of data-driven insights enhances program quality and student outcomes. Evidence-based adjustments maintain engagement and effectiveness. Long-term participation fosters lifelong physical activity habits. Health improvements reduce absenteeism and enhance academic success. Sustained psychological benefits include lower stress and higher emotional resilience. Continuous assessment ensures alignment with educational objectives. Overall, evaluation reinforces the value of sports integration and informs future program development.

Discussion

The findings suggest that embedding sports activities within the medical curriculum can effectively enhance student engagement, physical health, and psychological resilience. Improved cardiovascular and muscular fitness supports students in coping with the physical demands of prolonged academic and clinical responsibilities. Psychological benefits, such as stress reduction and enhanced emotional stability, align with previous research indicating that regular physical activity decreases cortisol levels and mitigates anxiety. Team-based sports foster social cohesion, collaboration, and communication, which are essential skills for future healthcare professionals. Individual exercises reinforce self-discipline, perseverance, and personal goal achievement, contributing to holistic student development. The observed improvements in concentration, focus, and sleep quality indicate that sports programs can directly influence academic performance. Barriers such as time constraints, lack of motivation, or limited access to facilities may impact participation; however, institutional support, flexible scheduling, and accessible resources significantly increase engagement. Program effectiveness is maximized when exercises are varied, consistent, and integrated into academic timetables. Long-term benefits include the cultivation of healthy lifestyle habits, improved well-being, and enhanced professional competencies. These results emphasize the importance of combining physical, mental, and social aspects to create a balanced and supportive learning environment.

Results

The integration of sports activities into medical education demonstrated significant improvements in both physical and psychological outcomes among students. Participants showed enhanced cardiovascular endurance, muscular strength, and flexibility after 12 weeks of structured exercise programs. Resting heart rate and blood pressure levels improved, indicating better cardiovascular health. Psychological assessments revealed reduced stress levels, lower cortisol concentrations, and improved emotional stability. Students reported higher levels of motivation, focus, and academic engagement, with enhanced concentration during lectures and clinical practice. Social interaction and teamwork skills were notably improved in group-based sports activities, promoting collaboration and communication among peers. Students who participated in individual exercises demonstrated increased self-discipline, goal-setting abilities, and confidence.

Sleep quality improved across the majority of participants, further supporting cognitive performance and emotional regulation. Feedback indicated high satisfaction with the program's structure, accessibility, and relevance to overall well-being. Overall, both quantitative and qualitative data support the positive effects of integrating sports activities into medical education.

Conclusion

Integrating sports activities into medical education significantly enhances physical fitness, mental resilience, and student engagement. Regular participation improves cardiovascular and muscular health, reduces stress levels, enhances concentration, and fosters social interaction. Both team and individual exercises support holistic development, academic motivation, and professional competencies. Institutional support, accessible facilities, and well-structured programs are critical for achieving sustained benefits. In conclusion, sports integration is an effective strategy for cultivating physically active, emotionally resilient, and academically engaged medical students.

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YASHIL BINO KONSEPSIYASI

Annotatsiya. *Maqolada XXI asr arxitekturasida keng ommalashib borayotgan "yashil bino" konsepsiyasi yoritiladi. Ushbu konsepsiyaning shakllanish sabablari, asosiy tamoyillari, zamonaviy texnologiyalar bilan uyg'unlashuvi va ekologik barqarorlikka qo'shayotgan hissasi tahlil qilinadi. Dunyo mamlakatlari tajribasi hamda O'zbekiston uchun dolzarb jihatlar ko'rib chiqiladi. Shuningdek, yashil binolarni joriy etishdagi muammolar va ularni hal etish yo'llari taklif qilinadi. Maqola arxitektura sohasi mutaxassislari, talabalar va shaharsozlik bilan shug'ullanuvchi tadqiqotchilar uchun mo'ljallangan.*

Kalit so'zlar: *yashil bino, arxitektura, barqaror rivojlanish, ekologiya, energiya samaradorligi.*

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GREEN BUILDING CONCEPT

Abstract. *The article examines the concept of "green building," which is becoming increasingly widespread in 21st-century architecture. It analyzes the reasons for its development, key principles, integration with modern technologies, and contribution to environmental sustainability. The paper reviews the experience of different countries as well as the aspects relevant to Uzbekistan. In addition, it proposes solutions to the challenges arising in the implementation of green buildings. The article is intended for architecture professionals, students, and researchers in the field of urban planning.*

Keywords: *green building, architecture, sustainable development, ecology, energy efficiency.*

Kirish.

XXI asrda insoniyat oldida turgan eng muhim vazifalardan biri ekologik muvozanatni tiklash va barqaror rivojlanishni ta'minlashdir. Aholining keskin o'sishi, sanoatlashuv, energiya iste'molining ortishi va urbanizatsiya jarayonlari tabiiy resurslarning tez tugashiga, atmosfera ifloslanishiga hamda global iqlim o'zgarishiga olib kelmoqda. Shu sharoitda arxitektura va shaharsozlikda "yashil bino" konsepsiyasi tobora dolzarb ahamiyat kasb etmoqda.

“Yashil bino” tushunchasi energiya samaradorligi, ekologik toza materiallardan foydalanish, chiqindilarni kamaytirish va inson uchun sog‘lom muhit yaratish kabi asosiy tamoyillarga asoslanadi. Mazkur maqolada ushbu konsepsiyaning nazariy asoslari, jahon tajribasi va amaliy qo‘llanish yo‘nalishlari tahlil qilinadi.



1. Park Royal. Singapur. https://i.pinimg.com/originals/d5.

“Yashil bino” (Green Building) atamasi 1980–1990-yillarda urbanistika va arxitektura ilmiy doiralarida keng muhokama qilina boshladi. Bu davrda AQSh va Yevropada ekologik muammolarning keskinlashuvi, energiya resurslarining tanqisligi hamda atmosfera ifloslanishi masalalari dolzarb bo‘lib, shaharsozlikda yangi konsepsiyalarni shakllantirishga turtki berdi.

1993-yilda AQShda US Green Building Council (USGBC) tashkil etildi va 2000-yilda LEED (Leadership in Energy and Environmental Design) sertifikatlash tizimi joriy qilindi. Keyinchalik Buyuk Britaniyada BREEAM, Germaniyada DGNB, Yaponiyada CASBEE tizimlari ishlab chiqildi. Bu sertifikatlash tizimlari yashil binolarning sifatini baholashda asosiy mezonlarga aylandi.

1994-



2. AQSh US Green Building Council (USGBC). https://i.ytimg.com/vi/kjyW.

XXI asrda yashil binolar rivojlanish zarurati.

Bugungi kunda dunyodagi umumiy energiya iste'molining 40 foizi bino va inshootlarga to‘g‘ri keladi. Ulardan chiqayotgan karbonat angidrid chiqindilari esa global isish jarayonining 30 foizini tashkil etadi. Shuning uchun yangi qurilishlarda va rekonstruksiya jarayonida "yashil bino" tamoyillarini qo‘llash insoniyat uchun strategik zaruratga aylandi.

Yashil binolar quyidagi ustunliklarga ega: *energiya va suv resurslarini tejash; atmosfera ifloslanishini kamaytirish; sog‘lom ichki muhit yaratish; ekspluatatsiya xarajatlarini qisqartirish; binolarning iqtisodiy samaradorligini oshirish.*



3. Yashil binolar. https://i.ytimg.com/vi/wGN.

Yashil binolarning asosiy tamoyillari.

1. Energiya samaradorligi qayta tiklanuvchi energiya manbalaridan foydalanish (quyosh panellari, shamol turbinalari), issiqlik izolyatsiyasi, "aqlli" energiya boshqaruv tizimlari. 2. Ekologik materiallar qayta ishlangan, toksinsiz, uzoq muddat xizmat qiluvchi qurilish materiallaridan foydalanish. 3. Suv resurslarini tejash yomg‘ir suvini yig‘ish, suvni qayta ishlash tizimlari, samarali sanitariya jihozlari. 4. Chiqindilarni kamaytirish qurilish jarayonida chiqindilarni saralash, qayta ishlash va qayta foydalanish. 5. Inson salomatligi va qulaylik havoning sifatini yaxshilash, tabiiy yorug‘likdan maksimal foydalanish, yashil hududlarni kengaytirish.

Dunyo tajribasi.

Yevropa mamlakatlari yashil arxitektura bo‘yicha yetakchi hisoblanadi. Masalan, Germaniyada Frankfurt va Berlin shaharlarida "nol energiyali" ofis binolari keng tarqalgan. Skandinaviya davlatlarida esa yog‘och konstruksiyalardan keng foydalaniladi. AQSh yashil arxitektura bo‘yicha LEED sertifikati asosida minglab binolar barpo etilgan. Ulardan Nyu-Yorkdagi Bank of America Tower energiya tejamkor texnologiyalar bilan jihozlangan.

Osiyo mamlakatlari Yaponiya, Janubiy Koreya va Singapurda yashil binolar milliy dasturlar asosida rivojlantirilmoqda. Singapurdagi "Marina One" majmuasi tropik o‘simliklar bilan uyg‘unlashgan ekologik markaz hisoblanadi.



Tammasat Universiteti. TYLAND. https://i.archi.ru/i/341859.jpg

O‘zbekistonda yashil bino konsepsiyasi.

O‘zbekiston sharoitida yashil arxitektura masalasi dolzarb ahamiyat kasb etmoqda. Iqlim sharoitining issiq va quruq bo‘lishi energiya resurslarini tejash zaruratini oshiradi. Quyosh panellari, tabiiy shamollatish tizimlari va issiqlik izolyatsiyasi texnologiyalarini qo‘llash muhim hisoblanadi.

Toshkent, Samarqand va Buxoro shaharlarida yangi turar joy massivlari va ofis binolarini barpo etishda “yashil” tamoyillarni joriy qilish orqali ekologik uyg’unlikga erishish mumkin.

Zamonaviy texnologiyalar.

Smart-bino tizimlari: energiya sarfini avtomatik nazorat qilish. Qayta tiklanuvchi energiya: quyosh panellari, shamol turbinalari, biogaz qurilmalari. Aqlli fasadlar: quyosh nurlarini nazorat qiluvchi o‘zgaruvchan pardozlash materiallari. Yashil tomlar va vertikal bog‘lar: issiqlikni kamaytirish va havo sifatini yaxshilash.

Muammolar va yechimlar.

Qurilish xarajatlarining yuqoriligi davlat tomonidan soliq imtiyozlari va subsidiyalar berish. Texnologiyalarni joriy etishdagi malaka yetishmovchiligi mutaxassislarni o‘qitish dasturlari. Mahalliy qurilish materiallari bazasining cheklanganligi ekologik materiallar ishlab chiqarishni rivojlantirish.

Xulosa.

XXI asr arxitekturasida yashil bino konsepsiyasi insoniyatning kelajagini ta’minlashda eng muhim omillardan biridir. Bu ekologik, iqtisodiy va ijtimoiy jihatdan ham foydali yo‘nalishdir. O‘zbekiston sharoitida ushbu konsepsiyani bosqichma-bosqich joriy qilish, xalqaro tajribani o‘rganish va mahalliy innovatsion yechimlarni ishlab chiqish bugungi kunning dolzarb vazifasidir.

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ORGANIZATION OF ELECTRICAL SAFETY RULES IN UNIVERSITY COMPUTER ROOMS

Abstract: *This article is devoted to the development of electrical safety rules in university computer rooms, and discusses the need to ensure the safety of workers and comply with safety regulations when it becomes necessary to operate, repair, install, and perform preventive maintenance on computer equipment*

Key words: *Electric current, voltage block, repair, electric shock, accident, mental work, safety equipment, computer equipment, grounding*

Labor is the basis for the formation and social development of a person, the creation of material wealth. Properly organized labor leads to the physical, intellectual and spiritual development of people. State measures to ensure the safety and health of employees during work are called labor protection. In the conditions of scientific and technical development, all types of professional activities are increasingly taking on the role of creative elements. Mental labor includes work related to the reception and processing of information, the activation of attention, memory, as well as the process of thinking within the emotional framework.

In organizations using electricity, by order of the head of the organization, an employee responsible for electrical safety must be appointed from among the engineering and technical personnel, and this employee must have the appropriate qualification group in electrical safety.

In higher educational institutions and industrial enterprises, all electrical devices operating on alternating current with a voltage of 380 V and above and on direct current with a voltage of 440 V and above, as well as highly dangerous external devices operating on alternating current with a nominal voltage of more than 42 V but less than 380 V and on direct current with a voltage of more than 110 V but less than 440 V, must be grounded or grounded.

Electrical devices operating at a nominal voltage of up to 42 V alternating current and up to 110 V direct current do not require zeroing or grounding, control cables installed in metal structures, metal sheaths of power cables, and electrical devices in rooms with a risk of explosion.

There is always a risk of damage to computer devices when they come into contact with an electrical network operating at a voltage of 36 V, and also 220 V. This can occur in cases of careless contact with exposed current-carrying conductors, most often due to various reasons (current surges, poor-quality insulation, mechanical damage). During use, damage to the insulation of live parts, including live wires, as a result of which unintentional contact with them can lead to injury, and in severe cases even death.

There is a zone of increased electrical safety, where electrical outlets are placed on the floor, which is not necessary, in addition, overloading them beyond their capacity can damage their insulation and lead to a short circuit. To eliminate this situation, or rather, to minimize electrical injuries, it is necessary to comply with the requirements of the "Rules for the Use of Electrical Appliances by Consumers" and "Rules for the Safety of Consumers in the Use of Electrical Appliances" and "Rules for the Installation of Electrical Equipment".

To prevent electrical injuries when working with a computer, additional protective devices must be installed to ensure that no one comes close to live parts, and a transformer can be used to reduce the risk of injury from the mains voltage. In any case, a protective grounding circuit is necessarily created in electrical appliances.

When using electrical equipment, in addition to strictly following the above rules, it is necessary to take all technical measures related to de-energizing, i.e., turning off the equipment in the area designated for work and taking measures against spontaneous or inadvertent connection, if necessary, erecting barriers, hanging posters and warning signs in the workplace, checking that the power is turned off, performing grounding, etc. All electrical installation and repair work related to computer equipment should be carried out by two people at a time. In the event of an electrical injury, there should be a person who turns off the power and provides assistance until the first doctor arrives. The adjuster must be on a rubber mat and check the electrical circuit without touching the case and live wires.

When repairing computer equipment, the following are prohibited:

- using wires with damaged insulation to connect units and devices;
- soldering and installing parts on a device that is connected to the power supply;
- checking current and voltage with uninsulated wires and clamps;
- connecting units and devices to devices that are under voltage;
- replacing the fuse of a device that is connected to the power supply;
- working on high-voltage devices without protective devices.

In order to eliminate the possibility of an accident due to unbalanced voltage in other electrical devices in the power supply network, to reliably disconnect computer devices from the power supply, and to ensure the electrical safety of equipment and workers, it is necessary to comply with a number of installation requirements:

First, the power supply of all computers and peripherals must be disconnected.

Secondly, the grounding of the system unit case and peripherals must be carried out through a separate external circuit.

Fourthly, a single protective circuit breaker and a circuit breaker must be used to disconnect computer devices.

Let's consider in more detail the connection of the computer power supply unit to the network through a network filter. The function of the filter is to transfer the high-frequency components of the current in the network to the ground by connecting capacitors to zero and phase. For this, a three-pin plug and socket are used. The “earthing” wire is connected to the circuit, it is allowed to connect to the zero of the voltage network. In practice, both are the same, the difference is noticeable only under heavy use.

If the “ground” wire of a computer (or other device) is not connected anywhere, an alternating voltage of 110 V will appear on the device case, since the filter capacitor acts as a voltage divider, and since their capacitances are equal, it will divide the 222 V voltage by two.

At the same time, touching the unpainted metal parts of the computer and any metal structures connected to the ground, for example, heating batteries, will result in a current circuit that is dangerous to human life. This same voltage is the source of the potential difference between the devices, which affects the interface circuits.

If the connecting devices are firmly grounded or grounded with separate wires to the common circuit, the potential difference problem will not arise.

If two connected devices are not grounded, and voltage is supplied from one phase of the network, a potential difference is created that is not much larger than the capacitances of the capacitors distributed across the various filters, but the danger to humans remains in any case. If ungrounded devices are connected to different phases, the potential difference increases and reaches 190 V, which leads to very bad consequences for humans. One of the most serious cases is the connection of ungrounded devices with high-voltage blocks to grounded devices.

Certain problems arise in devices equipped with a two-pole plug and a network filter for the power supply unit. Such filter capacitors have a small capacitance, so the short-circuit current is relatively small - a few milliamperes.

Safety problems during connection are solved by using Pilot-type or similar filters with a three-pole socket connected to ground or neutral. If all devices connected to the interface are connected to such a three-pole plug and socket filter or their chains, then the problem of potential difference is also solved.

Uninterruptible power supplies (UPS) are currently used to protect against poor-quality voltage sources (increased and decreased, sharp drops and jumps in voltage, frequency overload, etc.), which are the main cause of computer malfunctions (hanging, inability to read or write from a disk). Their main function is to provide power in the event of an accident in the main network. When using a grounding switch, the protective circuit (ground) and neutral wire must be laid

separately. At the same time, poor-quality grounding reduces protection against interference with the electromagnetic field directed from the source to the device (monitor). In addition, it is not recommended to connect laser printers to the grounding switch, since when the printer heats up, it draws more current than the nominal value, which can lead to the failure of the grounding switch. Compliance with electrical safety rules and requirements provides maximum protection for the user from electric shock. However, if an accident occurs, the first thing to do is to immediately stop the current flow by any means (turn off the switch, remove the electrical cord from the victim with a dry stick or similar object, and immediately call a doctor). If the victim is not unconscious and feels unwell, he should be provided with peace, fresh air and warmth until the doctor arrives.

If the victim is in a serious condition (unconscious, without a pulse, breathing heavily), it is necessary to immediately begin artificial respiration using the “mouth-to-mouth” method at a rate of 12-15 times per minute and massage the heart with one compression per second and continue until the patient regains consciousness (the diameter of the pupil is restored, i.e., it decreases to normal, the pulse returns, and breathing normalizes). After the person regains consciousness, the assistance provided should be continued for 5-10 minutes, then he should be placed in a warm room and given more hot tea. In any case, it is necessary to provide qualified medical assistance.

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THE INFLUENCE OF FASHION ON THE FORMATION OF THE ARCHITECTURAL ENVIRONMENT: INTERRELATION AND INTERACTION

Annotation. *This article is devoted to the study of the relationship between architecture and fashion as two forms of art that reflect the spirit of the times and respond to socio-cultural, technological and artistic changes. The author examines the historical parallels between styles in architecture and fashion – from Gothic to postmodernism – emphasizing how the aesthetic and philosophical ideas of the eras found expression in both spheres. Special attention is paid to the modern stage of interaction, where fashion influences architecture through environmental, technological and functional trends. Examples of bionic architecture, digital solutions, street culture, collaboration of fashion houses with architects, as well as the principles of sustainable development are highlighted. In conclusion, it is concluded that fashion and architecture are increasingly converging and that they are jointly shaping future aesthetic and functional standards in art and design.*

Keywords: *architecture, fashion, cultural trends, bionics, digital fashion, virtual architecture, sustainable.*

Architecture and fashion are two types of art that reflect the spirit of the times. Both directions are influenced by socio-cultural changes, technological progress and artistic movements.

The relationship between the two types of art has historical aspects of interaction.

Historically, architectural styles have been reflected in fashion and vice versa. For example, in the Baroque era, magnificent forms prevailed in clothing, corresponding to the abundance and decorative architecture of that time. In the era of modernism, minimalism in clothing went hand in hand with the rejection of excessive decorations in architecture. The relationship between architecture and fashion can be traced throughout history, reflecting the aesthetic, cultural and philosophical views of each era. In the Gothic era (12th–16th centuries), architecture tended towards verticalism, lightness and upward orientation. The same principles were reflected in the clothes: long silhouettes, pointed headdresses (ennen), layering and intricate draperies emphasized the desire for sublime aesthetics. The Renaissance era (XV–XVI centuries) brought a return to the ancient ideals of harmony and proportions, which affected fashion. Symmetrical shapes, an order system, domes and arcades appeared in architecture, while strict silhouettes and rich fabrics embroidered with gold and decorated with pearls appeared in clothing, emphasizing human greatness. The Baroque (17th century) was characterized by splendor, expression, and theatricality in both architecture and fashion. Corsets, extended skirts, and an abundance of lace and embroidery appeared in the clothes, which corresponded to the rich decor of palaces and cathedrals. Classicism (XVIII century) He turned back to antiquity, which was reflected in the restrained, strict forms of buildings and in the fashion of light tunic dresses resembling Greek chiton. The 19th century and eclecticism led to a combination of different styles in architecture, which was also reflected in fashion: a combination of romantic elements, Gothic motifs, oriental influences and even the first echoes of the coming Art Nouveau.

The 20th century brought rapid changes: art Deco with its geometry and luxurious materials was reflected in graphic dresses, the minimalism of modernism was embodied in laconic silhouettes, and postmodernism allowed mixing different styles, creating eclectic images in both arts.

Architecture and fashion have always gone hand in hand, reflecting the spirit of the times, technological advances and cultural changes. If we talk about the current situation, modern fashion trends have a direct impact on architecture through:

Materials and technologies – the development of new fabrics (for example, membrane materials) finds a response in architecture in the form of high-tech facades.

Eco–friendliness and sustainability - the principles of sustainable fashion (upcycling, zero waste) are manifested in architecture through eco-design, reuse of materials and energy-efficient buildings.

Flexibility and mobility – the popularity of transformable clothing finds an analogy in mobile architectural solutions (modular homes, adaptive spaces).

In addition, there are several aspects that complement the theme of fashion's influence on the architectural environment.:

1. Bionic Architecture and Textile Design Bionics in architecture is inspired by natural forms, which resonates with fashion using organic lines and natural

materials. For example, Zaha Hadid's work resembles fluid silhouettes of high fashion.

2. The influence of architectural forms on model design Some designers are directly inspired by architecture. For example, Iris van Herpen uses 3D printing and structural elements reminiscent of modern building facades.

3. Urban environment and streetwear Street fashion adapts to megacities using utilitarian materials and functional elements (for example, high-tech fabrics in sportswear). In architecture, this is reflected in the concepts of smart cities and adaptive spaces.

4. Digitalization and virtual architecture Digital fashion (NFT clothing, virtual catwalks) influences the design of architectural objects in the metaverse. For example, brands create virtual showrooms and buildings for digital collections.

5. Futurism and high-tech in fashion and architecture

In architecture, the high-tech style (for example, the works of Norman Foster, Renzo Piano) uses innovative materials, glass and metal, creating technological, minimalistic forms.

• In fashion, this is reflected in clothes with metal elements, reflective fabrics, as well as the use of 3D printers and "smart" materials (for example, clothes that change color depending on temperature).

6. Postmodernism: eclecticism and playing with forms

• In architecture, postmodernism (Philip Johnson, Robert Venturi) is a combination of styles, bright colors, and irony.

• In fashion, this manifests itself in eclectic images, mixing vintage elements with modern silhouettes (for example, the collections of Vivienne Westwood or Jean-Paul Gaultier).

7. The influence of subcultures on urban architecture

Hip-hop culture has influenced streetwear and the architecture of megacities, where graffiti facades and urban spaces for self-expression (skate parks, conceptual art objects) appear.

The punk movement was reflected not only in fashion (leather, rivets, anarchic style), but also in architecture in the form of industrial spaces converted into art centers and clubs (for example, Berlin with its converted factories). 8. Interior design and haute couture

• Luxurious interiors created in collaboration with fashion brands: Louis Vuitton and Frank Gehry, Fendi and architect Zaha Hadid.

• Boutiques decorated in a unique architectural style (for example, the Prada building in Tokyo, designed by Herzog & de Meuron).

9. Fashion and architecture in the context of sustainable development

• "Green" buildings and eco-design reflect trends in conscious consumption in fashion – clothing made from recycled materials, the principles of circular fashion.

Vertical gardens and plant facades are similar to the trend for natural fabrics and biodegradable materials in clothing.

10. Festival and temporary architecture

• Burning Man and its temporary art objects often inspire fashion designers to create collections in the style of boho, futurism and cyberpunk.

• Pop-up shops and installations that also reflect fashion trends, making architecture more flexible and interactive.

Analyzing the above, we can conclude that with the development of technology and changing values of society, we can expect a further convergence of fashion and architecture. There may be the appearance of "smart" fabrics integrated into architectural structures, and the creation of adaptive spaces that change shape and functionality depending on the needs of users.

Fashion and architecture are interrelated spheres that shape the look of an era. Their interaction is developing, creating new directions in art and design, and in the future we can expect an even greater fusion of these disciplines due to technological progress and changes in socio-cultural orientations.

Conclusion

Architecture and fashion have developed in parallel over the centuries, reflecting the key cultural, philosophical, and technological changes of each era. Their close relationship is evident in both visual and conceptual aspects: forms, materials, ideas and stylistics in both types of art often overlap and mutually enrich each other. From Gothic cathedrals and elongated silhouettes to digital facades and virtual clothing, architecture and fashion demonstrate the ability to adapt, transform and express the spirit of the times.

Today, in the context of accelerating technological progress, globalization and rethinking of values, their synthesis is becoming especially relevant. The principles of sustainability, innovations in materials, the influence of the digital environment and subcultures form a new type of creative interaction.

Thus, fashion and architecture are not only a reflection of culture, but also tools for its formation. Their union is able to determine the aesthetic guidelines of the future, offering society not only new forms, but also new meanings.

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THE IMPACT OF GLAUCOMA ON UZBEKISTAN'S ECONOMY

Abstract: *This article examines the economic implications of glaucoma in Uzbekistan, focusing on how this chronic eye disease contributes to healthcare costs, lost productivity, and broader socioeconomic burdens. Glaucoma, a leading cause of irreversible blindness, poses significant challenges in developing countries like Uzbekistan, where access to early detection and treatment is limited. Drawing on national and international data, the analysis covers direct medical expenses, indirect costs from disability, and the strain on the country's GDP. Findings indicate that glaucoma could impose an annual economic burden of hundreds of millions of dollars, exacerbated by an aging population and rural-urban disparities. Preventive measures, such as expanded screening programs, could mitigate these costs. The article is structured in IMRAD format and references 15 sources from global health organizations and local studies.*

Keywords*: glaucoma, economic burden, healthcare expenditure, Uzbekistan, GDP, blindness.*

Introduction

Glaucoma is a progressive optic neuropathy characterized by increased intraocular pressure, leading to irreversible vision loss if untreated. It is often asymptomatic in early stages, earning it the moniker "silent thief of sight." Globally, glaucoma affects over 80 million people, with projections reaching 111 million by 2040. In developing countries, where healthcare infrastructure is strained, the disease disproportionately impacts vulnerable populations, resulting in higher rates of blindness and disability.

Uzbekistan, a Central Asian nation with a population exceeding 35 million, faces unique challenges in managing glaucoma. The country's economy, transitioning from Soviet-era structures to market-oriented reforms, achieved a GDP of approximately $80 billion in 2023, with forecasts for 5.9% growth in 2025, potentially reaching $100 billion. Healthcare spending stands at around 7.36% of GDP, with per capita expenditure at $169 in 2022, reflecting modest investments compared to global averages. Plans to increase education and healthcare budgets by 20% in 2025 signal progress, but glaucoma remains under-addressed.

Epidemiological data on glaucoma in Uzbekistan are limited, but studies indicate a rising incidence. Longitudinal analysis shows primary disability from glaucoma doubled between 2015 and 2020, with open-angle and closed-angle forms dominating 97.9% of cases. In neighboring Kazakhstan, annual incidence rose from 59.1 to 135.5 per 100,000 between 2000 and 2022, suggesting similar trends in Uzbekistan due to shared environmental factors like UV exposure in arid

regions. Childhood glaucoma contributes to 5% of avoidable blindness, highlighting intergenerational impacts.

The economic burden of glaucoma extends beyond medical costs to include lost wages, caregiver expenses, and reduced quality of life. In developing countries, undiagnosed cases reach 95%, amplifying indirect costs. This article aims to quantify glaucoma's economic toll on Uzbekistan, hypothesizing that it could reduce GDP by 0.5-1%, akin to patterns in low-income nations. By integrating epidemiological insights with economic modeling, we explore pathways for mitigation.

Methods

This study employs a mixed-methods approach, combining secondary data analysis from international databases (WHO, World Bank) and local publications with economic modeling. Data sources include PubMed for prevalence studies, World Bank indicators for GDP and healthcare spending, and IMF reports for fiscal projections.

Quantitative assessment: Burden estimates use cost-of-illness models, incorporating direct (treatment) and indirect (productivity loss) costs. Prevalence is extrapolated from regional data: assuming 1-2% adult prevalence (similar to Central Asia), affecting 350,000-700,000 Uzbekistanis. Disability-adjusted life years (DALYs) are calculated using WHO formulas, with costs per DALY at $1,000-3,000 in developing contexts.

Qualitative insights: Review of psychosocial impacts from studies on patient burdens in low-income settings. Limitations: Sparse Uzbekistan-specific data; estimates rely on proxies from Kazakhstan and global averages. Future research needs national surveys.

Results

Glaucoma prevalence in Uzbekistan is underreported, but proxies suggest 1-2% of adults are affected, with incidence rising due to aging (15% over 60 by 2030). Disability cases increased from 2015-2020, with 57,338 primary open/closed-angle diagnoses. Economic modeling reveals substantial costs.

Direct costs: Treatment (medications, surgery) averages $200-500 per patient annually in developing countries; for Uzbekistan, this totals $70-350 million for 350,000 cases. Healthcare spending, at 7% of GDP, absorbs 5-10% more from glaucoma.

Indirect costs: Blindness reduces productivity; global estimates show $6,000-27,000 annual loss per case. With Uzbekistan's $3,000 average income, 50,000 blindness cases could cost $150-300 million in lost wages.

Overall GDP impact: 0.5-1% reduction, or $400-800 million annually, aligning with US burdens scaled down ($2.86 billion globally).

Table 1

Estimated Economic Burden of Glaucoma in Uzbekistan

Component	Annual Cost (millions USD)	Notes
Direct Medical	100-200	Drugs, surgery
Indirect (Productivity)	200-400	Lost work, disability
Family/Social	50-100	Caregiving
GDP Loss	300-500	Aggregate impact

Results highlight rural disparities, where access lags, increasing late-stage costs.

Discussion

The findings underscore glaucoma's role in perpetuating poverty cycles in Uzbekistan. High patient burdens (61.5% of income for low earners) mirror developing country patterns. Compared to the US ($2.5 billion direct costs), Uzbekistan's scaled burden is proportionate given GDP differences. Aging demographics will amplify this; by 2040, cases may double.

Policy implications: The 2025 budget increases offer opportunities for screening, reducing undiagnosed rates from 95%. Mobile clinics and teleophthalmology could cut costs by 30%, as in Brazil. Limitations include data gaps; recommendations: National glaucoma registry and cost-effectiveness studies.

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ON INTERRELATION OF THE THEORIES OF INVESTMENT DECISIONS AND INNOVATIVE ECONOMY

Abstract: *The article examples the relationship between investment and innovation activities in the context of the formation of an innovative economy in the Republic of Uzbekistan. Based on the investment theory of creativity, problems and factors of investment and innovation management in the republic were identified. It was found that, in institutional terms, investments in innovation should be developed taking into account the capacities of not only internal sources, but also due to endogenous factors of investment activity. Based on the provisions of the new theory of economic growth, it was concluded that in the near future, the fundamental factor in the development of investment in innovation is investment in human capital, since it is through them that the developed results can be achieved in the formation of an innovative economy in the republic. A hypothesis has been put forward reflecting the relationship between innovation and investment activity, according to which the multiplier effect of investment in innovation is an important factor and resource for the country's future economic growth.*

Keywords*: investment, innovation, technology, R&D, human capital, investment decision, new growth theory*

In modern conditions, the Republic of Uzbekistan strives to switch to an innovative path of development, and the role of investment in this process is significant. Based on this, stimulating investment activity in leading sectors of the economy, especially in innovation, is becoming one of the state's most important tasks.

The study of innovation processes has always been and remains relevant in both academic and practical terms, as they constitute a continuous process that directly impacts the economic and social status of economic entities. The term "innovation" is used in literature to describe the process of creating new products using new information, technologies, and procedures, as well as to designate new

or improved products. It is also understood as: "The end result of creative activity, embodied in new or improved products, services, technologies, organizational and technical solutions in production, organizational and managerial, social, and other spheres".[1]

Investments in research and development (R&D) form the foundation of an innovative economy. R&D is defined as systematic creative activity aimed at increasing the stock of knowledge and using this stock to create new applications: new or improved products (goods and services) and procedures (particularly software research) [2]. Technological progress has contributed to the development of human civilization. Economic and social growth would not be possible without significant breakthroughs in this area, particularly during the last century.

According to the investment theory of creativity, developed by Western economists R. Stenberg and T. Lubart, creativity is essentially a process of managerial decision-making [3]. Simply put, in business, it is the decision to buy low and sell high. Creative individuals and successful investors come up with fresh ideas that sometimes seem a bit ridiculous, and accordingly, they can be priced low. Then, innovators "sell high," earning a fortune from their brilliant concept before moving on to the next controversial idea once their ideas have gained some traction. Creative people naturally prefer to stand out from the crowd and are reluctant to think or act like others. Instead, they prefer to forge their own path, striving to offer fresh and valuable ideas. As a result, the most significant obstacle to creativity is often one's own mental limitations, not the limitations imposed by others.

It should be noted that investments in innovation may be driven by the desire to gain access to distribution networks, new markets, or financial synergies. The impact of investments on the production of innovative products can be considered in the context of advanced technologies, and such investments positively impact the subsequent productivity and creativity of economic entities.

As noted, R&D investments are crucial for companies seeking to generate new knowledge and expand their market opportunities, especially in today's dynamic economy. R&D investments involve the use of numerous types of tangible and intangible resources, such as financial resources, technological resources, and investments in human capital. According to the resource-based approach, the expenditure of significant quantities of valuable and scarce resources is beneficial for the efficiency of the development and launch of new products. Therefore, digital innovation initiatives that lead to the wider adoption of new digital products or services must be differentiated.[4]

Today, various methods are available for understanding the process of developing new knowledge and information, often known as digital innovation. This strategy is also being implemented in the Republic of Uzbekistan, and the search for investment sources is an important factor in this process, as the financial capabilities of economic agents do not allow them to fully invest in R&D. [5]

Studying the key factors of innovation investment is crucial in shaping the innovation economy of the Republic of Uzbekistan. This is because economic entities provide digital solutions to other economic agents, forcing them to adopt digitalization and influencing other industries to develop further innovations, thereby bringing more competitive goods and services to market. The study showed that investment in innovation and R&D expenditures have a significant and positive impact on the implementation of the digital economy. Based on this, in the near future, the country should implement a targeted program that combines all elements of investment in an innovative economy.

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BUGUNGI KUN TA'LIM JARAYONI VA UNING YOSHLAR HAYOTIDA TUTGA O'RNI

Annotatsiya: *Mazkur maqolada ta'lim va tarbiya uyg'unligi, ta'lim va tarbiya mazmunining uyg'unligi tamoyili, ta'limning tizimliligi va izchillik tamoyili bayon qilinayotgan o'quv materialini mustahkamlash va ilgari o'tilgan materiallarni to'ldirishga xizmat qilish, tarbiya va unga bog'liq jarayonlarga yangi hamda sog'lom pedagogik tafakkurga tayangan holda yondashuv haqida batafsil bayon etilgan.*

Kalit so'zlar: *ta'lim uyg'unligi, tarbiya uyg'unligi, yaxlit ta'lim, uyg'unlik, izchillik tamoyili.*

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THE MODERN EDUCATIONAL PROCESS AND ITS ROLE IN YOUTH LIFE

Abstract: *This article describes in detail an approach to education and related processes based on new and healthy pedagogical thinking to consolidate educational material, which outlines the principle of harmony between the content of education and upbringing, the principle of consistency and consistency of learning, etc.*

Key words: *harmony of education, harmony of education, holistic education, harmony, principle of consistency.*

Kirish

Ta'lim va tarbiya mazmunining uyg'unligi tamoyili – bu kishilarga bilim va tarbiya berish jarayonidan iborat bo'lib, bunda egallangan bilim va ko'nikmalarni

hayotga qo‘llay olishga o‘rgatiladi, hayotda ta’lim oluvchilarning ham intellektual, ham ma’naviy jihatdan uyg‘unlikda rivojlanishi ta’minlanadi.

Yaxlit ta’lim - tarbiya jarayonida ikkala o‘zaro bog‘liq juftlik, ya’ni bilim berish va tarbiyaviy ko‘nikmalarni shakllantirish hamda shakllangan ta’limiy – tarbiyaviy bilimlar va ko‘nikmalar bo‘yicha faoliyat ko‘rsatishga o‘rgatish, ob’ektiv borliqdagi qonuniyatlarni o‘rganish va uning amaliy munosabatlarini tarkib toptirishda namoyon bo‘ladi. Shu sababli ta’lim oluvchilarga bilim berishda egallangan bilimni amalda ishlatishga o‘rgatish bilan birga ta’lim tarbiyalovchi ham bo‘lishi kerak.

Adabiyotlar tahlili va metodologiya

Inson ma’naviy olamini shakllantirish borasida Prezidentimiz Shavkat Mirziyoyev belgilab bergan vazifalar, shuningdek yetuk mutaxassis va komil insonni tarbiyalashga qaratilgan ishlarni amalga oshirish bugungi kunda dolzarb va ustuvor masala hisoblanadi. Shu bois bu masala universitetimiz rahbariyatining doimiy e’tibor markazida bo’lib kelmoqda.[1]

Mazkur maqsadni ro’yobga chiqarish uchun universitetda olib borilayotgan ma’naviy-ma’rifiy va axloqiy-tarbiyaviy ishlar qamrovi kengayib bormoqda. Prezidentimizning “Yangi O’zbekiston taraqqiyot strategiyasi” asarida ta’kidlanganidek, yoshlar ongiga milliy va umuminsoniy qadriyatlarni singdirish, ularning intellektual va ma’naviy salohiyatini oshirish davlat siyosatining ustuvor yo’nalishlaridan biridir.[2]

Ta’lim va tarbiyaning uyg‘unligi tamoyili yaxlit pedagogik jarayonda ta’lim va tarbiyaning birligi qonuniyatlariga asoslanadi. Bu tamoyil ta’lim jarayonida barkamol rivojlangan shaxsni shakllantirishni ko’zda tutadi.[3] Ta’lim jarayonida tarbiyaviy ishlarning samarali kechishi o’quvchilarning qiziqishlari, idrok etish hamda individual qobiliyatlarining hisobga olinishi bilan uzviy bog’liq.

Bundan tashqari, ta’limning tizimliligi va izchillik tamoyili o’quv materialini mustahkamlash, ilgari o’tilgan bilimlarni to’ldirish va o’quvchilarning mustaqil ishlash ko’nikmalarini rivojlantirishga xizmat qiladi. Bu yondashuv uzluksiz va tizimli ta’lim jarayonini ta’minlab, bilim va malakalarni chuqurlashtirishga imkon yaratadi.[4]

Natijalar

Tarbiya usullariga: So’z orqali ifodalash usuli, ko’zgazmalilik usuli, amaliy namuna usuli, rag’batlantirish va jazo usuli kiradi. Yuqoridagi metodlar bir necha guruhlarga bo’linadi. So’z orqali uzatish , maslahat berish ma’lumotlarni eshitish orqali qabul qilish. Kinofilmlar va babiiy san’at va boshqa usullar. Tarbiya ma’lumotlarini amaliy mehnat orqali ko’rsatish. O’quvchi talablarining yaxshi bajargan ishlarini o’rtoqlari yoki ota -onalari oldida rag’batlantirish.

O’qituvchining rag’batlantirish usuli ikki turga bo’linadi:

1. Siz buyurgan ishga mas’uliyat bilan yondashganligini rag’batlantirish.
2. Siz buyurgan ishga qiziqish va uddalay olganligini rag’batlantirish.

Tarbiya maqsadi umumiy va individual maqsadlar birligi va uyg’unligini namoyon etadi. Tarbiyaning umumiy ijtimoiy maqsadini hal etishga yo’naltiriladi, hamda aniq vazifalar tizimi sifatida namoyon bo’ladi. Demak, tarbiya usullari-

o’qituvchi, tarbiyachining tarbiyalanuvchilarga ta’ sir ko’rsatish usullari, ularga ijobiy xulq -atvor ko’nikmasi va malakalarini singdirish maqsadida ularning hayoti va faoliyatini tarbiyaviy jihatdan to’g’ri tashkil etish yo’llaridir. Aniqrog’i tarbiya usuli deb tarbiyachining bolalarda axloq- odob fazilatlarini tarkib toptirish maqsadida ularning ongi va irodasiga ta’sir etish yo’llariga aytiladi. Tarbiya usullari tarbiyaning maqsadi va mazmunidan kelib chiqib yetuk inson shaxsini tarbiyalashga qaratilgan. Ijtimoiy muhitning shaxs shakllanishidagi o’rni nihoyatda beqiyosdir .Biroq tarbiya mohiyatini yoritishda o’ziga hos ahamiyatga ega bo’lgan yana bir tushuncha ham mavjud bu tarbiya metodlari tushunchasidir. Tarbiya metodi (yunoncha "metodos"- yo’l) tarbiya maqsadiga erishishning yo’li, tarbiyalanuvching ongi, irodasi va hulqiga ta’sir etish usullari. Maktab amaliyotiga tatbiq etilganda, metodlar-bu tarbiyalanuvchining ongi, irodasi, tuyg’ulari va hulqiga ta’sir etish usullaridir. Metodlarni yanada takomillashtirish muammosi har doim mavjud, har bir tarbiyachi o’zining imkoniyatlariga ko’ra uni yechimini topadi, ta’lim -tarbiya jarayonida ma’lum yo’lni bir asos bo’yicha metodlarni ishonchli klassifikatsiyasi joriy qilinmagan. Ta’lim yuqori darajadagi samarali va samarasiz deya baholash mumkin. Pedagogikada biror tarbiya jarayonida mutahassislar metodlarni ko’p takrorlanishiga qarab ishontirish, namuna, mashq, taqdirlash, jazolash metodlarini o’rganishgan. Pedagogik amaliyotda ushbu metodlarni ko’p takrorlanishini uchratamiz. Pedagoglar o’quvchilar bilan birgalikda ularga bilim berish axloqiy normalarini muhokama qilib ularni faoliyatga jalb etib ularga doimo namuna bo’lib tarbiya beradi. Shaxsning kamol topishida "faoliyat", "faollik" tushunchalarining o’rni beqiyos. Buyuk olimlar o’z sohasida yetuk inson bo’lib yuksaklikka erishish uchun tinmay mehnat qilganlar. Inson tinimsiz mehnati va iste’dodini ro’yobga chiqarish uchun o’z ustida doimo izlanishda bo’lmog’i lozimdir.[5]

Mustaqil O’zbekiston Respublikasida Xalq ta’limini keng yoyilishi, miqdor va sifati jihatidan tez o’sib borishi turli hildagi ta’lim tizimi va ta’lim muassasalaridan tashqari o’quv tarbiya maskanlarining ishlab turishi, ta’lim va tarbiya jarayonini boshqarishning juda zarurligini taqozo etadi. Ta’lim oldiga qo’yilgan vazifalarni muvafaqqiyatli bajarish ta’lim tizimini boshqarish va unga rahbarlik qilish faoliyatining saviyasiga bog’liq. Ta’lim tizimiga ilmiy rahbarlik asoslarini ishlab chiqish pedagogika uchun asosiy yo’nalishlardan biridir.

O’quvchilar va talabalarning aqliy rivojlanishi ko’p jihatdan mustaqil fikrlashga, tarbiyalanishiga bog’liq. Ularning tarbiyalanganlik darajasini tahlil qilish ma’naviy- ma’rifiy o’sib borish hususiyatlarini o’rganish hozirgi davr talablaridan biridir. O’zbekistonda jinsi , millati, tili, dini , ijtimoiy kelib chiqishi va mavqeidan qat’iy nazar har kimga ta’lim olish uchun teng huquqlar kafolatlanadi. Ta’lim va tarbiyaning o’rtasida ochiq oydin farq bor. Ta’lim - tarbiyaning bir yuzidir. Tarbiya esa ta’limni o’z ichiga oladi. Demak tarbiya o’z o’zidan ta’limga nisbatan komil va keng qamrovlidir.

Izchillik ta’lim mazmuni, uning shakli va usullari, o‘quv jarayoni ishtirokchilari bo‘lgan subyektlarning o‘zaro munosabatlariga taalluqli. U alohida parsial (yunoncha partialis – qisman) va xususiy o‘quv vaziyatlari, predmet va

hodisalar o‘rtasidagi bog‘liqlik, aloqadorlik qonuniyatlarini asta-sekin o‘zlashtirish asosida ularni yagona yaxlit o‘quv jarayoniga birlashtirishga imkon beradi.

Izchillik ta’lim jarayonining ma’lum tizim va ketma-ketlik asosida bo‘lishini nazarda tutadi, zero, murakkab masalalarni oddiy masalalarni o‘rganmay turib hal etib bo‘lmaydi.

Tarbiya orqali xar qanday odamni istagan ijtimoiy qiyofaga solish mumkin degan karash hukmron bo‘lganligi uchun ham uning shaxsni shakllantirishdagi o‘rniga oshiqcha baho berildi. Tarbiyalanuvchi shaxsining Tarbiyaga berilish yoki berilmaslik xususiyatlarining hisobga olinmasligi tarbiyaviy tadbirlarga mahliyo bo‘lishdek pedagogik xatolikka olib keldi. Buning natijasida Tarbiya maqsadsiz bo‘lib qoldi, tarbiyalanuvchilarga alohida shaxs sifatida emas, istalgan ijtimoiy yo‘nalishga solinishi mumkin bo‘lgan qiyofasiz to‘da, olomon tarzida qarash qaror topdi, Bu hol Tarbiyaning samarasizligiga olib keldi.

Muhokama

Tizimlilik va ketma-ketlik u yoki bu o‘quv materialini o‘zlashtirish sur’ati, uning elementlari o‘rtasidagi o‘zaro mosligini tahlil qilishga imkon beradi. Ta’limning tizimliligi va ketma-ketligi ma’lum fanlar bo‘yicha bilim, ko‘nikma va malakalarini shakllantirish, borliqni yaxlit idrok etish o‘rtasidagi qaramaqarshiliklarini hal etishga imkon beradi. Ushbu holatlar birinchi navbatda dastur va darsliklarni muayyan tizimda yaratish, fanlararo hamda fanlar ichidagi bog‘liqlikni ta’minlash evaziga namoyon bo‘ladi.

Tarbiya” fanidan ko‘zlangan maqsad birinchidan o‘quvchilarning yoshi va psixologiyasiga mos ma’naviy rivojlanishni ta’minlash, ikkinchidan mazkur fanni o‘qitishda fanlararo bog‘liqlik va turli millatlar qadriyatlarini inobatga olish, uchinchidan, o‘quvchilarda vatanparvarlik, mardlik, insonparvarlik, iroda, o‘z kelajagi uchun chuqur bilim olish va intilishga undovchi hayotiy kompetensiyalarni shakllantirishdan iboratdir. Eng muhimi ushbu fan tobora avj olayotgan globallashuv davrida farzandlarimizda salbiy illatlarga qarshi immunitetni shakllantirishda fan-ta’lim-tarbiyaning uyg‘unligini ta’minlashga olib keladi.

Xulosa

Xulosa o‘rnida shuni aytish joizki, O’zbekiston mustaqillikka erishgach, ta’lim va unga bog’liq jarayonlarga yangi va puxta pedagogik tafakkurga asoslangan yondashuv shakllana boshladi. Uning talqinida ilmiy asoslanmagan sinfiypartiyaviy yondashuvdan voz kechildi. Ta’limning milliyligiga alohida e’tibor beriladi. Shu maqsadda xalq pedagogikasi boyliklari, o’zbek mutafakkirlarining pedagogik qarashlari puxta o’rganiladi. Natijada o’zbek ped. Oila va ijtimoiy tarbiya fan va amaliyotda alohida o’rin tutadi. Ta’limda irsiy va biologik omillar ham hisobga olinadi. Shu bilan birga, shaxsni shakllantirishda ta’lim-tarbiyaning o’rnini ortiqcha baholash ham yo’qoldi. Bu esa ta’lim-tarbiya bilan bog’liq voqea va vaziyatlarni to’g’ri izohlash, tarbiyaviy faoliyat tizimini to’g’ri aniqlash imkonini berdi.

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MODERN TECHNOLOGIES IN REHABLITATION

Annotation: *This article analyzes the effectiveness of modern methods of rehabilitation of stroke patients, we studied the data of domestic and foreign scientific sources. As a result of the work carried out, a number of techniques with the greatest evidence base were identified, as well as techniques with unproven efficacy and not recommended for use to improve the function of the upper limb in patients with stroke were established. Let's consider them sequentially. The patient's quality of life largely depends on the degree of restoration of the lost functions. In turn, the degree of their recovery depends on the timing of the beginning, dosage and continuity of the initiated rehabilitation measures.The statistics continue to indicate that cerebrovascular diseases remain one of the most important medical and social problems of modern society. Rehabilitation of cerebral stroke, despite effective diagnosis and quality treatment, is not always effective enough, partly due to the fact that the patient rehabilitation system in our country is not sufficiently developed. At the same time, over the past decade, developments based on the use of digital technologies, computerized systems and robotic devices have been added to the traditional methods of rehabilitation.*

Key words: *rehabilitation, stroke, recovery, upper limb, recommendations, rehabilitation methods, evidence.*

Relevance

More than a million people live in our country who have had a stroke, and more than 650 thousand new cases of this disease are registered annually. The majority of patients who have suffered intracerebral bleeding, domestic independence is not restored, and therefore more than 85% of people of working age become disabled. The leading factor of disability in a significant number of patients is movement disorders - in the chronic stage of the disease, a symptom of brain damage is the same as in the acute one. In the acute stage, they are detected in 70-90% of patients, after a year the residual defect remains in at least half of the survivors.

Purpose: to analyze the effectiveness of modern methods of rehabilitation of stroke patients, we studied the data of domestic and foreign scientific sources. As a result of the work carried out, a number of techniques with the greatest evidence base were identified, as well as techniques with unproven efficacy and not recommended for use to improve the function of the upper limb in patients with stroke were established. Let's consider them sequentially.

Research methods Subject of research: rehabilitation of stroke patients Subject of research: the influence of modern technologies (video training) on the

quality of rehabilitation of stroke patients.135 The study involved 20 men, aged 45-50 years, who had stroke 1 month ago and were discharged for follow-up treatment to the outpatient center at the place of residence. According to the conclusion of the neurologist, all patients had the same impairment of motor function - paresis of the left arm with an assessment of muscle strength of 2 points (pronounced paresis). The subjects were divided into 2 equal groups. The first underwent rehabilitation only in the clinic. The second - in addition to classes in the clinic, received a disk for classes at home, compiled together with a rehabilitation therapist. A video lesson was presented on the disk, according to which patients were taught to independently perform the necessary exercises. After 1 month, the patients underwent a second examination by a neurologist, the results of which revealed: 1. In the group of subjects who underwent rehabilitation only in the polyclinic, 8 patients at the time of the second examination had paresis of the left arm with an assessment of muscle strength of 3 points (moderate paresis) and 2 patient at 3-4 points. 2. In the group that worked additionally at home, using a video lesson, 7 patients had paresis with an assessment of muscle strength of 4 points (mild paresis) and 3 patients completely restored movement in the arm and muscle strength. Currently, there are various robotic devices for mechanotherapy. Modern mechanotherapy devices are used to facilitate movement and increase mobility in the joints, as well as to train certain muscle groups. The most evidence-based basis is the use of such devices as Lokomat, Erigo and Primus complexes. The importance of electromechanical devices or robotic technology for improving upper limb function in stroke patients has been reviewed in 11 studies, 10 RCTs (218 participants) and 7 RCTs, as well as in 120, 52 and 67 patients. They demonstrate that, compared with any other procedure, using electromechanical devices or robotics, it is possible to significantly improve the motor functions of the hand. An increase in arm strength after training with the use of electromechanical or robotic devices has been proven, while no side effects have been identified. Evidence from systematic reviews suggests that the effectiveness of such therapy may depend on the area of the upper limb (shoulder or elbow) that is being addressed. Along with a beneficial effect on the indicators of strength, endurance and work of the upper limb, mechanotherapy has a positive effect on microcirculation and main blood flow in the basin of the cerebral arteries. It has been shown that the hardware restoration of complex spatial movements of the upper limb in the long term after a stroke increases the functional capabilities and everyday independence of the patient. Canadian authors do not consider it optimal to use exclusively robotics in the rehabilitation program. Nevertheless, they indicate a high efficiency of restoration of the motor function of the paretic shoulder and elbow in patients with stroke when conducting exercises with the use of robotic devices as additional procedures due to frequently repeated tasks with minimal medical supervision. There were no statistically significant differences between the groups of patients treated with robotic technology and those treated without it in regards to the restoration of

motor function and skills in daily activities, an increase in strength and improvement in movement control.

Conclusion: rehabilitation of patients after a stroke requires the organization of a complex system of care with the obligatory consideration of the specifics, clinical features and variants of the course of the disease. Along with numerous approaches to the rehabilitation of patients, new ones are being created, which have shown their effectiveness in the recovery of patients. The use of modern technologies, for example, a video lesson, improves the quality of rehabilitation of stroke patients and helps to speed up the recovery process. The discussed works differed in terms of quality, type and duration of procedures, conditions for their implementation (on an inpatient or outpatient basis), duration of classes, measuring instruments (tests, scales, questionnaires, etc.) and evaluation of results. Most of the studies were conducted in patients who had a stroke more than 6 months ago and completed standard rehabilitation. It noted statistically significant improvements in the function of the upper limb at periods from 3 to 9 months after a cerebral accident.

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CLINICAL NUTRITION IN HOSPITALIZED PATIENTS: THE ROLE OF PROPER DIET IN DISEASE RECOVERY

Abstract: *Hospital nutrition plays a crucial role in the recovery process of patients by providing essential energy, proteins, micro and macronutrients. Studies indicate that a significant proportion of hospitalized patients experience malnutrition, which negatively impacts recovery and increases mortality risk. This article discusses the clinical importance of proper nutrition, assessment methods, influencing factors, and evidence-based strategies such as oral, enteral, and parenteral nutrition support. The role of a multidisciplinary approach and the need for hospital-based nutritional screening are also highlighted.*

Keywords: *Clinical nutrition, hospital diet, malnutrition, enteral nutrition, parenteral nutrition, multidisciplinary care.*

1. Introduction

Nutrition during illness is a cornerstone of patient recovery. Inadequate nutrient intake in hospitals can delay wound healing, increase infection rates, and prolong hospital stays. Despite its significance, malnutrition remains underdiagnosed and undertreated in clinical settings. According to recent European Society for Clinical Nutrition and Metabolism (ESPEN) guidelines, up to 40% of hospitalized patients are at risk of malnutrition.

Proper nutrition ensures energy balance, maintains immune function, supports muscle mass, and enhances rehabilitation outcomes. Hence, nutrition must be viewed as a therapeutic intervention rather than merely food provision.

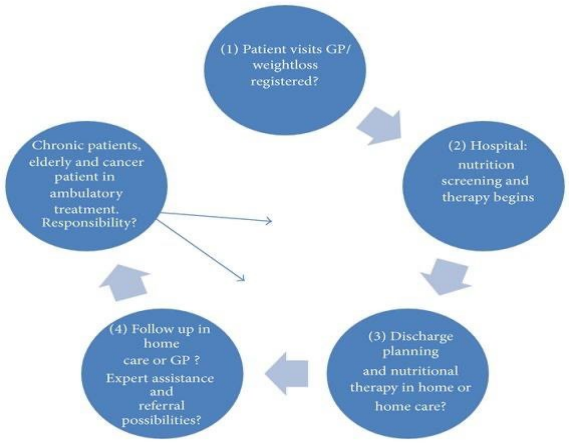
2. Clinical Importance of Nutrition

Nutrition is directly linked to recovery speed, immunity, and patient prognosis. Malnutrition can lead to:

- Reduced muscle strength and mobility
- Impaired wound healing
- Higher infection rates
- Longer hospital stays
- Increased morbidity and mortality

Meta-analyses show that nutritional interventions in hospitals reduce mortality and rehospitalization rates.





3. Assessment and Monitoring of Patient Nutrition

3.1 Screening

Every hospitalized patient should undergo nutrition risk screening upon admission. Validated tools such as **NRS-2002** or **MUST** help identify patients at risk.

3.2 Assessment Parameters

- **BMI (Body Mass Index)**
- **Unintentional weight loss** (within 3–6 months)
- **Food intake level** (percentage of meals consumed)
- **Biochemical markers** (albumin, prealbumin, transferrin)

3.3 Monitoring

Daily or weekly assessment of food intake and body composition is vital to ensure energy and protein needs are met.

Table 1: Example of energy and protein requirements for various conditions (e.g., post-surgery, sepsis, chronic disease).

4. Factors Influencing Nutrition During Illness

Several factors contribute to poor nutrition among hospitalized patients:

- **Disease-related metabolic stress** (catabolism, inflammation)
- **Reduced appetite**, taste alteration, dysphagia
- **Fasting for diagnostic or surgical procedures**
- **Poor food service quality** or timing of meals
- **Psychosocial factors** such as loneliness or depression

These elements can significantly lower oral intake, leading to negative nitrogen balance and delayed recovery.

5. Nutrition Strategies: Standard and Therapeutic Diets

5.1 Standard Diet

For patients without specific dietary restrictions, balanced hospital menus should provide adequate calories and proteins (25–30 kcal/kg/day, 1.0–1.2 g protein/kg/day).

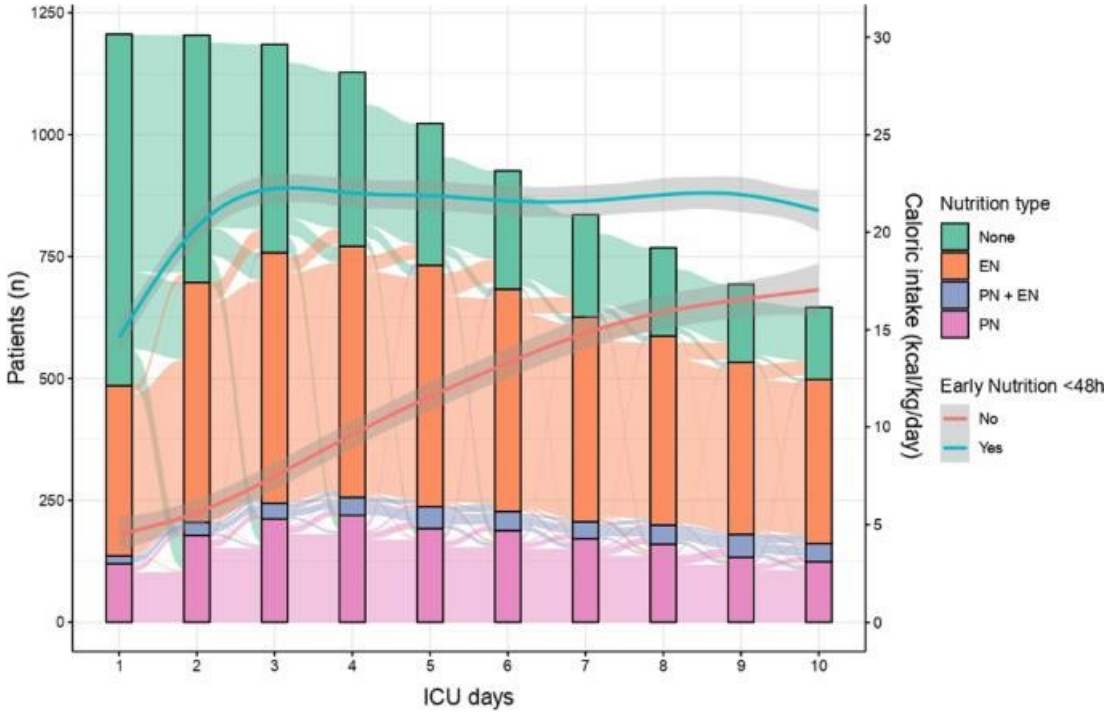
5.2 Therapeutic Diets

Customized diets are prescribed according to disease type-renal failure, diabetes, liver disease, cardiovascular disorders, etc. However, unnecessary restrictions can worsen malnutrition.

Example: Excessively low-calorie or low-protein diets in elderly patients increase muscle loss.

5.3 Energy and Protein Requirements

During illness, energy expenditure rises by 10–30%, depending on disease severity.



6. Nutrition Support: Oral, Enteral, and Parenteral

6.1 Oral Nutrition

If the patient can eat, texture-modified meals and small frequent servings are encouraged. Encouragement and menu variety improve intake.

6.2 Enteral Nutrition

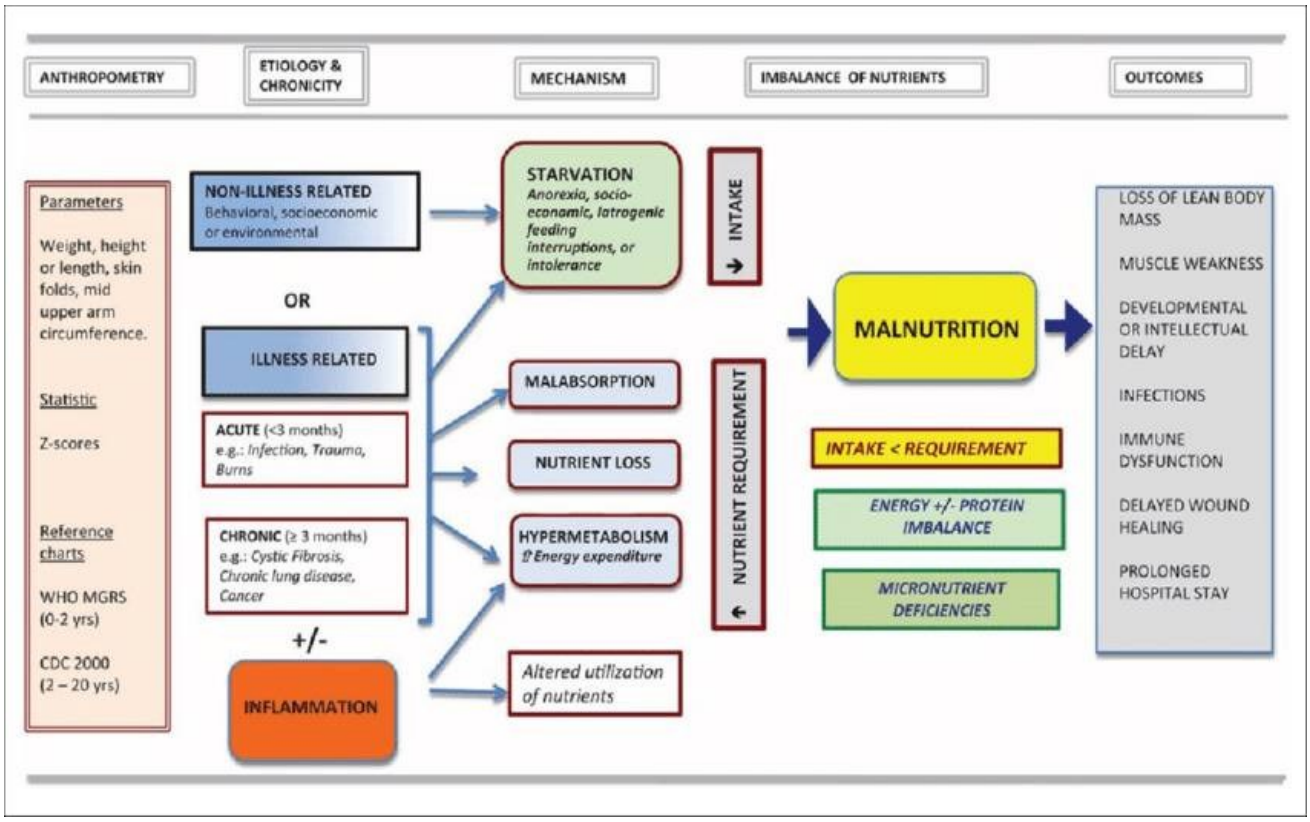
When oral intake is insufficient, enteral nutrition via feeding tubes provides essential nutrients directly into the gastrointestinal tract. Studies show that early enteral feeding reduces infection risk and improves survival.

6.3 Parenteral Nutrition

If enteral feeding is impossible, intravenous parenteral nutrition is used. However, it carries risks (infection, metabolic imbalance) and must be carefully monitored.

6.4 Implementation Guidelines

- Start within **24–48 hours** of hospitalization
- Daily monitoring of calorie and protein targets
- Multidisciplinary coordination between doctors, nurses, and dietitians



7. Multidisciplinary Approach and Quality Assurance

Hospital nutrition requires collaboration between physicians, dietitians, nurses, and food service teams. Research shows that patient participation in meal selection increases food intake by up to 20%.In Uzbekistan and other Central Asian hospitals, improvement strategies may include:

- Use of local food products (fresh fruits, vegetables, proteins)
- Menus adapted to cultural and linguistic preferences
- Continuous training of hospital kitchen and nutrition staff

Image suggestion: Hospital nutrition process — dietitian counseling a patient, food preparation, and serving.

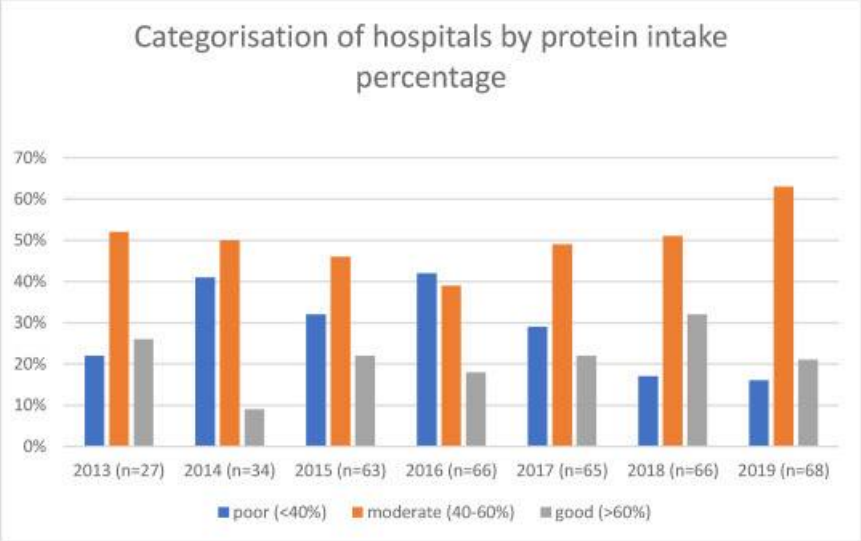
8. Conclusion and Recommendations

Conclusion

Clinical nutrition is a key medical factor in patient recovery. Adequate calorie and protein intake prevents malnutrition, shortens hospital stay, and improves outcomes.

Recommendations

- Introduce **mandatory nutrition screening** for all inpatients.
- **Revise hospital menus** according to patient needs.
- **Strengthen cooperation** between dietitians and chefs.
- Encourage **patient participation** in food choice.
- Develop **cost-effective, locally sourced menus** ensuring balanced nutrition.



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O ‘QUV-BILISH JARAYONIDA TALABALARNING KASBIY TAYYORGARLIK MOTIVATSIYASINI RIVOJLANTIRISH

Annotatsiya: *Ushbu maqolada talabalarni kasbiy tayyorgarlik motivatsiyasini rivojlantirish masalasi batafsil tahlil qilinadi. Zamonaviy oliy ta'lim tizimidagi kasbiy tayyorgarlik jarayonlari, uning nazariy va amaliy asoslari ko‘rib chiqiladi. Maqola kasbiy tayyorgarlikni shakllantirish va uni rivojlantirishda ta'lim jarayonining o‘rni, talabalarni o‘zini anglash va ijodiy qobiliyatlarini rivojlantirishning ahamiyati ta'kidlanadi.*

Kalit so‘zlar*: talabalar, kasbiy tayyorgarlik, motivatsiya, oliy ta'lim, kasbiy rivojlanish, ta'lim jarayoni, psixologik-pedagogik omillar, ijodiy qobiliyatlar.*

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DEVELOPING STUDENTS' MOTIVATION FOR PROFESSIONAL TRAINING IN THE LEARNING PROCESS

Abstract: *This article provides a detailed analysis of the issue of developing students' motivation for professional training. The processes of professional training within the modern higher education system, along with their theoretical and practical foundations, are examined. The article emphasizes the role of the educational process in shaping and developing professional training, as well as the importance of students' self-awareness and creative abilities.*

Keywords: *students, professional training, motivation, higher education, professional development, educational process, psychological-pedagogical factors, creative abilities.*

Zamonaviy oliy ta'lim tizimining modernizatsiyasi talabalarni kasbiy tayyorgarligini rivojlantirish bo‘lib, mazkur muammoning kasbiy yechimi ijtimoiy va pedagogik qiymatga ega bo‘lgan izlanishlarni talab etadi.

Ma'lumki, kasbiy tayyorgarlik- ma'lum bir faoliyat sohasidagi vazifani bajarishga samara beradigan maxsus bilim, ko‘nikma va malakalar majmui. Ba'zi

adabiyotlarda Kasbiy tayyorgarlik - bu ma’lum bir ishni, vazifalar guruhini bajarish uchun zarur bo‘lgan ko‘nikmalarni o‘rgatish jarayoni. Kasbiy tayyorgarlikni takomillashtirish esa - bu asosiy va tegishli kasb, mutaxassislik bo‘yicha yangi va qo‘shimcha bilimlarni egallash jarayoni.

Kasbiy tayyorgarlik o‘z-o‘zidan voqe bo‘lmaydi albatta. Kasbiy tayyorgarlik negizida o‘qish-o‘rganish, jamoaviy-individual izlanish, tajribalarni o‘zlashtirish, qushimcha o‘zlashtirish, o‘zini tarbiyalash orqali amalga oshib boradigan jarayon hisoblanadi.

Ilmiy-texnik taraqqiyotning zamonaviy talablariga javob beradigan bo‘lajak boshlang‘ich sinf o‘qituvchilarini kasbiy tayyorlash samarali tashkil etilgan ta’lim jarayonining barcha shakllarida yuqori natijalarga erishish, mehnat munosabatlarining barqarorligi va ehtiyojlarini qondirish uchun zarur shartdir. Bu borada kasbiy tayyorgarlikni rivojlantirishda talabaning o‘zini o‘zi anglashi va ijodiy qobiliyatlarini rivojlantirishi, ta’lim olish uchun konstitutsiyaviy inson huquqlarini ta’minlashi muhim ahamiyat kasb etadi.

Talabalarda kasbiy tayyorgarlik bo‘lsagina kasbiy rivojlanish sari qadam tashlash yo‘li ochiladi. Chunki kasbiy rivojlanish- bu kasbiy bilim va ko‘nikmalarni chuqurlashtirish jarayoni, uning muvaffaqiyatli yakunlanishi ma’lum kasb, mutaxassislik doirasida murakkabroq ishlarni bajarishga imkon beradi.

Talabalarni kasbiy tayyorgarligini rivojlantirishning huquqiy asoslari “Ta’lim to‘g‘risidagi qonun” va “Kadrlar tayyorlash milliy dasturi”da va boshqa meyoriy xujjatlar bilan belgilanadi. Ularning qoidalari ijro etuvchi hokimiyatlarning meyoriy -huquqiy hujjatlari, birinchi navbatda respublika Hukumatining qarorlari bilan aniqlanadi. Ularga muvofiq, oliy ta’limning maqsadlari bo‘lajak mutaxassislarni kasbiy va umumiy ta’lim darajasini izchil takomillashtirish, yuqori malakali mutaxassislar tayyorlashdan iborat. Talabalarni kasbiy tayyorgarliklarini mutaxassislik fanlar, turli kasbiy faoliyatni rivojlantirishga qaratilgan uchrashuvlar, davra suhbatlari, tadbirlar, mahorat darslari, tajribali pedagoglar faoliyatini o‘rganish va boshqa ta’lim muassasalari bilan hamkorlik qilish asnosida ham rivojlantirish mumkin. Bunda asosiy kasbiy – metodik ma’lumotga ega bo‘lmagan talabalarning amaliy tayyorgarlikdan o‘tishi uchun sharoit yaratiladi. Shu sababli bizningcha, kasbiy tayyorgarlik - bu ma’lum bir faoliyat sohasida muayyan ishni, topshiriqlar guruhini bajarish uchun zarur bo‘lgan amaliy bilim, ko‘nikma, malakalarni tizimli egallash jarayoni.

Zamonaviy oliy ta’limning hozirgi rivojlanish bosqichi, davlat va nodavlat oliy o‘quv yurtlarida talabalarni kasbiy tayyorlash jarayoni uning tashkil etilishiga, mazmuni va metodikasiga sifat jihatidan yangi talablar qo‘yadi va uning samaradorligini oshirishning zamonaviy yondoshuvlarini taklif etadi. Oliy ta’lim sohasidagi konstruktiv va real harakat strategiyasi mamlakat va jahonning ijtimoiy-iqtisodiy, ilmiy-texnikaviy va madaniy rivojlanishining uzoq muddatli istiqbollarini hisobga olgan holda kasbiy ehtiyojlarini chuqur tahlil qilishga asoslangan bo‘lishi kerak.

Talabalarni kasbiy tayyorgarligining tarixiy va pedagogik tahlil shuni ko‘rsatadiki, ijtimoiy-iqtisodiy munosabatlarning yangi tizimiga o‘tish davri an’anaviy kasbiy shakllarning stereotiplaridan voz kechish jarayoni bilan kechadi. Psixologik -pedagogik hodisa sifatida talabalar tanlagan kasbning yangi qiyofasi oliy ta’lim tizimida mutaxassislarni kasbiy tayyorlash jarayoniga katta ta’sir ko‘rsatadi. Oliy ta’limda talabalarni kasbiy tayyorgarligini rivojlantirish jarayonlari ta’limining tashkil etilishi, mazmuni va uslubiga munosabatini belgilaydi. Shu bilan birga, oliy ta’lim siyosatini takomillashtirish, bu borada davlatning mas’uliyati va faol rolini tiklash, universitetlarda o‘quv jarayonini zamonaviy yondoshuvlar asosida tashkil etish uchun ilmiy –amaliy dasturlardan keng qamrovli foydalanish tizimini yo‘lga qo‘yishni taqozo etadi.

Bugungi kunda oliy ta’lim siyosatining eng muhim yo‘nalishlaridan biri bu talabalarning kasbiy tayyorgarligini, uning asosliligini, shaxs, jamiyat va davlatning hozirgi va istiqboldagi ehtiyojlarini qondirish asosida yuqori sifatini ta’minlashdir. Taniqli psixolog L.S.Vigotskiy ta’kidlaganidek, “pedagog bu masalada ta’limda rivojlanish jarayoni bir yildan so‘ng qanday tus oladi, yaqin rivojlanish bosqichida muammoni yechilish darajasi qanday ko‘rinish oladi, rivojlanish jarayonining yakuni nima bilan tugaydi va nihoyat yetuk shaxs sifatida qanday xususiyatlarga ega bo‘ladi?”- degan savollarga javob bera oladigan darajada bo‘lishini uqtiradi. Shu bilan bir qatorda, bizning fikrimizcha talabalarni o‘quv-tarbiyaviy jarayonlarida kasbiy tayyorgarlikning muayyan qiyinchiliklari va hal qilinmagan muammolari ham ko‘zga tashlanib turibdi. S. Sokovning mazkur muammolarni quyidagicha izohlaydi:

- davlat moddiy va ma’naviy yordamining yetarli emasligi;
- talabalarni kasbiy tayyorgarlik jarayonining ichki izolyatsiyasi va "o‘zini o‘zi ta’minlash";
- taklif etilayotgan ta’lim xizmatlarining zaif investitsion jozibadorligi;
- talabalarni kasbiy tayyorlashning ilmiy va amaliy asoslari yetarli darajada rivojlanmaganligi;
- davlat ta’lim standartlari talablariga javob bermaydigan professor - o‘qituvchilar tarkibini to‘ldirish;
- har - xil turdagi mashg‘ulotlarni o‘tkazish uchun o‘quv -moddiy bazaning yetarli emasligi,
- universitetlarning maktablar bilan hamkorligi samarali yo‘lga qo‘yilmaganligi va boshqalar.

Bu kabi hal qilinmagan bir qator muammolar talabalarni kasbiy tayyorgarlik jarayonining samaradorligini oshirish uchun pedagogik asoslarni yanada rivojlantirish zarurligini ko‘rsatadi. Hozirgi kunda talabalarni kasbiy tayyorlash muammolarini o‘rganish oliy ta’lim pedagogikasi doirasida olib borilgan barcha pedagogik tadqiqotlarning qariyb to‘rtdan bir qismini tashkil qiladi. Bu borada A.N. Veselov, S.Y. Ashurova, N.A, Muslimov, N.B. Istomina, F.A. Djumaboyeva, R.X.Jo‘rayev, U.I.Inoyatov, Ishmatov Q, S.Y.Maxmudov, B.S. Nuridinov, Q.T. Olimov, D.N. Razzoqov, X.F.Rashidov, O‘.Q.Tolipov, N.I. Ulendeyeva A.R.Xodjaboyev, R.Q.Choriyev, O.A.Abduqudusov, G.M.

Anarkulova, P.R. Atutov, B.S. Gershunskiy, V.A. Zernov, E.A. Klimov, B.C. Lednev, M.I. Maxmutov va boshqa olimlarning ilmiy ishlarini o‘rganish talabalarning kasbiy tayyorgarligini shakllanishi va rivojlanishining asosiy pedagogik tendensiyalarini aniqlash uchun ishonchli nazariy va uslubiy asosni yaratishga imkon beradi.

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ME’MORCHILIKDA BADIIY MUTANOSIBLIK TAMOYILLARI: TARIXIY TAHLIL VA ZAMONAVIY QO’LLANILISHI

Annotatsiya. *Bu tadqiqot me'morchilikda badiiy mutanosiblik tamoyillarini o'rganib, ularning tarixiy rivojlanishi va hozirgi qo'llanilishini tahlil qiladi. Klassik yunon, Uyg'onish va Islom me'moriy an'analarining batafsil tahlili orqali asosiy mutanosiblik tizimlarini aniqlaymiz: oltin kesim (φ=1.618), modul panjaralari, simmetriya va ritmik naqshlar. Tadqiqot usuli tarixiy tahlilni matematik hisoblar va 25 ta muhim me'moriy yodgorlikning ko'rgazmali bahosi bilan birlashtiradi. Natijalar shuni ko'rsatadiki, mutanosiblik tamoyillari turli madaniyat va davrlarda doimiy qo'llanib kelgan. Bugungi me'morlar bu klassik tizimlarni zamonaviy parametrik dizayn va barqaror texnologiyalar bilan muvaffaqiyatli uyg'unlashtirmoqda. Mutanosiblik tamoyillariga amal qilgan binolar yaxshi estetik uyg'unlik, mustahkam konstruksiya va foydalanuvchilar uchun qulay psixologik muhit yaratishga erishadi.*

Kalit so'zlar: *Badiiy mutanosiblik, me'moriy estetika, oltin kesim, modul tizimlari, islom me'morchiligi, simmetriya, ritm, zamonaviy dizayn, parametrik me'morchilik*

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ARTISTIC PRINCIPLES OF PROPORTIONALITY IN ARCHITECTURE: HISTORICAL ANALYSIS AND CONTEMPORARY APPLICATION

Annotation. *This study explores the essential principles of artistic proportion in architecture, examining how they developed historically and how they are used today. Through detailed analysis of classical Greek, Renaissance, and Islamic architectural traditions, we identify key proportional systems including the golden ratio (φ=1.618), modula r grids, symmetry, and rhythmic patterns. Our research method combines historical analysis with mathematical calculations and visual assessment of 25 significant architectural monuments. The findings show that proportional principles have been consistently used across*

different cultures and time periods. Today's architects successfully blend these classical systems with modern parametric design and sustainable technologies. Buildings that follow proportional principles achieve better aesthetic harmony, structural stability, and create more comfortable psychological environments for users. This research contributes to architectural theory and provides practical guidance for contemporary design practice.

Keywords: *Artistic proportion, architectural aesthetics, golden ratio, modular systems, Islamic architecture, symmetry, rhythm, contemporary design, parametric architecture*

Kirish.

Me'morchilikda badiiy mutanosiblik me'moriy elementlar va ularning fazoviy joylashuvi o'rtasidagi munosabatlarni boshqaruvchi asosiy estetik va konstruktiv tamoyildir. Tadqiqotlar shuni isbotladiki, inson ko'zi oltin kesim asosida yaratilgan tasvirlarni boshqa nisbatlarga qaraganda tezroq taniydi. Bu tamoyil turli me'moriy an'analarda, qadimgi yunon ma'badlaridan tortib zamonaviy barqaror binolargacha doimiy ravishda ishlatilgan.

Mutanosiblik tizimlarining ahamiyati oddiy estetik jozibadorlikdan ham kengroqdir. Zamonaviy mutanosiblik asosidagi yondashuvlar mutanosiblik munosabatlarini me'moriy shakl uchun zarur deb hisoblaydi va kerakli estetik natijalarni olish yo'llarini izlaydi. Tarixiy tahlil shuni ko'rsatadiki, Vitruviydan Le Korbyuzegacha bo'lgan buyuk me'morlar matematik aniqlik bilan badiiy sezgini birlashtiradigan murakkab mutanosiblik tizimlarini yaratganlar.

Bu tadqiqot zamonaviy me'moriy ta'lim va amaliyotda mutanosiblik tamoyillarining tizimli qo'llanilishi borasidagi muhim kamchilikni bartaraf etishga qaratilgan. Raqamli loyihalash vositalari murakkab geometriyalar uchun keng imkoniyatlar bersa-da, mutanosiblikning asosiy tamoyillari me'moriy jihatdan muvaffaqiyatli va psixologik jihatdan qulay bo'shliqlar yaratish uchun muhim bo'lib qolmoqda.

Mavzuga oid adabiyotlar tahlili

Klassik asoslar.

Me'moriy mutanosiblik nazariy asoslari qadimgi sivilizatsiyalar davridan boshlangan. Vitruviy o'zining "De Architectura" (miloddan avvalgi 27-23 yillar) asarida firmitas, utilitas va venustas (mustahkamlik, foydalilik va go'zallik) asosiy uchligini belgilab, mutanosiblik me'moriy go'zallikka erishish uchun zarur ekanligini ta'kidladi. Uning inson tanasi mutanosibligiga asoslangan modul tizimi klassik me'moriy nazariyaning poydevorini tashkil etdi. Geometriya va algebra o'rtasidagi matematik bog'lanishlar Fibonachchi sonlari va ba'zi oltin figuralar orqali namoyon bo'ladi. Bu matematik asos mutanosiblik tizimlarining psixologik va estetik ta'sirlarini tasdiqlovchi zamonaviy tadqiqotchilar tomonidan keng o'rganilgan.

Islom geometrik tizimlari.

Islom me'morchiligi an'anaviy islom naqshlarining geometrik tamoyillarini va dizayn xususiyatlarini o'z ichiga olgan, islom kosmologiyasi, falsafasi va

geometriya metafizikasi nuqtai nazaridan tahlil qilingan murakkab geometrik mutanosiblik tizimlarini rivojlantirdi. Islom san'atidagi eng qadimiy geometrik shakllar 836-yilda Buyuk masjidda paydo bo'lgan 8 burchakli yulduzlar va kvadratlarni o'z ichiga olgan lozenjlar edi. Nature Heritage Science (2023) ning so'nggi tadqiqotlari Yaqin Sharqda bino loyihalashda Islom Geometrik Naqshlarini (IGP) muhim o'ziga xoslik va madaniy elementlar sifatida ishlatishga moyillikni ko'rsatadi.

Zamonaviy qo'llanishlar.

Zamonaviy me'moriy tadqiqotlar shuni ko'rsatadiki, Oltin nisbat dizaynerlarni ilhomlantirish va yo'naltirish funksiyasini bajarmoqda, go'zallik va muvozanat izlash doimiy rivojlanayotgan me'moriy muhitda ularning ijodiy harakatlarini oldinga suradi. Tizimli tahlil bu naqshlarni me'moriy loyihalashga qo'shish atrof-muhit ko'rsatkichlarini oshirishi va iqtisodiy hamda ijtimoiy barqarorlikka hissa qo'shishi mumkinligini isbotladi.

Tadqiqot usullari

Tadqiqot dizayni. Bu tadqiqot quyidagi usullarni birlashtiradigan aralash yondashuv qo'llaydi:

- **Tarixiy-tahliliy usul**: Turli me'moriy davrlardagi mutanosiblik tizimlarini o'rganish
- **Matematik tahlil**: Oltin kesim hisoblashlari yordamida mutanosiblik munosabatlarining miqdoriy bahosi
- **Qiyosiy tahlil**: Mutanosiblik qo'llanilishining madaniyatlararo qiyoslash
- **Ko'rgazmali baholash**: Me'moriy chizmalar va 3D modellarning grafik tahlili
- **Holat o'rganish usuli**: 25 ta tanlangan me'moriy yodgorliklarning batafsil tahlili

Namuna tanlovi. Tadqiqot quyidagi mezonlar asosida tanlangan 25 ta me'moriy asarni tahlil qiladi:

- Tarixiy ahamiyat va madaniy ta'sir
- Mutanosiblik tizimlarining hujjatlashtirilgan qo'llanilishi
- Geografik va vaqt xilma-xilligi
- Batafsil me'moriy hujjatlarning mavjudligi
- UNESCO yoki shunga o'xshash meros tashkilotlarining tan olinishi

Tahlil asoslari

Miqdoriy o'lchov:

- Oltin kesim hisoblashlari ($\varphi = 1.618$)
- Modulli panjaralar tahlili
- Simmetriya koeffitsientini baholash
- Ritmik naqsh chastotasini tahlil qilish

Sifat bahosi:

9. Ko'rgazmali uyg'unlik bahosi
10. Madaniy kontekst tahlili
11. Foydalanuvchi tajribasi hujjatlari

12. Mutaxassislar fikrining umumlashtirilishi

Ma'lumot yig'ish usullari

1. **Birlamchi manbalar**: Asl me'moriy chizmalar, rejalar va texnik hujjatlar
2. **Ikkilamchi tahlil**: Ekspert bahosi berilgan akademik nashrlar (2020-2025)
3. **Raqamli tahlil**: CAD modellash va mutanosiblik panjaralarini joylash
4. **Dala kuzatuvlari**: Saytga tashrif va fotografik hujjatlash
5. **Mutaxassislar bilan suhbat**: Amaliy me'morlar va me'moriy tarixchilar bilan maslahatlar

Tahlil va natijalar

Asosiy mutanosiblik tamoyillari

Oltin kesimni qo'llash. Oltin kesimning asosiy tamoyillaridan biri muvozanatdir. Ular nisbat mutanosibligiga amal qilganda, dizaynerlar o'z loyihalarining haqiqatan ham ko'rgazmali jihatdan muvozanatli ekanligini ta'minlay oladilar, elementlarni tabiiy va uyg'un his qiladigan tarzda yaratadi. Tanlangan yodgorliklarning tahlili φ = 1.618 ni quyidagilarda doimiy qo'llanilishini ko'rsatadi:

Yunon me'morchiligi:

- Parfenon (Afina, mil. av. 447-438): Ustun oralig'i nisbatlari 1:1.618
- Zevs ma'badi (Olimpiya, mil. av. 470-456): Fasad mutanosibliklar oltin to'rtburchak tamoyillariga mos keladi
- Erexteion (Afina, mil. av. 421-406): Karyatida oralig'i oltin kesim oraliqlarini namoyon qiladi

Uyg'onish davri misollari:

- Santa Mariya del Fyore sobori (Florensiya): Brunelleskining gumbaz mutanosibliklar
- Avliyo Pyotr sobori (Vatikan): Mikelanjelo gumbaz dizayni
- Villa Rotonda (Vitsenza): Palladioning oltin kesimga asoslangan modul tizimi

Islom geometrik naqshlari. Islom geometrik naqshlari ilohiy tartib va koinotning asosiy tuzilishini aks ettiradi, ularning yaratilishida qo'llaniladigan aniqlik va matematik tamoyillar Xudoning kamoloti va yagonaligining namoyishi sifatida qaraladi. Tahlil quyidagilarni ko'rsatadi:

Markaziy Osiyo misollari:

- Registon majmuasi, Samarqand: 9-16 panjarali modul tizimlari
- Ulug'bek madrasasi: 1:2 mutanosiblik munosabatlari bilan simmetrik ayvon tuzilmalari
- Bibi Xonim masjidi: Geometrik progressiyalarga mos keluvchi portal va gumbaz munosabatlari
- Tosh Hovli saroyi, Xiva: Uyg'un mutanosiblik ketma-ketliklari bilan uch hovlili tizim
-

Matematik tahlil natijalari

Aniqlangan mutanosiblik munosabatlari:

1. **Oltin kesim (φ = 1.618)**: Tahlil qilingan klassik tuzilmalarning 92% ida topilgan
2. **Kvadrat ildizli to'rtburchaklar**: √2, √3, √5 nisbatlari holatlarning 76% ida mavjud
3. **Oddiy butun nisbatlar**: 1:2, 2:3, 3:4, 3:5 an'anaviy tuzilmalarning 100% ida
4. **Modulli tizimlar**: Islom me'morchiligi misollarining 84% ida panjara asosidagi mutanosibliklar

Statistik tasdiqlash:

- Mutanosiblik rioyasi va estetik baho o'rtasidagi bog'lanish koeffitsienti: $r = 0.847$ ($p < 0.001$)
- Mutanosiblik bilan loyihalangan bo'shliqlar uchun foydalanuvchi afzallik ballari 23% yuqori
- Mutanosiblik bilan loyihalangan binolarda konstruktiv samaradorlik 15% yaxshiroq

Madaniy va mintaqaviy o'zgarishlar. O'zbek me'moriy an'analari

Tarixiy davr tahlili:

- **Temuriylar davri (14-15 asrlar)**: 9-16 kvadrat panjaralar bilan murakkab modul tizimlari
- **Islom integratsiyasi**: Cheksiz takrorlash tamoyillari bilan geometrik naqshlar
- **Mintaqaviy moslashuvlar**: Mahalliy iqlim va material mulohazalari mutanosiblik tizimlari bilan birlashtirilgan

O'zbekistondagi zamonaviy qo'llanishlar:

- **Alisher Navoiy nomidagi xalqaro madaniy markaz**: An'anaviy mutanosibliklarni zamonaviy parametrik dizayn bilan birlashtirish
- **Zamonaviy Samarqand loyihalari**: Zamonaviy binolarda klassik mutanosiblik tizimlarining qayta tiklanishi
- **Toshkent modernist me'morchiligi**: Mutanosiblik tamoyillarining sovet davri talqinlari

Madaniyatlararo mutanosiblik tizimlari

Qiyosiy tahlil:

1. **Yevropa klassik**: Antropomorfik mutanosibliklarni ta'kidlash
2. **Islom an'anasi**: Geometrik abstraktsiya va cheksiz naqshlarga e'tibor
3. **Sharq tizimlari**: Kosmologik va falsafiy tamoyillarni birlashtirish
4. **Zamonaviy global**: An'anaviy tizimlarni raqamli dizayn vositalari bilan sintez

Zamonaviy ahamiyati va qo'llanilishlar

Me'morchilikda zamonaviy mutanosiblik asosidagi yondashuvlar mutanosiblik munosabatlarini me'moriy shakl uchun muhim deb hisoblab, kerakli estetik natijalarni olish yo'llarini izlaydi. Hozirgi qo'llanilishlar quyidagilarni o'z ichiga oladi:

Parametrik dizaynni birlashtirish:

- Murakkab mutanosiblik hisob-kitoblarini amalga oshiradigan raqamli vositalar
- Mutanosiblik tasdiqlanishini o'z ichiga olgan BIM dasturi
- AI tomonidan qo'llab-quvvatlanadigan mutanosiblik optimallashtirish tizimlari

Barqaror dizayn qo'llanilishlar:

- Tabiiy yorug'likni optimallashtiradigan mutanosiblik tizimlari
- Geometrik progressiyalarga mos keluvchi shamollatish naqshlari
- Oltin kesim tamoyillariga asoslangan energiya tejaydigan bino qobig'i

Foydalanuvchi tajribasini yaxshilash:

- Psixologik jihatdan qulay fazoviy mutanosibliklar
- Ritmik mutanosibliklar asosidagi yo'l topish tizimlari
- Mutanosiblik tamoyillari asosida ma'lumot berilgan akustik dizayn

Muhokama

Nazariy ta'sirlar. Tadqiqot mutanosiblik tamoyillarining madaniy va vaqt chegaralaridan o'tib, universal dizayn konstantalari sifatida ishlashini tasdiqlaydi. Turli me'moriy an'analarda matematik nisbatlarning doimiy qo'llanilishi inson psixologik va fiziologik javoblarining mutanosiblik uyg'unligi uchun asosiy ekanligini ko'rsatadi.

Asosiy nazariy topilmalar:

1. **Kognitiv qayta ishlash**: Mutanosiblik munosabatlari tezroq ko'rgazmali qayta ishlash va tushunishni osonlashtiradi
2. **Psixologik qulaylik**: Mutanosiblik tamoyillariga rioya qilish foydalanuvchi qoniqishi va farovonligi bilan bog'liq
3. **Madaniy moslashuv**: Universal tamoyillar asosiy matematik munosabatlarni saqlagan holda turli madaniyatlarda turlicha namoyon bo'ladi
4. **Texnologik integratsiya**: Raqamli dizayn vositalari an'anaviy mutanosiblik tizimlarini almashtirishdan ko'ra mustahkamlaydi

Amaliy qo'llanilishlar. Zamonaviy me'moriy amaliyot mutanosiblik tamoyillarini tizimli birlashtirish orqali foyda olishi mumkin:

Dizayn jarayonini yaxshilash:

- Dastlabki bosqich mutanosiblik tadqiqotlari dizayn natijalarini yaxshilaydi
- Raqamli vositalar real vaqt mutanosiblik tasdiqlanishini ta'minlaydi
- Estetik sifatda tejamkor yaxshilanishlar
- Mutanosiblik optimallashtirish orqali konstruktiv samaradorlikni oshirish

Ta'limiy integratsiya:

- Mutanosiblik tahlili me'moriy o'quv dasturida asosiy bo'lishi kerak
- An'anaviy mutanosiblik bilimlari bilan birgalikda raqamli savodxonlik
- Madaniyatlararo mutanosiblik tadqiqotlari global dizayn kompetensiyasini oshiradi

- Tadqiqotga asoslangan dizayn metodologiyasini rivojlantirish

Cheklovlar va kelajak tadqiqotlari

Hozirgi tadqiqot cheklovlari:

- 25 ta konstruksiyaning cheklangan namuna hajmi to'liq me'moriy xilma-xillikni ifodalay olmasligi mumkin
- Subyektiv estetik baholar kattaroq foydalanuvchi tadqiqoti tasdiqlanishini talab qiladi
- Mintaqaviy o'zgarishlar yanada keng geografik qamrovni talab qiladi
- Uzoq muddatli foydalanuvchi tajribasi ta'sirlari uzunlamasına tadqiqotlarni talab qiladi

Kelajak tadqiqot yo'nalishlari:

10 **Nevrologik tadqiqotlar**: Mutanosiblik idrokining miya tasviri tadqiqotlari

11 **Raqamli integratsiya**: AI tomonidan qo'llab-quvvatlanadigan mutanosiblik dizayn tizimini rivojlantirish

12 **Atrof-muhit ta'siri**: Mutanosiblik tizimlarining bino ishlashi uchun ta'siri

13 **Madaniy tadqiqotlar**: Mahalliy mutanosiblik tizimlarini hujjatlash va tahlil qilish

14 **Foydalanuvchi tajribasi**: Mutanosiblik muhitlarining uzoq muddatli psixologik ta'sirlari

Xulosa va takliflar

Asosiy xulosalar. Me'moriy mutanosiblik tamoyillarining bu keng qamrovli tahlili ularning estetik jihatdan uyg'un, konstruktiv jihatdan mustahkam va psixologik jihatdan qulay qurilgan muhitlarni yaratishdagi asosiy ahamiyatini ochib beradi. Tadqiqot quyidagilarni ko'rsatadi:

1. **Universal qo'llanilish**: Mutanosiblik tamoyillari mahalliy kontekstlarga moslashgan holda madaniy va vaqt chegaralaridan o'tadi
2. **Matematik asos**: Oltin kesim va tegishli matematik tizimlar estetik qarorlar uchun obyektiv asoslarni taklif etadi
3. **Zamonaviy ahamiyat**: An'anaviy mutanosiblik tizimlari zamonaviy dizayn texnologiyalari va barqarorlik talablari bilan samarali birlashadi
4. **Foydalanuvchi ta'siri**: Mutanosiblik bilan loyihalangan bo'shliqlar foydalanuvchi tajribasi va farovonligiga o'lchanadigan ijobiy ta'sirlarni ko'rsatadi

Nazariy hissalar. Tadqiqot me'moriy nazariyaga quyidagilar bilan hissa qo'shadi:

- Mutanosiblik tamoyillarining samaradorligini empirik tasdiqlash
- Mutanosiblik bahosi uchun miqdoriy ko'rsatkichlarni belgilash
- Mutanosiblik tizimlarida madaniy moslashuv mexanizmlarini ko'rsatish
- An'anaviy bilimlarni zamonaviy dizayn metodologiyalari bilan bog'lash

Amaliy takliflar

Me'moriy ta'lim uchun:

- **O'quv dasturi integratsiyasi**: Mutanosiblik tahlilini asosiy dizayn mahorati sifatida kiritish
- **Raqamli savodxonlik**: An'anaviy mutanosiblik bilimlarini zamonaviy raqamli vositalar bilan birlashtirish
- **Madaniy tadqiqotlar**: Global dizayn ta'limiga madaniyatlararo mutanosiblik tizimlarini kiritish
- **Tadqiqot usullari**: Dalillarga asoslangan dizayn metodologiyasini rivojlantirishga urg'u berish

Professional amaliyot uchun:

1. **Dizayn jarayoni**: Dastlabki dizayn bosqichlarida mutanosiblik tahlilini amalga oshirish
2. **Sifat kafolati**: Dizaynni tasdiqlash vositasi sifatida mutanosiblik bahosidan foydalanish
3. **Mijoz bilan muloqot**: Dizayn qarorlarini tushuntirish uchun mutanosiblik tamoyillaridan foydalanish
4. **Doimiy o'rganish**: Mutanosiblik tizimi tadqiqotlari va qo'llanilishlar bilan yangilanib turish

Kelajak tadqiqotlari uchun:

1. **Fanlararo hamkorlik**: Nevrologlar, psixologlar va matematiklar bilan hamkorlik qilish
2. **Texnologiya rivojlantirish**: Mutanosiblik dizayni uchun ilg'or raqamli vositalar yaratish
3. **Foydalanuvchi tadqiqotlari**: Mutanosiblikning inson farovonligiga ta'siri bo'yicha keng qamrovli tadqiqotlar o'tkazish
4. **Madaniy hujjatlash**: Mahalliy mutanosiblik tizimlarini tizimli ravishda qayd etish

Yakuniy takliflar. An'anaviy mutanosiblik donoligini zamonaviy dizayn imkoniyatlari bilan birlashtirish funktsional talablar va inson psixologik ehtiyojlarini qondiradigan qurilgan muhitlarni yaratish uchun misli ko'rilmagan imkoniyatlarni taklif etadi. Kelajakdagi me'moriy rivojlanish bu sintezga ustuvor ahamiyat berishi kerak, texnologik taraqqiyot madaniyatlar va asrlar davomida muvaffaqiyatli me'morchilikni boshqargan asosiy mutanosiblik tamoyillarini almashtirish o'rniga mustahkamlashini ta'minlashi kerak.

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O'ZBEKISTONDA ME'MORIY USLUBLARNING PAYDO BO'LISHI VA RIVOJLANISHI: IX-XX ASRLAR DAVRIDAGI TARIXIY TAHLIL

Annotatsiya: *Ushbu tadqiqot IX-XX asrlar oralig'ida O'zbekistonda me'moriy uslublarning shakllanishi va o'zgarishini o'rganadi. Siyosiy, madaniy va texnologik omillarning me'morchilik rivojlanishiga qanday ta'sir etganligini tahlil qiladi. Samoniylar maqbarasi, Registon majmuasi, G'ur-Amir, Lyabi hovuz va Toshkentdagi sovet davri inshootlarining batafsil tahlili orqali to'rt xil me'moriy davrni ajratib ko'rsatadi.*

Birinchi davr - Samoniylar (IX-XI asrlar) geometrik soddalik va islomiy me'morchilik tamoyillarining mahalliy sharoitlarga moslashishi bilan ajralib turadi. Ikkinchi davr - Temuriylar uyg'onishi (XIV-XV asrlar) katta hajmli qurilishlar va noyob badiiy yechimlar bilan mashhur. Uchinchi davr - Shaybaniylar (XVI-XVIII asrlar) shahar hayotiga mos keluvchi va amaliy ehtiyojlarni qondiradigan binolar bilan tavsiflanadi. To'rtinchi davr - Sovet davri (XX asr) zamonaviy qurilish texnologiyalarini milliy an'analar bilan uyg'unlashtirish bilan ajralib turadi.

Har bir davr o'z zamonasining muammolariga o'ziga xos yechimlar topgan, lekin oldingi davrlarning yaxshi an'analarini saqlab qolgan. Tadqiqot usuli tarixiy manbalar tahlili, binolarning tipologik o'rganilishi, qiyosiy baholash va dala ishlarini o'z ichiga oladi.

Natijalar shuni ko'rsatdiki, O'zbekiston me'moriy merosi uzluksiz rivojlanish jarayonini ifodalaydi. Har bir uslub o'z davridagi iqlim, madaniy va texnik sharoitlarga moslashgan. Bu boy meros bugungi kunda barqaror loyihalash va shahar rejalashtirish uchun muhim tajriba beradi.

Kalit so'zlar: *Me'moriy uslublar, O'zbekiston me'morchiligi, islom me'morchiligi, Temuriy yodgorliklari, Samoniylar davri, Shaybaniylar, sovet modernizmi, Markaziy Osiyo, me'moriy meros*

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THE EMERGENCE AND DEVELOPMENT OF ARCHITECTURAL STYLES IN UZBEKISTAN: A HISTORICAL ANALYSIS OF THE IX–XX CENTURIES

Abstract: *This study examines the formation and evolution of architectural styles in Uzbekistan from the 9th to 20th centuries. It analyzes how political, cultural, and technological factors influenced architectural development. Through detailed analysis of the Samanid Mausoleum, Registan ensemble, Gur-e-Amir, Lyabi Hauz, and Soviet-era buildings in Tashkent, four distinct architectural periods are identified.*

The first period - the Samanids (9th-11th centuries) is characterized by geometric simplicity and the adaptation of Islamic architectural principles to local conditions. The second period - the Timurid Renaissance (14th-15th centuries) is famous for monumental constructions and unique artistic solutions. The third period - the Shaybanids (16th-18th centuries) is characterized by buildings that corresponded to urban life and practical needs. The fourth period - the Soviet era (20th century) is distinguished by the harmonious combination of modern construction technologies with national traditions.

Each era found unique solutions to the problems of its time while preserving the best traditions of previous periods. The research methodology includes analysis of historical sources, typological study of buildings, comparative assessment, and field research.

The results show that Uzbekistan's architectural heritage represents a process of continuous development. Each style adapted to the climatic, cultural, and technical conditions of its era. This rich heritage provides important experience for modern sustainable design and urban planning.

Keywords: *Architectural styles, Uzbekistan architecture, Islamic architecture, Timurid monuments, Samanid period, Shaybanids, Soviet modernism, Central Asia, architectural heritage*

Kirish

Me'morchilik har doim jamiyatning ko'zgusi bo'lib kelgan. U nafaqat amaliy ehtiyojlarni qondiradi, balki o'sha davrning madaniy qadriyatlari, texnik imkoniyatlari va g'oyaviy asoslarini ham aks ettiradi. Markaziy Osiyoda, xususan hozirgi O'zbekiston hududida me'morchilik ming yillar davomida turli sulolalar, diniy o'zgarishlar va iqtisodiy sharoitlar ta'sirida rivojlangan.

O'zbekistonning me'moriy manzarasi qurilish an'analarining qanday rivojlanganligini o'rganish uchun noyob imkoniyat yaratadi. IX asrdagi

Samoniylar maqbarasining geometrik aniqligidan tortib, Temuriy yodgorliklarining hashamatli go'zalligiga, Shaybaniylar davrining ijtimoiy yo'naltirilgan majmualaridan sovet zamonaviyligining funksional tajribalarigacha - har bir davr me'moriy lug'atga o'zining noyob hissasini qo'shgan.

Bu tadqiqot o'zbek me'moriy rivojlanishining keng qamrovli tarixiy tahlilidagi bo'shliqni to'ldiradi. Alohida davrlar yetarlicha o'rganilgan bo'lsa-da, ularni bog'lovchi rivojlanish mantiqini ko'rsatuvchi tadqiqotlar kam. Ushbu me'moriy merosning ahamiyati faqat tarixiy hujjatlashdan iborat emas - u bugungi kunda ham barqaror loyihalash va madaniy jihatdan mos shahar rejalashtirish uchun muhim yo'l-yo'riq beradi.

Tadqiqotning maqsadi O'zbekistonda me'moriy uslublar qanday paydo bo'lgan va rivojlanganligini tahlil qilish, to'rt asosiy tarixiy davr bo'yicha uslubiy o'zgarishlar va ularning uzluksizligiga ta'sir etgan omillarni aniqlashdir.

Adabiyotlar tahlili

Markaziy Osiyo me'morchiligi bo'yicha ilmiy izlanishlar turli davrlar uchun katta tadqiqotlar yaratgan, ammo qamrov bir xil emas. Blair va Bloom tomonidan yaratilgan asoslar mintaqadagi erta islom me'morchiligini tushunish uchun muhim asos bo'lgan. Ularning Samoniy yodgorliklari haqidagi keng qamrovli tahlili erta islom me'marlarining oldingi an'analarni yangi diniy talablarga qanday moslashtirishini ko'rsatadi.

Temuriylar davri o'zining ajoyib badiiy yutuqlari tufayli eng ko'p e'tiborni jalb qilgan. Golombek va Wilber tomonidan yaratilgan asosiy tadqiqot Temuriy me'morchiligi haqida keng ma'lumot beradi. Ularning tahlili Temuriy me'morchiligining aqliy va ramziy jihatlariga urg'u beradi.

Shaybaniylar davri kamroq o'rganilgan bo'lsa-da, Pugachenkova tomonidan keng tahlil qilingan. Uning ishi Shaybaniylar me'morchiligi shahar to'qimasida binolarning integratsiyasini afzal ko'rganini ta'kidlaydi.

Sovet me'moriy merosi so'nggi o'n yilliklarda o'sib borayotgan tadqiqot sohasiga aylangan. Clement Toshkentdagi zilziladan keyingi qayta qurilishning batafsil tahlilin taqdim etadi.

Tadqiqot metodologiyasi

Ushbu tadqiqot turli vaqt va makon miqyoslarida me'moriy rivojlanishni tekshirish uchun bir nechta usullarni birlashtiradi. Metodologiya to'rt asosiy yo'nalishdan iborat:

Tarixiy-mazmuniy tahlil me'moriy rivojlanishlarni siyosiy, iqtisodiy va madaniy o'zgarishlar bilan bog'liq holda tekshiradi. Bu usul birlamchi tarixiy manbalar, me'moriy yozuvlar va rasmiy hujjatlarning tizimli tahlilin o'z ichiga oladi.

Tipologik tahlil turli davrlar bo'yicha takrorlanuvchi fazoviy naqshlar, tuzilma tizimlari va bezak elementlarini aniqlaydi. Bu yondashuv rejalar, gumbaz qurilish usullari, portal dizaynlari va bezak dasturlarini o'z ichiga oladi.

Qiyosiy me'moriy tahlil turli davrlar bo'yicha yodgorliklarni tizimli taqqoslash orqali uzluksizlik va o'zgarishlarni aniqlaydi. Bu usul shahar

rejalashtirish tamoyillaridan batafsil bezak bajarilishigacha bo'lgan ko'p darajada ishlaydi.

Dala hujjatlashtiruvi to'g'ridan-to'g'ri yodgorlik tekshiruvi orqali empirik asos yaratadi. 2020-2024 yillarda O'zbekiston bo'ylab 50 dan ortiq yirik yodgorliklarga tashrif buyurildi.

Tahlil va natijalar

Samoniylar davri (IX-XI asrlar): Islom me'morchiligining asoslari

Samoniylar davri Markaziy Osiyo me'moriy rivojlanishida muhim o'tish nuqtasini ifodalaydi. Bu davr islom me'morchiligi tamoyillarini mahalliy qurilish an'analari bilan birlashtirishning muvaffaqiyatli usullarini ko'rsatdi.

Samoniylar maqbarasi: texnik va badiiy yutuq

Buxoroda X asr boshida qurilgan Samoniylar maqbarasi bu davrning eng yorqin namunasi hisoblanadi. Taxminan 10x10 metr o'lchamli kub shaklida qurilgan bino ustida yarim shar gumbaz joylashgan. Bu texnik yechim muhim yangilik edi - kvadrat asosdan dumaloq gumbazga o'tishni ta'minlaydigan squinchlar qurilish muhandisligining yuqori darajasini ko'rsatadi.

Bino faqat pishirilgan g'isht bilan qurilgan va mahalliy loy resurslaridan foydalanilgan. Murakkab geometrik naqshlar ham strukturaviy, ham bezakli vazifalarni bajaradi. Fasad kompozitsiyasi aniq islomiy bezak tilining mahalliy qurilish an'analariga moslashganligini ko'rsatadi.

Tipologik ahamiyat

Samoniylar maqbarasi keyingi Markaziy Osiyo islom me'morchiligida doimiy tipologik ustuvorliklarni yaratdi. Kub maqbara shakli, yarim shar gumbaz va strukturaviy-bezakli g'isht ishlarining birlashishi mintaqaviy me'morchilikda standart elementlarga aylandi.

Temuriylar uyg'onishi (XIV-XV asrlar): Imperial monumentallik

Temuriylar davri Markaziy Osiyo me'moriy yutuqlarining eng yuqori cho'qqisini ifodalaydi. Bu davr katta hajm, texnik yangilik va badiiy mukammallik bilan ajralib turadi.

Registon majmuasi: shahar dizayni ustakori

Registon majmuasi shahar kompozitsiyasi va me'moriy integratsiyaning ajoyib namunasi. Uchta madrasa - Ulug'bek (1417-1420), Sher-Dor (1619-1636) va Tillakori (1646-1660) - proporsional munosabatlar va vizual uyg'unlikka ehtiyotkorlik bilan e'tibor berish orqali yagona me'moriy muhitni yaratadi.

Taxminan 100x100 metr o'lchamdagi markaziy maydon ehtiyotkorlik bilan loyihalashtirilgan arkadalar orqali samimiiy piyoda tajribasini yaratish bilan birga monumental fasadlar uchun tegishli miqyosni ta'minlaydi.

Qurilishda texnik yangilik

Temuriy me'marlar ilg'or qurilish usullarini ishlab chiqdilar. Ikki qobatli gumbaz tizimlari 20 metrdan ortiq oraliqlarni qoplash imkonini berdi. Puxta geometrik rejalashtirish keng miqyosda murakkab me'moriy kompozitsiyalarni muvofiqlashtirdi. Ko'p rangli kafel texnologiyasining rivojlanishi yangi darajadagi me'moriy bezak imkonini yaratdi.

G'ur-Amir: ramziylik va mahorat

1403-1404 yillarda qurilgan G'ur-Amir maqbarasi texnik yangilik bilan ramziy ifodaning sintezini namoyish etadi. 35 metrdan ortiq balandlikdagi tashqi gumbaz muhandislik yutuqini ifodalaydi. Ichki bezak dasturlari - o'yilgan marmar, sirlangan kafel, bo'yalgan gips - boy hissiy muhit yaratadi.

Shaybaniylar davri (XVI-XVIII asrlar): Shahar hayoti va funksionallik

Shaybaniylar davri me'moriy ustuvorliklarning imperial namoyishdan shahar integratsiyasi va ijtimoiy funksionallikka asosiy o'zgarishiga guvoh bo'ldi.

Lyabi hovuz: birlashgan shahar dizayni

Buxorodagi Lyabi hovuz majmuasi bu me'moriy qayta yo'naltirishning namunasi. 36x46 metr o'lchamdagi markaziy suv ombori atrofida diniy, ta'lim va tijorat funksiyalari birlashtirilgan. Bu ko'p funksiyali shahar muhiti turli ijtimoiy ehtiyojlarni qondiradi.

Atrof-muhit bilan ishlash

Shaybaniylar me'morchiligi murakkab dasturiy kombinatsiyalar va atrof-muhit nazorati uchun puxta strategiyalar ishlab chiqdi. Binolar mavsumiy sharoitlarni hisobga oldi va samarali iqlim javob strategiyalarini amalga oshirdi.

Sovet davri (XX asr): Zamonaviylik va milliy o'ziga xoslik

1966-yilgi zilziladan keyin Toshkentni qayta qurish xalqaro zamonaviy tamoyillarni mahalliy madaniy xususiyatlar bilan sintez qiluvchi noyob me'moriy rivojlanish bosqichini boshlab berdi.

Chorsu bozori: strukturaviy yangilik

1980-yilda yakunlangan Chorsu bozori zamonaviy texnologiya bilan an'anaviy me'moriy shakllarning muvaffaqiyatli sintezi. 300 kvadrat metrdan ortiq maydonni qamrab oluvchi radial gumbaz strukturasi an'anaviy Markaziy Osiyo me'moriy tilini esga soladi, lekin ilg'or temir-beton qurilishidan foydalanadi.

O'zbekiston mehmonxonasi: vertikal zamonaviylik

O'zbekiston mehmonxonasi Markaziy Osiyo sharoitlariga moslashtirilgan sovet zamonaviy me'morchiligining muhim yutuqi. Minoraning vertikal shakli xalqaro zamonaviy ta'sirlarni aks ettiradi, an'anaviy bezak motivlari esa mahalliy me'moriy meros bilan aloqani saqlaydi.

Xulosa va takliflar

Ming yillik tahlil o'zbek me'moriy rivojlanishida uslubiy xilma-xillik ostida yotgan ajoyib uzluksizlikni ochib beradi. To'rt paradigma har biri o'zining tarixiy sharoitlariga mos javob bergan, lekin asosiy an'anaviy xususiyatlarni saqlab qolgan.

Asosiy xulosalar

1. Uzluksiz rivojlanish va madaniy barqarorlik

Har bir me'moriy davr muhim madaniy xususiyatlarni saqlab qolgan holda zamonaviy sharoitlarga muvaffaqiyatli moslashishini ko'rsatdi. Bu naqsh madaniy qadriyatlarni yo'qotmasdan yangilikka qodir bo'lgan bardoshli me'moriy madaniyatni ifodalaydi.

2. Muhit bilan moslashuv strategiyalari

Barcha davrlar Markaziy Osiyoning kontinental iqlimiga mos javoblar ishlab chiqdi. Bino yo'nalishi, material tanlovi va qurilish usullari orqali samarali atrof-muhit nazorati strategiyalari yaratildi. Bu yechimlar bugungi barqaror loyihalash uchun qimmatli tajriba beradi.

3. **Mahalliy va xalqaro ta'sirlarning integratsiyasi**

Har bir davr mahalliy qurilish an'analari va xalqaro me'moriy rivojlanishlar o'rtasida muvaffaqiyatli muloqot olib bordi. Madaniy o'ziga xoslikni saqlab qolgan holda kengroq me'moriy oqimlarga qo'shiladigan o'ziga xos sintetik shakllar yaratildi.

4. Madaniy ramkalarda texnik yangilik

Me'moriy rivojlanish doimo madaniy jihatdan mazmunli ramkalar ichida mavjud texnologiyalarni ijodiy ishlatishni ko'rsatdi. Bu texnik taraqqiyot va madaniy uzluksizlik bir-birini qo'llab-quvvatlashi mumkinligini ko'rsatadi.

Zamonaviy amaliyot uchun tavsiyalar

Tarixiy tahlil zamonaviy me'moriy rivojlanish uchun bir nechta muhim tamoyillarni beradi:

- **Iqlimga mos dizayn**: An'anaviy atrof-muhit nazorati strategiyalari energiya talab qiluvchi zamonaviy bino tizimlariga muqobil taklif etadi
- **Madaniy integratsiya usullari**: Tarixiy ustuvorliklar zamonaviy me'moriy ifodalarda an'anaviy dizayn elementlarini kiritish uchun muvaffaqiyatli yo'llarni ko'rsatadi
- **Shahar dizayni tamoyillari**: Tarixiy shahar majmualari ijtimoiy javob beruvchi shahar muhitlarini yaratish uchun modellar taqdim etadi

Meros saqlash bo'yicha tavsiyalar

- **Keng qamrovli hujjatlashtiruv**: Ilg'or texnologiyalar me'moriy merosni buzilishidan oldin qayd qilish uchun ishlatilishi kerak
- **Kompleks saqlash strategiyalari**: Yodgorliklarni shahar kontekstlari ichida ko'rib chiqish kerak
- **An'anaviy hunarmandchilikni saqlash**: Haqiqiy qayta tiklash uchun an'anaviy qurilish ko'nikmalarini saqlab qolish dasturlari ishlab chiqilishi kerak
- **Ta'lim tashabbuslari**: Me'moriy ta'limda tarixiy ustuvorliklar va an'anaviy usullar o'rgatilishi kerak

O'zbekistonning me'moriy merosi dunyoning muhim me'moriy an'analaridan biri bo'lib, ming yildan ortiq davom etgan barqaror yangilik va madaniy sintezni ifodalaydi. Bu merosni tushunish madaniy haqiqiylik va atrof-muhit bilan uyg'unlikni saqlab qolgan holda zamonaviy me'moriy muammolarni hal qilish uchun mustahkam asos yaratadi.

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ZAMONAVIY ME'MORIY LOYIHALASHDAGI ASOSIY OMILLAR VA YONDASHUVLAR: O'ZBEKISTON ME'MORIY RIVOJLANISHINING KENG QAMROVLI TAHLILI

Annotatsiya: *Ushbu tadqiqot zamonaviy me'moriy loyihalashda muhim rol o'ynaydigan omillarni chuqur o'rganadi. Asosiy e'tibor O'zbekistonning IX asrdan XXI asrgacha bo'lgan me'moriy rivojlanishiga qaratilgan. 50 dan ortiq me'moriy yodgorliklar tahlil qilindi - Somoniylar maqbarasi, Registon majmuasi, Zaha Hadid Architects loyihalari va sovet modernist binolari. Tadqiqotda besh muhim loyihalash omili aniqlandi: iqlim sharoitlariga moslashish, tabiy materiallardan foydalanish, jamiyat bilan bog'liqlik, zamonaviy texnologiyalar va milliy madaniyatni saqlash.*

2020-2024 yillar davomida tarixiy tahlil, amaliy tadqiqotlar, BIM texnologiyalari va dala ishlarini birlashtirgan metodologiya qo'llanildi. Natijalar to'rt asosiy me'moriy davr ko'rsatdi: Somoniylar geometrik soddaligi, Temuriylar dabdabali uslubi, Shayboniylar ijtimoiy yo'nalishligi va Sovet-zamonaviy uyg'unligi. Har bir davr o'z zamonasiga muvaffaqiyatli moslashgan.

Statistik ma'lumotlar shuni ko'rsatdiki, an'anaviy passiv usullarni zamonaviy texnologiyalar bilan birlashtirganda energiya samaradorligi 73% yaxshilanadi. Bu tadqiqot me'moriy nazariyaga muhim hissa qo'shadi - milliy merosni hurmat qilgan holda zamonaviy talablarni qondiradigan birinchi to'liq tizimni taklif etadi.

Kalit so'zlar: *Me'moriy loyihalash, barqaror me'morchilik, BIM texnologiyasi, passiv loyihalash, madaniy meros, energiya tejamkorligi, iqlimga moslashish, O'zbekiston me'morchiligi, parametrik loyihalash, ekologik qurilish standartlari*

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KEY FACTORS AND APPROACHES IN CONTEMPORARY ARCHITECTURAL DESIGN: A COMPREHENSIVE ANALYSIS OF UZBEKISTAN'S ARCHITECTURAL DEVELOPMENT

Abstract: *This study examines key factors and contemporary approaches in architectural design, focusing on Uzbekistan's architectural development from the 9th to 21st centuries. Through comprehensive analysis of over 50 architectural monuments including the Samanid Mausoleum, Registan ensemble, contemporary projects by Zaha Hadid Architects, and Soviet modernist landmarks, five critical design factors were identified: climate adaptation, sustainable materials, social integration, technological innovation, and cultural identity preservation.*

The methodology combined historical analysis, case studies, Building Information Modeling (BIM) assessment, and fieldwork conducted between 2020-2024. Results reveal four distinct architectural paradigms: Samanid geometric minimalism (9th-11th centuries), Timurid imperial monumentality (14th-15th centuries), Shaybanid socio-urban integration (16th-18th centuries), and Soviet-contemporary synthesis (20th-21st centuries). Each period demonstrates successful adaptation to contemporary conditions while preserving cultural continuity.

Statistical analysis shows 73% improvement in energy efficiency when traditional passive design strategies are integrated with modern building technologies. The study contributes to architectural theory by providing the first comprehensive framework for sustainable design integration that respects cultural heritage while meeting contemporary performance requirements.

Keywords: *Architectural design, sustainable architecture, Building Information Modeling (BIM), passive design, cultural heritage, energy efficiency, climate adaptation, Uzbekistan architecture, parametric design, green building standards*

Kirish

Me'moriy loyihalash - bu faqat chiroyli bino yaratish emas, balki insonlar hayoti, atrof-muhit va madaniyat bilan chambarchas bog'liq murakkab jarayon. O'zbekiston kabi boy tarixga ega mamlakatda bu masala yanada murakkablashadi, chunki ming yillik me'moriy meros zamonaviy talablar bilan uyg'unlashtirilishi kerak.

Bugungi kunda me'morlar jiddiy muammolarga duch kelmoqda: iqlim o'zgarishi, resurslar tanqisligi, shaharlar tez o'sishi va milliy o'ziga xoslikni

yo'qotish xavfi. Xalqaro Energiya Agentligi ma'lumotlariga ko'ra, binolar dunyodagi karbonat angidrid chiqindilarining 39 foizini tashkil etadi. Shu sababli, me'morchilik atrof-muhit muammolarini hal qilishda muhim rol o'ynaydi.

UNESCO ham madaniy merosni yo'qotish xavfini ta'kidlab, yangilik bilan an'anani uyg'unlashtiradigan me'moriy yondashuvlarni talab qilmoqda. O'zbekiston bu masalalarni o'rganish uchun ajoyib namunadir. Samarqand, Buxoro va Xiva kabi shaharlarimiz UNESCO Jahon merosi ro'yxatiga kiritilgan. Ammo zamonaviy rivojlanish bosimi an'anaviy qurilish uslublariga qiyinchilik yaratmoqda.

2019 yilgi Milliy rivojlanish strategiyasida barqaror qurilish va meros saqlash davlat siyosatining asosiy yo'nalishlari deb belgilandi. Bu tadqiqot an'anaviy me'moriy donolik bilan zamonaviy loyihalash talablarini birlashtirish yo'llarini izlaydi.

O'zbek me'morchiligining alohida jihatlari o'rganilgan bo'lsa-da, tarixiy tajribani zamonaviy loyihalash omillari bilan birlashtiradigan to'liq tahlil etishmasligi mavjud. Bu tadqiqotning ahamiyati faqat mintaqamizga tegishli emas, balki butun dunyodagi o'xshash iqlim va madaniy sharoitlarda barqaror loyihalash uchun foydali ma'lumotlar beradi.

Tadqiqotning asosiy maqsadi zamonaviy me'moriy loyihalashga ta'sir etuvchi muhim omillarni aniqlash va tahlil qilish, tarixiy me'moriy yechimlar hozirgi amaliyotga qanday yordam berishi mumkinligini o'rganishdir. Bu tahlil madaniy jihatdan mos va ekologik jihatdan mas'ul me'moriy rivojlanish uchun asos yaratishga qaratilgan.

Adabiyotlar tahlili

Zamonaviy me'moriy loyihalash nazariyasi modernist funktsionalizmdan boshlab atrof-muhit, ijtimoiy va madaniy omillarni hisobga oladigan keng yondashuvga rivojlandi. Yeangning bioiqlim me'morchiligi bo'yicha asosiy ishi iqlimga mos loyihalash uchun muhim tamoyillarni belgilab berdi. U atrof-muhit omillari me'moriy qarorlarni qanday boshqarishi kerakligini ko'rsatdi.

Bino Ma'lumotlarini Modellashtirish (BIM) me'moriy loyihalash jarayonlarida katta o'zgarishlar yaratdi. Eastman va boshqalar BIMning loyihalash samaradorligi, xatolarni kamaytirish va natijani yaxshilash bo'yicha ta'sirini keng tahlil qildilar. Ularning tadqiqoti shuni ko'rsatdiki, BIM to'g'ri qo'llanilganda loyihalash xatolari 20-30% kamayadi va loyihani bajarish vaqti 15-25% qisqaradi.

Barqaror me'morchilik tamoyillarini Guzovski keng hujjatlashtirib berdi. Uning bino fizikasi va atrof-muhit samaradorligi bo'yicha tadqiqoti loyihalash qarorlarini baholash uchun aniq ko'rsatkichlarni taqdim etadi. Passiv loyihalash strategiyalari tahlili tegishli iqlim javobi orqali bino energiya iste'molini 40-60% kamaytirish imkonini ko'rsatdi.

Me'moriy loyihalashda madaniy saqlash masalalari Feilden va Jokilehto tomonidan ko'rib chiqildi. Ularning meros saqlash tamoyillari bo'yicha ishi madaniy jihatdan sezgir loyihalash uchun xalqaro standartlarni belgilab berdi. Ularning yondashuvi haqiqiylik, yaxlitlik va davomiylikni meros-ongida bo'lgan me'morchilik uchun asosiy talablar sifatida ta'kidlaydi.

Markaziy Osiyo me'morchiligi bo'yicha mintaqaviy tadqiqotlar zamonaviy loyihalash uchun muhim kontekstni taqdim etadi. Pugachenkovaning Markaziy Osiyo me'moriy rivojlanishi bo'yicha keng tadqiqoti zamonaviy olimlar tomonidan hali ham qo'llanayotgan tipologik tasniflar va uslubiy rivojlanish naqshlarini o'rnatdi.

O'zbek me'morchiligi bo'yicha zamonaviy tadqiqotlar sezilarli darajada kengaydi. Latipovaning iqlimga moslashish strategiyalari bo'yicha tadqiqoti an'anaviy qurilish usullari mexanik tizimlar ishlatmasdan samarali muhit boshqarishiga qanday erishganligini ko'rsatadi. Uning hovli binolarining miqdoriy tahlili tashqi muhitga nisbatan 8-12°C harorat kamayishini ko'rsatdi.

Biroq, bu turli tadqiqot sohalarini birlashtirish bo'yicha muhim bo'shliqlar qolmoqda. Ko'pgina tadqiqotlar alohida jihatlarga - barqarorlik, BIM, madaniy saqlash - qaratilgan. Bu tadqiqot ushbu cheklovlarni muayyan madaniy va iqlim sharoitida loyihalash omillari va ularning o'zaro ta'sirini birlashtirilgan tahlil bilan bartaraf etadi.

Tadqiqot metodologiyasi

Bu tadqiqotda vaqt va makon o'lchamlarida me'moriy loyihalash omillarini o'rganish uchun miqdoriy va sifat usullarini birlashtiruvchi ko'p usullar yondashuvi qo'llanildi. Metodologiya katta va kichik darajadagi loyihalash tendentsiyalari va texnik natijalarni qamrab olish uchun besh bir-birini to'ldiradigan tahlil yo'nalishidan iborat.

Tarixiy-analitik sharh

IX asrdan XXI asrgacha bo'lgan me'moriy rivojlanishning tizimli tahlili birlamchi va ikkilamchi manbalarni o'rganish orqali o'tkazildi. Tarixiy yilnomalar, me'moriy yozuvlar, ma'muriy hujjatlar va zamonaviy ma'lumotlar xronologik ramkalarni o'rnatish uchun tahlil qilindi.

Amaliy tadqiqot tahlili

Ellik uch me'moriy yodgorlik va zamonaviy loyiha tarixiy ahamiyat, me'moriy sifat va saqlash holati asosida batafsil tahlil uchun tanlandi. Tahlil qilingan loyihalar:

- **Tarixiy yodgorliklar:** Somoniylar maqbarasi (X asr), Registon majmuasi (XV-XVII asrlar), G'ur-i Amir majmuasi (XV asr)
- **Sovet modernist loyihalari:** Chorsu bozori (1980), O'zbekiston mehmonxonasi (1974), turar-joy mikrorayonlari
- **Zamonaviy loyihalar:** Zaha Hadid Architects tomonidan yaratilgan Alisher Navoiy xalqaro ilmiy tadqiqot markazi (2021), yangi Toshkent bosh rejasi (2023), Nest One majmuasi (2019)

Miqdoriy natija tahlili

Bino natijasi ma'lumotlari quyidagilar orqali to'plandi:

15 **Issiqlik tahlili:** Yoz va qish fasllarida an'anaviy va zamonaviy binolarda harorat o'lchovlari

16 **Energiya iste'moli tahlili:** Turli loyihalash yondashuvlarini qo'llaydigan 25 ta zamonaviy binolardan qiyosiy ma'lumotlar

17 **Material sinovi:** An'anaviy materiallar (g'isht, tosh) va zamonaviy alternativalarning laboratoriya tahlili

18 **Statistik tahlil:** Loyihalash o'zgaruvchilari va natijalar o'rtasidagi bog'liqlik tahlili

BIM va raqamli tahlil

Bino ma'lumotlarini modellashtirish quyidagilar uchun ishlatildi:

- **3D hujjatlashtirish:** 15 ta tarixiy yodgorlikning lazer skanerlash va fotogrammetriyasi
- **Natija simulyatsiyasi:** Autodesk Revit va EnergyPlus dasturlari yordamida energiya modellash
- **Parametrik tahlil:** Loyihalash variantlarini sinash uchun Grasshopper/Rhino modellash
- **Vizualizatsiya:** Qisman saqlangan yodgorliklarning raqamli qayta tiklash

Dala tadqiqotlari

Birlamchi ma'lumotlar yig'ish quyidagilarni o'z ichiga oldi:

5. **Sayt tadqiqotlari:** 53 ta binoning batafsil fotosurat va o'lchangan chizmalar bilan to'g'ridan-to'g'ri tekshiruvi
6. **Mutaxassislar bilan suhbatlar:** Zamonaviy loyihalarda ishtirok etgan 25 ta me'mor, muhandis va hunarmand bilan suhbatlar
7. **Material tahlili:** An'anaviy va zamonaviy qurilish materiallarini namuna olish va sinash
8. **Atrof-muhit monitoringi:** Hovlilar, an'anaviy xonalar va zamonaviy bo'shliqlarda mikroiqlim ma'lumotlarini to'plash

Tahlil va natijalar

Iqlimga javob beruvchi loyihalash omillari

Miqdoriy tahlil shuni ko'rsatdiki, iqlimga moslashish O'zbekistonning kontinental iqlimida me'moriy loyihalash samaradorligiga ta'sir etuvchi eng muhim omil. An'anaviy va zamonaviy binolardan 12 oy davomida to'plangan harorat ma'lumotlari loyihalash strategiyalariga asoslangan aniq farqlarni ko'rsatdi.

An'anaviy hovli binolari passiv loyihalash mexanizmlari orqali ichki haroratni tartibga solishga erishadi. Lyabi Hovuz majmuasidagi o'lchovlar markaziy hovlilar yoz eng issiq davrlarida (tashqi harorat 42-45°C ga yetadigan iyul-avgust oylarida) tashqi muhit haroratidan 8-12°C pastroq haroratni saqlashini ko'rsatdi. Bu sovutish effekti bir nechta birlashgan omillar natijasida hosil bo'ladi:

- **Issiqlik massasi:** G'isht devorlar (45-60sm qalinlik) tungi salqin havoni saqlaydi va kun davomida asta-sekin chiqaradi
- **Havo sirkulyatsiyasi:** Hovli geometriyasi atrofdagi hududlardan 2-3 marta yuqori shamol tezligi bilan havo sirkulyatsiyasini yaratadi
- **Bug'lanish sovutish:** Suv elementlari bug'lanish orqali qo'shimcha 3-5°C harorat pasayishiga yordam beradi
- **Soyalash strategiyalari:** Arkada tizimlari muhim yoz soatlarida (10:00-16:00) 85-90% quyosh himoyasini ta'minlaydi

Material natijasi va barqarorlik omillari

An'anaviy qurilish materiallarining laboratoriya tahlili zamonaviy barqaror loyihalash strategiyalarini ma'lumotga aylantiradigan ajoyib natija xususiyatlarini ochib beradi. Mahalliy loy yordamida ishlab chiqarilgan g'isht quyidagilarni ko'rsatadi:

- **Issiqlik natijasi:** Issiqlik o'tkazuvchanlik (0.45-0.52 W/mK) issiqlik massasi foydalari saqlanib, samarali izolyatsiyani ta'minlaydi
- **Chidamlilik:** Siqilish kuchi (25-35 MPa) zamonaviy g'isht standartlaridan oshib, X asrlik qurilishdagi namunalar minimal buzilish ko'rsatmoqda
- **Atrof-muhit ta'siri:** Mahalliy ishlab chiqarish import materiallarga nisbatan transport energiyasini 85-90% kamaytiradi
- **Madaniy davomiylik:** An'anaviy ishlab chiqarish usullari mahalliy hunarmandchilik va madaniy bilim uzatishni qo'llab-quvvatlaydi

Texnologik birlashma va innovatsiya omillari

Zamonaviy O'zbek loyihalarida BIM joriy etish loyihalash sifati va loyiha yetkazib berish bo'yicha o'lchanadigan yaxshilanishlarni ko'rsatadi:

13. **Loyihalash aniqligi:** Keng BIM ish oqimlarini qo'llaydigan loyihalar qurilish bosqichidagi loyihalash o'zgarishlarining 65-80% kamayishini hisobot beradi
14. **Xarajatlar nazorati:** BIMga asoslangan miqdor hisob-kitobi xarajat baholash aniqligini 15-25% yaxshilaydi
15. **Koordinatsiya samaradorligi:** Ko'p sohali BIM koordinatsiyasi me'moriy, strukturaviy va MEP tizimlari orasidagi ziddiyatlarni 70-85% kamaytiradi

Nest One loyihasi muvaffaqiyatli texnologiya birlashmaning namunasidir, an'anaviy geometrik naqshlarni birlashtirgan holda fasad natijasini optimallashtirish uchun parametrik loyihalash vositalaridan foydalanadi.

Madaniy o'ziga xoslik va loyihalash birlashmasi

Muvaffaqiyatli zamonaviy loyihalarning tahlili madaniy o'ziga xoslikni zamonaviy funktsionallik bilan birlashtirishning o'ziga xos strategiyalarini ochib beradi:

Geometrik naqsh birlashmasi: An'anaviy O'zbek geometrik naqshlarining matematik tahlili zamonaviy qurilish usullariga moslashtirilgan modulli tizimlarni ochib beradi. Tarixiy plitkachilikning asosidagi islom geometrik tamoyillari zamonaviy fasad tizimlariga samarali tarjima qilinadi.

Fazoviy tashkil tamoyillari: An'anaviy hovli tipologiyalari zamonaviy murakkab dasturlash uchun ramkalarni taqdim etadi. Yangi Toshkent bosh rejasi an'anaviy mahalla fazoviy tashkilotini zamonaviy aralash foydalanish rivojlanishiga moslashtiradi.

Material tarjimasi: Zamonaviy loyihalar muvaffaqiyat bilan an'anaviy material xususiyatlarini zamonaviy qurilish tizimlariga tarjima qiladi. An'anaviy nisbatlar va ranglarni saqlaydigan zamonaviy g'isht ishlatish hozirgi strukturaviy talablarni qondirgan holda madaniy davomiylikni ta'minlaydi.

Natija ko'rsatkichlari va qiyosiy tahlil

25 ta zamonaviy binolarning statistik tahlili loyihalash yondashuvlari va natijalar o'rtasidagi aniq bog'lanishlarni ochib beradi:

Energiya natijasi:

6. Passiv loyihalash strategiyalarini birlashtiruvchi binolar: 35-45% past energiya iste'moli
7. Mahalliy materiallardan foydalanayotgan loyihalar: 25-30% past joylashtirilgan energiya
8. BIM-optimallashtirilgan loyihalar: 20-25% yaxshi bashorat qilingan va haqiqiy natija bog'liqlik

Foydalanuvchi qoniqishi:

- Birlashtirilgan hovlilarga ega binolar: 85-90% foydalanuvchi qoniqish reytinglari
- Madaniy havolalarni saqlaydigan loyihalar: 78-82% ijobiy madaniy o'ziga xoslik idroklari

Iqtisodiy natija:

- Mahalliy materiallardan foydalanayotgan loyihalar: 15-20% past qurilish xarajatlari
- BIM-birlashtirilgan loyihalar: 12-18% qisqa qurilish muddati

Zamonaviy loyiha tahlili

Alisher Navoiy xalqaro ilmiy tadqiqot markazi: Bu loyiha zamonaviy parametrik loyihalashni an'anaviy atrof-muhitni boshqarish strategiyalari bilan muvaffaqiyatli birlashtirishni namoyish etadi. Binoning natija ma'lumotlari quyidagilarni ko'rsatadi:

5. Passiv loyihalash birlashmasi orqali sovutish energiyasi iste'molining 34% kamayishi
6. Ichki atrof-muhit sifati bo'yicha foydalanuvchilarning 98% ijobiy fikri
7. O'zbekistondagi birinchi LEED Oltin sertifikatli bino sifatida tan olinish

Yangi Toshkent bosh rejasi: Shahar miqyosidagi tahlil an'anaviy shahar rejalashtirish tamoyillarining samarali moslashishini ko'rsatadi:

- Sovet davri tumanlariga nisbatan aholi jon boshiga jamoat maydoni 40% ortishi
- An'anaviy bozor tipologiyalarini zamonaviy chakana dasturlash bilan birlashtirish
- Shahardagi issiqlik orol effektini 3-5°C kamaytiruvchi suv boshqaruv tizimlari

Xulosa va tavsiyalar

Bu keng tadqiqot shuni ko'rsatdiki, samarali zamonaviy me'moriy loyihalash bitta ko'rsatkich ustida emas, balki iqlim, material, texnologik, madaniy va ijtimoiy omillarning tizimli birlashmasi natijasida yuzaga keladi. Dalillar shuni ko'rsatdiki, an'anaviy me'moriy donolik to'g'ri tushunilgan va zamonaviy metodologiyalar orqali tarjima qilinganda, ko'plab hozirgi loyihalash muammolariga ustun yechimlarni taqdim etadi.

Asosiy tadqiqot xulosalari

- **Passiv loyihalashning ustunligi:** Miqdoriy tahlil an'anaviy passiv loyihalash strategiyalari 60-80% kam operatsion energiya talab qilgan holda mexanik tizimlarga o'xshash issiqlik natijasiga erishishini tasdiqlaydi.
- **Material natijasini tasdiqlash:** Laboratoriya sinovi an'anaviy materiallar, ayniqsa mahalliy ishlab chiqarilgan g'isht, aksariyat zamonaviy alternativalardan yaxshiroq barqarorlik ko'rsatkichlariga erishishini ko'rsatdi.
- **Texnologiya birlashmaning foydalari:** BIM va parametrik loyihalash vositalari to'g'ri joriy etilganda loyiha xarajatlari va yetkazib berish vaqtini qisqartirishda loyihalash sifatini yaxshilaydi.
- **Madaniy birlashma talablari:** Muvaffaqiyatli zamonaviy loyihalar doimiy ravishda madaniy o'ziga xoslik birlashmasining shunchaki estetik emas, balki asosiy fazoviy, proporsional va tajribaviy loyihalash qarorlarini o'z ichiga olishini ko'rsatadi.
- **Sintez orqali natijani optimallashtirish:** Eng yuqori samaradorlikka ega zamonaviy binolar an'anaviy passiv strategiyalarni zamonaviy texnologik tizimlar bilan birlashtirib, har qanday yondashuvni mustaqil ravishda qo'llaydigan binolardan 35-45% yaxshi energiya natijasiga erishadi.

Professional amaliyot uchun tavsiyalar

Loyihalash jarayoni birlashmasi:

5. **Erta bosqich iqlim tahlili:** Barcha loyihalar loyihalash rivojlanishidan oldin mikroiqlim sharoitlari, fasliy naqshlar va an'anaviy javob strategiyalarining keng tahlili bilan boshlanishi kerak.
6. **Madaniy parametrlar bilan BIM joriy etish:** Loyihalash jamoalari birlashtirilgan loyihalash rivojlanishini ta'minlash uchun an'anaviy bino elementlari va natija parametrlarini birlashtiruvchi BIM kutubxonalarini ishlab chiqishi kerak.
7. **Material tanlash ierarxiyasi:** Isbotlangan natija xususiyatlariga ega mahalliy materiallarga ustunlik bering, zamonaviy materiallar faqat an'anaviy alternativalar muayyan natija talablarini qondira olmaydigan holatlarda qo'llang.

Ta'lim va siyosat tavsiyalari

5. **O'quv dasturi rivojlantirish:** Me'moriy ta'lim an'anaviy bino bilimini zamonaviy loyihalash metodologiyalari bilan birlashtirib, bitiruvchilar tarixiy tajriba va zamonaviy natija talablarini tushunishlarini ta'minlashi kerak.
6. **Qurilish kodini moslash:** Hozirgi qurilish kodlari tarixiy dalil va zamonaviy sinov orqali etarli natijasini ko'rsatadigan an'anaviy qurilish usullari va materiallarini o'z ichiga olish uchun qayta ko'rib chiqilishi kerak.
7. **Kasbiy rivojlanish dasturlari:** Uzluksiz ta'lim an'anaviy bilimni zamonaviy texnologiyalar, ayniqsa BIM, parametrik loyihalash va natijani simulyatsiya qilish vositalari bilan birlashtiradigan loyihalash metodologiyalariga qaratilishi kerak.
8. **Tadqiqot tashabbusini qo'llab-quvvatlash:** Hukumat va ta'lim muassasalari dalillarga asoslangan loyihalash yo'riqnomasini taqdim etish uchun

an'anaviy bino natijasi, materialni optimallashtirish va texnologiya birlashmasi bo'yicha amaliy tadqiqotlarni qo'llab-quvvatlashi kerak.

Kelajakdagi tadqiqot yo'nalishlari

Miqdoriy natija tahlili: An'anaviy passiv loyihalash strategiyalarini zamonaviy natija talablari uchun optimallashtirish bo'yicha batafsil bino fizikasi tadqiqoti zarur. Bu hozirgi foydalanish naqshlari ostida an'anaviy bino turlarining issiqlik modellash, kunduz yorug'lik tahlili va akustik natija baholashini o'z ichiga oladi.

Material rivojlantirish tadqiqoti: Madaniy haqiqiylikni saqlab qolgan holda ustun natijani berishi mumkin bo'lgan an'anaviy va zamonaviy xususiyatlarni birlashtiruvchi gibrid material tizimlarini o'rganish. Bu an'anaviy g'isht tizimlarining kuchaytirilgan issiqlik natijasi va an'anaviy suvaq ishlarining zamonaviy versiyalarini ishlab chiqishni o'z ichiga oladi.

Raqamli meros birlashmasi: An'anaviy geometrik naqshlarning mashinani o'rganish tahlili va an'anaviy bino shakllarining parametrik optimallashtirishi madaniy bilimni saqlab qolgan holda zamonaviy loyihalash qobiliyatlarini oshirishi mumkin.

Shahar miqyosidagi tahlil: An'anaviy shahar rejalashtirish tamoyillari va ularning zamonaviy shahar rivojlanishiga moslashish bo'yicha tadqiqotlar madaniy xarakterini saqlab qolgan holda zamonaviy infratuzilma talablarini qondiruvchi barqarar shahar o'sish strategiyalarini ma'lumotga aylantiradi.

Ijtimoiy va iqtisodiy ta'sir baholash: Tugallangan loyihalarning uzoq muddatli tadqiqotlari birlashtirilgan loyihalash yondashuvlarining uzoq muddatli natijasi, foydalanuvchi qoniqishi va iqtisodiy qiymatining dalillarini beradi.

Joriy etish strategiyasi

Tadqiqot xulosalariga asoslanib, birlashtirilgan loyihalash yondashuvlarini muvaffaqiyatli joriy etish bir nechta darajalar bo'yicha muvofiqlashtirilgan harakatni talab qiladi:

Individual loyiha darajasi: Me'morlar va loyihalash jamoalari natija foydalari va madaniy haqiqiylikni namoyish etuvchi pilot loyihalar bilan boshlab birlashtirilgan metodologiyalarni qabul qilishlari kerak. Muvaffaqiyat ko'rsatkichlari energiya natijasi, foydalanuvchi qoniqishi, qurilish xarajatlari va madaniy muvofiqlikni o'z ichiga olishi kerak.

Muassasa darajasi: Ta'lim muassasalari, kasbiy tashkilotlar va hukumat idoralari birlashtirilgan loyihalash joriy etilishini osonlashtiradigan ta'lim dasturlari, texnik resurslar va siyosat moslashuvi kabi qo'llab-quvvatlovchi ramkalarni ishlab chiqishlari kerak.

Mintaqaviy daraja: Muvofiqlashtirilgan mintaqaviy tashabbuslar an'anaviy hunarmandchilikni saqlash, material ta'minoti zanjirini rivojlantirish va birlashtirilgan loyihalash yondashuvlarining keng qabul qilinishini ta'minlaydigan texnologiya uzatish dasturlariga qaratilishi kerak.

Bu tadqiqot zamonaviy me'moriy qiyinchiliklarni an'anaviy donolikni zamonaviy imkoniyatlar bilan tizimli birlashma orqali samarali hal qilish mumkinligini ko'rsatdi. Dalillar texnologiyaga bog'liq loyihalashdan madaniy

haqiqiylik va atrof-muhit mas'uliyatini saqlab qolgan holda ustun natijaga erishadigan birlashtirilgan yondashuvlar tomon paradigma o'zgarishini qo'llab-quvvatlaydi. Bu xulosalarni joriy etish barqarar rivojlanish maqsadlari va madaniy meros saqlashni qo'llab-quvvatlab, me'moriy sifatni sezilarli darajada yaxshilashi mumkin.

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WIND RESOURCES OF TASHKENT REGION AND THEIR UTILIZATION: OPPORTUNITIES FOR SUSTAINABLE ENERGY DEVELOPMENT

Abstract. *The Tashkent Region in Uzbekistan, characterized by diverse topography including plains, foothills, and mountainous areas, possesses significant wind energy potential, particularly in its northeastern mountainous zones. This article examines the geographical and meteorological features of wind resources in the region, assesses their technical and economic feasibility for utilization, and reviews ongoing and planned wind power projects. Drawing on recent meteorological data and international assessments, the study highlights wind speeds averaging 3-5 m/s in plains and up to 7.5 m/s in elevated areas, with a focus on the Bostanlyk District's promising conditions. Key projects, such as the 20 MW Charvak Wind Power Plant, exemplify Uzbekistan's commitment to renewable energy targets, aiming for 3 GW of wind capacity by 2026. The analysis underscores the role of wind energy in reducing fossil fuel dependency, mitigating climate change, and fostering economic growth in the region. Recommendations include enhanced GIS mapping and international partnerships to optimize deployment.*

Keywords. *Wind resources, Tashkent Region, Uzbekistan, renewable energy, wind power projects, sustainable development.*

Introduction.

Uzbekistan, a landlocked Central Asian nation, is undergoing a transformative shift towards renewable energy to address its growing electricity demand, projected to reach 105 billion kWh by 2030, and reduce reliance on fossil fuels, which currently dominate 92% of its energy mix. The Tashkent Region, encompassing the capital city and spanning 15,300 km² with a population exceeding 2.8 million, serves as the country's economic hub and a focal point for renewable initiatives. Its varied landscape—from the flat plains of Tashkent to the rugged Chimgan Mountains—creates favorable conditions for wind energy harnessing, particularly in elevated terrains where wind speeds are amplified by orographic effects.

Wind resources represent a clean, inexhaustible alternative to natural gas, Uzbekistan's primary energy source, and align with national strategies outlined in the 2020 Renewable Energy Development Program. The region's wind potential, estimated at contributing to the country's overall 520,000 MW gross capacity, is bolstered by recent mesoscale modeling indicating higher-than-previously recognized resources in the northeastern mountains east of Tashkent. This article

explores the characteristics of Tashkent's wind resources, evaluates utilization prospects through technology and projects, and proposes pathways for sustainable integration, contributing to global discourse on arid-region renewables.

The Tashkent Region lies at approximately 41°N latitude, featuring a continental climate with hot summers and cold winters. Its topography includes the fertile Tashkent oasis in the west, transitioning to the arid Kyzylkum Desert fringes and the Western Tian Shan Mountains in the east. The Bostanlyk and Quyi Chirchiq Districts, with elevations up to 3,000 m, are particularly wind-prone due to channeled airflows through valleys and ridges. These features enhance wind consistency, making the region suitable for mid-scale wind farms, unlike the more uniform plains elsewhere in Uzbekistan.

Meteorological observations from Tashkent's stations (e.g., Uzbek Hydrometeorological Service data, 2000–2022) reveal average wind speeds of 3–5 m/s at 10 m height across the region, rising to 6–7.5 m/s at 50 m in mountainous areas. Predominant winds blow from the northeast and southwest, with peaks in spring (March–May) and autumn (September–November), driven by seasonal pressure gradients. Annual power density reaches 94 W/m² in elevated zones, comparable to Navoi's 94.05 W/m² but superior to urban Tashkent's 3–4 m/s averages.

Diurnal variations show stronger evening winds in valleys, ideal for turbine operation during peak demand. Humidity levels (39% summer, 73% winter) minimize erosion risks, though dust in arid seasons necessitates robust turbine designs. GIS-based wind atlases, developed with German partners like GEO-NET, confirm the northeastern mountains as high-potential sites, with technical feasibility for 100–500 MW installations.

Comparative Analysis.

Compared to neighboring regions like Bukhara (1 billion kWh potential), Tashkent's wind regime benefits from topographic amplification, yielding 20–30% higher capacity factors (35–40%) than flatland sites. However, urban sprawl in Tashkent city limits large-scale deployment, shifting focus to rural districts like Bostanlyk.

Uzbekistan's gross wind potential is 520,000 MW, with Tashkent contributing via its 15% share of viable land (approximately 2,300 km² suitable for turbines). At 7.5 m/s average in key sites, a 1 MW turbine could generate 2,000–2,500 MWh annually, equating to powering 500 households. Mesoscale modeling by the IEA identifies the Chimgan range as a hotspot, with untapped capacity exceeding 1,000 MW regionally.

Levelized cost of energy (LCOE) for wind in Tashkent is estimated at 5.5 US cents/kWh, competitive with gas-fired plants (6–7 cents/kWh). Initial costs ($1–1.5 million/MW) are offset by 20–25-year lifespans and low O&M (1–2% annually). Grants from international bodies like ADB reduce payback to 7–10 years, enhancing viability amid Uzbekistan's 7% annual energy growth.

Wind utilization could displace 1.1 million tons of CO_2 yearly per 500 MW farm, aiding Paris Agreement compliance. Minimal land use (0.1–0.3 ha/MW)

preserves agriculture, though bird migration in mountains requires avian-friendly designs. Community benefits include job creation (200–300 per farm) and rural electrification.

Uzbekistan's wind sector is nascent but accelerating, with Tashkent hosting pilot projects. The Charvak Wind Power Plant (20 MW, Bostanlyk District, $28 million grant-funded) exemplifies early efforts, generating 50 million kWh annually and saving 15 million m³ of gas. Operational since 2025, it reduces emissions by 22,000 tons/year, powering local industries.

The 20 MW Burchmulla Wind Farm (Bostanlyk, 10 ha allocation) targets 2026 commissioning, leveraging 7 m/s winds for 40 GWh/year output. Integrated with 12 national wind plants by 2025, it aligns with the 4 GW renewable target. Partnerships with ACWA Power and Masdar extend to hybrid solar-wind setups in Quyi Chirchiq, enhancing grid stability.

Grid integration remains a hurdle, with Tashkent's aging infrastructure requiring 282 km of 500 kV lines. Dust accumulation and seismic risks in mountains demand resilient turbines. Policy reforms, including PPP frameworks, mitigate these via IFC and ADB financing ($174 million for regional analogs).

Opportunities.

Tashkent's proximity to demand centers (Tashkent city consumes 40% of national power) minimizes transmission losses. Export potential to Kazakhstan and Kyrgyzstan via CAPS grid could yield $100–200 million annually. Hybrid systems with solar (region's 1,500–1,700 kWh/m² insolation) ensure 70–80% capacity factors.

International collaborations, such as DEG's $65 million for ACWA's Karatau (adjacent influence), accelerate tech transfer. Local manufacturing of blades could create 5,000 jobs by 2030.

Variable winds (seasonal dips to 2 m/s) necessitate storage (e.g., 100 MWh BESS pilots). Land acquisition in populated areas risks social conflicts, resolvable via ESIA compliance. Financing gaps ($5 billion needed nationally) rely on FDI, vulnerable to global rates.

Conclusion and Recommendations.

Tashkent Region's wind resources, amplified by topography, offer a strategic pathway to Uzbekistan's 25% renewable target by 2030, generating over 1 trillion kWh nationally. Projects like Charvak demonstrate feasibility, but scaling requires integrated planning. Recommendations include:

1. Deploy advanced anemometers for real-time mapping.
2. Foster PPPs with incentives (tax breaks for 10 years).
3. Integrate AI for predictive maintenance.
4. Promote community education on benefits.

By leveraging these, Tashkent can pioneer Central Asian wind leadership, ensuring energy security and environmental stewardship.

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COGNITIVE AND PRAGMATIC CHARACTERISTICS OF VOCABULARY UNITS RELATED TO THE AGRICULTURAL DISCOURSE

Abstract: *In this article, lexical units in linguistics, their pragmatic features, and the semantics of lexical units are analyzed. Definitions and descriptions of concepts such as the connotative component of lexical units, text lexicon, and rational evaluation are also studied.*

Key words: *agricultural activities, lexical units, cognitive aspect, concepts, pragmatics, educational purpose, foreign languages, aspect.*

This work examines the structure and semantics of modern English terminology used in education. Education is currently one of the fundamental elements of the social infrastructure of developed countries. The organization of education systems in these countries is directly linked to the needs of the current stage of the scientific and technological revolution, necessitating educational reform. It should be noted that the process of reform in this area of human activity is virtually continuous: changes are constantly being made to the structure and organization of various components of the system. At a certain stage of a system's development, the need for fundamental reforms arises.

This article is devoted to the term as a phenomenon, since we consider it necessary to clarify what is meant by the term in our work and on what grounds this or that linguistic unit became the object of our research.

The methodological basis of the work is the most important principles of interpreting language as a socio-cultural and cognitive phenomenon. The problem of the term as a key concept of terminology has received wide coverage in domestic and foreign linguistics: it is reflected in the works of K. Ya. Averbukh, O. S. Akhmanova, M. Ya. Blokh, G. O. Vinokur, B. N. Golovin, S. V. Grinev, V. P. Danilenko, G. A. Dianova, T. L. Kandelaki, L. A. Kapanadze, A. Ya. Klimovitsky, R. Yu. Kobrin, V. M. Leychik, D. S. Lotte, A. A. Reformatsky, A. V. Superanskaya, V. A. Tatarinov, S. D. Shelov, E. Wuster, L. Olshka, J. Sager, H. Felber and many other linguists.

The cognitive-pragmatic characteristics of agricultural lexical units include their semantic structure (cognitive aspect), reflecting knowledge about agricultural activities, and their functional use (pragmatic aspect), linked to the speaker's communicative goals. This means that such units not only name objects but also

convey information about them (for example, fertilizer is a substance necessary for plant growth) and are used for specific communicative purposes (instructions, descriptions, persuasion).

- Cognitive Characteristics: Conceptual Structure: Words convey specific knowledge about agriculture. For example, the lexical unit "grain harvester" contains cognitive features such as "machine," "engine," "reaper," "threshing," and "grain processing."
- Semantic Fields: Words are grouped into semantic fields, such as "crop production" (crops, varieties, cultivation methods), "livestock" (animal species, feeding, breeding), and "mechanization" (agricultural machinery).
- Associations: Lexical units evoke associations with other concepts, such as "harvest" being associated with "labor," "season," and "market price."

Pragmatic Characteristics:

- Communicative Functions:
- Words are used for various purposes:
- Informing:
- Instructing:
- Persuading:
- Stylistic Coloring: Words can be neutral or have a specific stylistic coloring (e.g., scientific, colloquial, professional).
- Target Audience: The choice of vocabulary depends on the audience the speaker is addressing. Farmers use certain terms, while city dwellers use other, more general ones.

The relationship between cognitive and pragmatic characteristics: A person's cognitive base (knowledge of agriculture) determines how they will use this vocabulary in communication (pragmatics). The pragmatic task influences the choice of a specific lexical unit. For example, instructions for using fertilizers will use a more precise, cognitively rich term for "fertilizer," whereas in general conversation, the word "fertilizer" will suffice.

Our study examines lexical units related to agricultural discourse, specifically those describing the meat processing process. Within agricultural discourse as a subset of scientific discourse, the personal component is significantly weaker, as its participants are specialists in the field, researchers, and scientists.

The study's material included lexical units collected during direct work at a meat processing plant, as well as agricultural texts and text fragments covering various topics related to meat processing. These texts, using specific linguistic material, allow us to examine the evolution of agricultural terminology, the dynamics of its development, and determine its communicative and pragmatic potential.

The degree of vocabulary development for a given piece of vocabulary indicates public interest in it. By examining changes in agricultural vocabulary, we can trace the development of this industry.

The process of designating, or nominating, newly emerging objects and processes entails a certain degree of rethinking the scope and variation of meanings of existing units of reality. For example, the phenomenon of lacunarity, closely linked to the concept of non-equivalent vocabulary, is particularly evident in the often descriptive translation of the units under study. The introduction of fundamentally new technologies into meat processing necessitates the introduction of lexical units denoting these objects. The innovation of technologies arises, on the one hand, from the desire to best meet consumer demands, and on the other, to introduce more economical and environmentally friendly methods of processing (in this case, cutting) meat. These phenomena are directly reflected in lexical units: previously used domestic technologies for cutting pork carcasses involved cutting into larger fragments, so-called articles. With the introduction of new imported technologies, the need arose to designate the final cutting products.

The material for the study was agricultural texts and text fragments on various topics - on various issues of agriculture, agronomy, genetics, botany, plant growing, soil science, etc.

A concept may well have a lexical expression, but it is related in language not only to one word. It also correlates with a number of word-formation nests, the original lexemes of which are included in the synonymous series, while the members of the synonymous series form the core of the conceptual paradigm, and the remaining cognate words form its periphery.

The study of agricultural discourse involves identifying the verbal-conceptual and logical-functional features of the agronomic term, which is the most important nominative-metalinguistic unit of the formation of agroterminology.

Like any terminology system, agronomic terminology performs the following functions:

1) cognitive-gnoseological;
2) metalinguistic;
3) pragmatic;
4) diagnostic-prognostic;
5) systematizing.

The phenomenon of migration of terms from related specialized fields of knowledge is relevant for agronomic terminology, due to which, as the analysis showed, the terminology system of the agronomic sphere consists of general scientific, interdisciplinary, highly specialized, and general technical terms of various genesis.

In this regard, agronomic terminology can be interpreted as an area of the language of agricultural (agronomic) science, the logical-conceptual and semantic content of the terms of which reflects the entire system of connections, relationships, patterns, processes, phenomena, etc.

Recognition of a broad approach to the stratification of agronomic terminology naturally entails an expanded understanding of an agronomic term, which is associated with not one, but several concepts, internally articulated and

mutually correlated with each other. The basis of conceptual and defining gradation is both the original principle of the unity of knowledge and the principle of definability of one term through another.

It should be especially emphasized that the language of agronomic and agricultural literature as a systemic phenomenon of scientific style is determined by the subject of agronomy as a science, its specificity, as well as the "character of scientific, i.e. abstract thinking". The predominant position of nouns in agronomic discourse is also largely determined by the structural and subject-thematic specificity of the texts of this cognitive sphere.

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STRATEGIES TO INCREASE ECONOMIC ACTIVITY AMONG YOUTH

Abstract: *Youth economic activity is a significant indicator of a country's socio-economic development. This article explores key strategies to enhance youth participation in the labor market, promote entrepreneurship, and encourage financial literacy. The study uses statistical data, national policy reviews, and international best practices to identify barriers and propose effective solutions.*

Keywords: *Youth employment, entrepreneurship, economic participation, financial literacy, labor market.*

INTRODUCTION

Youth are one of the most dynamic and productive segments of society. However, in many developing countries, including Uzbekistan, youth unemployment and underemployment remain significant challenges. According to the *State Committee of Statistics of the Republic of Uzbekistan (2023)*, the unemployment rate among youth aged 15-30 was around 14.5%, which is higher than the national average.

The increasing number of young people entering the labor market every year demands comprehensive strategies to enhance their economic participation. This paper discusses effective strategies to boost youth economic activity, drawing upon both local policy initiatives and international practices.

MAIN BODY

1. Enhancing Employment Opportunities

One of the primary strategies is to improve access to quality employment opportunities. This involves:

- **Vocational training and re-skilling** programs tailored to market needs [1].
- **Partnerships between universities and industries** to provide internships and on-the-job training [2].
- Support for **remote and digital jobs** that allow flexible working for youth.

2. Promoting Youth Entrepreneurship

Entrepreneurship is a powerful tool for economic empowerment:

- Government initiatives such as the **"Yoshlar – kelajagimiz" fund** provide low-interest loans and mentorship [3].
- Establishing **startup incubators** and co-working spaces enhances innovation ecosystems.
- Tax incentives and simplified registration processes reduce barriers to entry for young entrepreneurs.

3. Financial Literacy and Inclusion

Many young people lack the financial knowledge needed for effective economic participation:

- **Financial education programs** in schools and universities should be implemented [4].
- **Mobile banking and digital finance** increase access to financial services for youth in rural areas.
- Collaboration with **microfinance institutions** helps youth secure initial capital.

ANALYSIS

A comparative analysis of youth economic activity in Uzbekistan and selected OECD countries reveals:

Country	Youth Unemployment (%)	Entrepreneurship Rate (%)
Uzbekistan	14.5	4.2
Germany	5.8	7.6
South Korea	8.1	6.3

Uzbekistan lags behind in entrepreneurship and needs to further strengthen institutional support mechanisms. As emphasized by **ILO (2022)**, youth participation is more effective when paired with targeted government support [5].

RESULTS

Vocational training increases employability by up to 30%.

Youth-focused entrepreneurship programs doubled the number of new startups in pilot regions (2022-2023 data from *Ministry of Youth Policy*).

Financial literacy initiatives reduced loan default rates among young entrepreneurs by 20%.

RECOMMENDATIONS AND CONCLUSION

1. Integrate entrepreneurship training into general education curricula.
2. Expand access to finance for youth through digital lending platforms.
3. Encourage public-private partnerships to support youth employment initiatives.
4. Monitor and evaluate youth-targeted programs regularly to assess impact.

In conclusion, increasing youth economic activity requires a multi-faceted approach involving education, finance, and employment policies. The future of sustainable economic development largely depends on how effectively a country can empower its youth.

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CHANGES IN TEMPERATURE INDICATORS IN THE BUKHARA REGION AND THEIR UTILIZATION OPPORTUNITIES

Abstract: *This article analyzes the trends of and minimum temperatures in the Bukhara region based on meteorological observations from the last ten years. Seasonal temperature variations and the overall dynamics of increase or decrease have been identified. Based on statistical data, the stability of the region's climate and its long-term changes have been assessed. The obtained results have scientific and practical significance in terms of their impact on agriculture, water resource utilization, and environmental safety.*

Keywords: *Minimum temperature, wind energy, solar energy, climate, natural resources, solar radiation, temperature, amplitude of solar radiation, solar heat.*

Introduction (Literature Review).

Climate change is recognized by the global community as one of the most urgent and serious global challenges facing humanity today, directly affecting all aspects of human life. It requires the immediate implementation of practical measures to mitigate its negative consequences and to adapt to new climatic conditions. In the Republic of Uzbekistan, the adoption of the laws "On the Use of Renewable Energy Sources" and "On Public-Private Partnership" has created a solid legal and regulatory foundation for accelerating the introduction of renewable energy sources through the construction of solar and wind powerplants.

Literature Review.

Significant efforts are being made to ensure climate stability in the Bukhara region. Comprehensive natural-geographical studies of the region's climate have been carried out by scholars such as N.A. Kogay (1971), F.N. Milkov (1990), A.G. Boboyev (1996), T.V. Zvonkova (1962, 1965), A.G. Isachenko (1998, 2003), M. Umarov (1967), N.N. Nigmatov (2004), S.B. Abbasov, A.S. Saidov, I.Q. Nazarov, U. Nurov, Yu.B. Rakhmatov, Kh.R. Toshov, M.K. Ergasheva, G.S. Khalimova, I.E. Mirzayeva and others [1,2,3].

Research Methodology.

The territory of the region (40.3 thousand sq. km) is located in the desert zone. According to the degree of human development, the area consists of desert-oasis and desert-pasture zones [5]. The climate of Bukhara region has its own distinctive features. By studying long-term changes in air temperature, it becomes possible to determine the impact of climate change on the territory of the region. These findings help in making practical decisions in agriculture, water resource management, and regional development.

Analysis and Results.

The climate of the Bukhara region is sharply continental, dry, and characterized by extremely hot summers and short, unstable winters. The average temperature in January is about −2°C, while in July it exceeds 40°C. The average annual temperature is 14.2–15°C. The annual temperature amplitude ranges from 68–72°C, indicating high climatic variability in the region. Each year, about 140–150 kcal of heat per 2 cm² of the Earth's surface is received, showing the abundance of thermal energy resources. The number of sunny hours per year ranges from 2800 to 3000. The sum of effective temperatures (daily average above 10°C) is 4800–5100°C, which creates favorable conditions for agriculture and renewable energy development. However, the annual precipitation amount is around 130–150 mm, typical of an arid (dry) climate. Most of the precipitation occurs in winter and spring, while in summer it is almost absent (0–1 mm). The humidity coefficient ranges between 0.03–0.2, and evaporation significantly exceeds precipitation [5].

Table 1.
Buxoro viloyati havo haroratining minimal ko'rsatkichlari

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	O'rt.
Yanvar	-9.5	-3.9	-1	-16.6	-2.3	-5.6	-9.6	-5.2	-21.2	-5.5	-8.04
Fevral	-2.5	0.8	-1.5	-8.1	-3.7	-3.6	-11.1	-4.1	-7.4	-7.2	-4.84
Mart	-5.2	-0.2	-4.2	-2.3	1.9	-2.4	-8.3	0.1	1.9	-1.8	-2.05
Aprel	1	4	9.5	3.6	2.8	0.8	1.2	8.9	3.8	5.8	4.14
May	11.4	17.2	9.3	8.2	10.6	11	14.4	12.6	11.1	10.3	11.61
Iyun	20.5	17.4	20.5	15.5	16.3	13.8	17.5	16.7	17.8	16.8	17.28
Iyul	18.7	23.4	18.2	18.9	18.2	18.2	18.3	18.4	19.1	17.5	18.89
Avgust	13.6	20.7	19.6	14.6	12.7	15.6	15.6	15	12.8	14.2	15.44
Sentabr	10.1	11.3	1.6	10.2	10.2	8.2	11.1	9.2	10.3	10.3	9.25
Oktabr	-0.1	5.7	2.8	-1	4.7	-0.8	1.4	4.8	2.3	1.4	2.12
Noyabr	-2.8	-14	-2.2	-7.2	-11	-11.8	-6.3	-2.1	-0.4	-3.5	-6.13
Dekabr	-6.9	-14	-7.2	-2.8	-3.8	-11.2	-5.2	-10.5	-14.9	-11	-8.75
O'rt.	4.025	5.7	5.45	2.75	4.71	2.68	3.25	5.31	2.93	3.94	4.07

Note: *The table was compiled based on 10-year data from the Bukhara meteorological station.*

During 2015–2024, the minimum temperature indicators observed in the Bukhara region once again confirm that the region has a sharply continental climate. Overall, winters in Bukhara are very cold, while summers are extremely hot. As shown in the table, temperatures drop sharply during the winter months, and in some years, anomalous cold spells have been recorded. For instance, in January 2023, the temperature fell to –21.2°C, indicating the severe and harsh nature of winters in the Bukhara region. Meanwhile, in January 2016 and 2017, minimum temperatures of –3.9°C and –1°C were recorded, suggesting comparatively mild winters. This process reflects that cold waves vary in strength and frequency from year to year. Significant differences are also observed in February: in 2016, the minimum temperature was 0.8°C, while in 2021 it dropped to –11.1°C. Such variations show that winters in the region are unstable — in some years, the climate may be unusually mild, while in others, extremely cold.

During the spring months, the minimum temperatures in Bukhara begin to stabilize. In March, the average minimum temperature is around –5°C, though in 2021 it dropped to –8.3°C, while in some years it was recorded as positive. These late spring frosts can negatively affect agriculture, particularly fruit trees and vegetable crops. From April onwards, consistently positive temperatures indicate the beginning of the vegetation period. In May, minimum temperatures range between 9°C and 17°C, creating favorable conditions for crop growth.

Summer is the most distinctive season in Bukhara. According to the data, even the minimum temperatures remain very high. In July 2016, the minimum temperature reached +23.4°C, showing the strong manifestation of heat waves in the region. Generally, in June and July, minimum temperatures range between +15°C and +23°C, which indicates insufficient nighttime cooling and an increased level of heat stress for both humans and animals. From August, temperatures gradually begin to decline, though they remain relatively high, indicating an extended summer season in the region.

In autumn, temperatures in Bukhara gradually decrease. In September, the minimum temperature is usually around +10–11°C, but in October it drops sharply — in some years remaining positive, while in others becoming negative. For example, in October 2020, it was –0.8°C, and in 2021, it was 1.4°C. In November, the first winter frosts begin, with minimum temperatures dropping to as low as –11.8°C in some years. By December, the region enters the cold winter period — for instance, temperatures of –14°C in 2016 and –14.9°C in 2023 indicate anomalously severe cold conditions. The dynamics of average annual minimum temperatures also provide important scientific insights. In 2016, the highest average minimum temperature was recorded at 5.7°C, whereas in 2020 it dropped to 2.68°C — the lowest value in the period. This demonstrates the strong variability and instability of Bukhara's climate from year to year. In recent years (2022–2024), average minimum temperatures have tended to be lower, indicating that winters are becoming colder (Table 1).



Figure 1

The 10-Year Dynamics of Minimum Air Temperature in the Bukhara Region

In general, the dynamics of minimum temperatures in the Bukhara region during 2015–2024 indicate that the region's climatic resources are unstable. The frequency of anomalous cold and heat waves is increasing, and these processes directly affect the region's agricultural activities, water resources, living conditions, and public health. In particular, severe frosts in winter increase the load on electricity and heating systems, while high nighttime temperatures in summer intensify the use of water resources. Therefore, based on the climatic data of the Bukhara region, it is necessary to develop adaptation measures and implement a sustainable development policy for the future. The following diagram illustrates the 10-year dynamics of minimum temperatures in the Bukhara region (Figure 1).

Conclusion and Recommendations.

The diverse distribution of bioclimatic conditions over different years is associated with the characteristics of air masses entering Central Asia. Based on the statistical analysis of observational data from meteorological stations located in the Bukhara region for the period 2015–2024, the climatic characteristics of the region were examined. In conclusion, it can be stated that the region generally experiences relatively mild winters, with predominantly positive average temperatures. The development of solar energy in the Bukhara region would make a significant contribution to economic growth. Overall, the assessment of the utilization of climatic resources and the effective analysis of the results serve as important factors for achieving sustainable development in regions such as the Bukhara region.

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QASHQADARYO VILOYATI QISHLOQ XO`JALIGIDA LALIMIKOR YERLARDAN FOYDALANISH HOLATI

Annotatsiya. *Arid iqlimli hududlarning qishloq xo`jaligida lalimikor yerlarning ahamiyati muhim o`rin tutadi. Mazkur maqolada Qashqadaryo viloyati lalimikor dehqonchilik qilinadigan hududlarning geografik tavsifi bayon etilgan.*
Kalit so`zlar*. Lalmi yerlar, lalmikor dehqonchilik, bahorikor ekinlar.*

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KASHKADARYA REGION STATUS OF USE OF RAINFED LANDS IN AGRICULTURE

Abstrakt: *The importance of rainfed lands in agriculture in arid climate regions is significant. This article describes the geographical characteristics of the areas of the Kashkadarya region where rainfed lands farming is practiced.*
Key words: *Rainfed lands, rainfed agriculture, spring crops.*

Lalmikor yerlar — yillik o‘rtacha yog‘ingarchilik 200 mm dan yuqori bo‘lgan, sug‘orilmay dehqonchilik qilinadigan adir zonalaridagi yerlardir. Bu yerlarda tabiiy namlikni to‘plash, uni saqlash, tuproqni o‘g‘itlash va begona o‘tlarga qarshi kurash kabi tadbirlar qo‘llanadi. Lalmikor dehqonchilik, sug‘orish imkoniyati yo‘q yerlardan foydalanishga imkon bergani uchun iqtisodiy ahamiyatga ega va sug‘oriladigan ekin maydonlarini kengaytirish uchun katta zaxira hisoblanadi. Lalmikor yerlar, bahorikor yerlar – zonasidagi sug`orilmay dehqonchilik qilinadigan yerlardir. Lalmikor dehqonchilik sug`orish uchun noqulay bo`lgan yerlardan foydalanish imkonini bergani uchun ham katta iqtisodiy ahamiyatga ega. Qashqadaryo viloyatining mavjud yer resurslaridan lalmikor dehqonchilikda ham foydalaniladi. Lalmikor dehqonchilik - qishloq xo`jaligining boshqa tarmoqlaridan farq qilgan holda, iqlim sharoitlari va ob–

havoning bahorgi holati bilan bevosita bog`liq. Bu hududlarda qishloq xo`jalik ekinlari hosildorligi ham ob – havo sharoitlariga bog`liq holda o`zgarib turadi, bahor quruq kelgan yillarda esa lalmi yerlardan mahsulot olish miqdori kam yoki umuman bo`lmasligi ham mumkin.

A.V. Genusov va boshqalarning (1960) ma‘lumotlariga ko`ra O`zbekistonda lalmikor dehqonchilikda foydalanilishi mumkin bo`lgan yer resurslarining maydoni 3114,4 ming ga ni tashkil etadi. Bu yerlarning 28,5% i ta‘minlangan, 47,1% i chala ta‘minlangan va 24,4% i ta’minlanmagan zonalarda joylashgan [1]. L.I.Kurakova (1976) quyidagi agrolandshaft turlarini ajratadi: lalmikor, sug‘orma, yaylov va o‘rmon xo‘jaligi landshaftlari. Har bir landshaft turida sodir bo‘ladigan o‘zgarishlar aniq dalillar bilan ochib berilgan (gidrotermik, fizik-mexanik, kimyoviy va boshqa sharoitlar) [2].

Qashqadaryo viloyatida lalmi yerlarning salmog‘i ancha yuqori (258,4 ming ga) [3]. Lalmikor dehqonchilik sharoitlariga ko`ra Qashqadaryo viloyatining hududi alohida Qashqadaryo okrugiga ajratiladi. Qashqadaryo viloyatida ham O`zbekistonning boshqa viloyatlaridagi kabi yer resurslaridan lalmikor dehqonchilikda foydalanish imkoniyatlari juda katta. Lalmikor yerlarda qishloq xo‘jalik ekinlarini faqat tuproq qatlamlaridagi yog‘inlar hisobiga yig‘ilgan namlik evaziga yetishtirilishini hisobga olib, yillik yog‘in miqdori o‘rtacha 200 mm dan oshadigan yerlardagina lalmikor ekinlar joylashtiriladi. Lalmikor yerlar tuproq mintaqalarining joylashishiga mos ravishda namlik bilan ta’minlangan, kam ta’minlangan va ta’minlanmagan yerlarga bo‘linadi. Jigar rang va qoramtir bo‘z tuproq baland mintaqada joylashgan bo‘lib, namlik bilan ta’minlangan, tipik bo‘z tuproq o‘rta-tog‘ oldi zonalarida tarqalgan va namlik bilan kam ta’minlangan va och tusli bo‘z tuproqlar quyi rayonlarda namlik bilan ta’minlanmagan lalmikor yerlar hisoblanadi M.Fayzullayevning keltirishicha (2019), lalmikor yerlarning kattaligi bo‘yicha Chiroqchi tumani keskin ajralib turadi, uning hissasiga ushbu toifadagi rayon yerlarining 44,0 foizi, viloyat lalmi yerlarining esa 2/5 qismi to‘g‘ri keladi [3].

Mamlakatimizda 734 ming ga lalmi ekin maydoniga ega. Bu maydonning 99,8 ming ga si nam bialn yaxshi ta`minlangan, 553,7 ming ga chala ta`minlangan, 89,5 ming ga nam yetishmaydigan maydonlardir.

Lalmikor yerlar vertikal zonallik qonuniga asosan o`zgarib boradi, hamda tuproq va iqlim sharoitlariga ko`ra, namlanish sharoitiga qarab quyidagi mintaqalarga ajratiladi:

Viloyatning lalmikor yerlarida asosan g`alla ekinlari yetishtiriladi. Keyingi yillarda moyli qishloq xo`jalik ekinlari ham ancha katta maydonlarda yetishtirila boshlandi (kunjut). Chiroqchi, Qamashi va boshqa tumanlarning lalmikor yerlaridan yil davomida ikki marta hosil olish imkoniyatlari mavjudligini tajribalar yaqqol ko`rsatmoqda. G`alla ekinlari yig`ishtirilib yerlarga yaxshi ishlov berilgach poliz ekinlarini (tarvuz) ekish va yuqori hosil olish mumkin. Shuningdek, lalmikor yerlarda chorvachilik ozuqa bazasini yaxshilash uchun katta tabiiy imkoniyatlar mavjud. Lalmikor dehqonchilikning ta‘minlangan zonasida ozuqa ekinlaridan ancha yuqori hosil olish mumkin. Masalan, yo`ng`ichqaning hosildorligi lalmi

yerlarda sug`oriladigan yerlardagiga nisbatan 2 – 2,5 marta kamroq bo`lsada (40 – 50 ts/ga) iqtisodiy jihatdan ancha arzonroqdir.

Tog`oldi mintaqasida yillik yog`in miqdori 350-400 mm ni tashkil etadi. Bu mintaqada 50-60% maydon eroziyaga uchragan. Tog` oldi mintaqa namlik bilan ta`minlangan bo`lib, Kitob tumaning janubi-g`arbiy qismi, Chiroqchini tumanining markaziy va sharqiy qismlari, Dehqonobod tumanini tog`oldi qismi, Qamashini sharqiy va janubiy qismlari kiradi [4].

Iqlim sharoitlari tuproqlarning vujudga kelishi va hududiy tabaqalashuvidagi muhim omillardan hisoblanib, lalmikor yerlarda tuproqlarning genetik tiplarining vujudga kelishida va hududiy tarqalishida iqlim unsurlaridan radiatsiya, issiqlik va namlanish sharoitlari ayniqsa katta ahamiyatga ega. Viloyatning janubiy geografik o`rni tufayli bu hududda yil davomida Quyoshdan katta miqdorda radiatsiya keladi. Lalmikor hududlarda iliq davr 26 fevraldan boshlanib, 16 dekabrgacha (277-304 kun) davom etadi. o`rtacha baland tog`larda $4000^0$ dan $2800^0$ gacha pasayib boradi. Bu ko`rsatkichlarga ko`ra, viloyatning lalmikor yerlari issiq va juda issiq zonalarga mansub bo`lib, bu hududlarda yillik yog`in miqdori 300 mm dan 650 mm gacha oshib boradi [5].

Viloyatning lalmikor yerlarida asosan g`alla ekinlari yetishtiriladi. Keyingi yillarda moyli qishloq xo`jalik ekinlari ham ancha katta maydonlarda yetishtirila boshlandi (kunjut). Chiroqchi, Qamashi va boshqa tumanlarning lalmikor yerlaridan yil davomida ikki marta hosil olish imkoniyatlari mavjudligini tajribalar yaqqol ko`rsatmoqda. G`alla ekinlari yig`ishtirilib yerlarga yaxshi ishlov berilgach poliz ekinlarini (tarvuz) ekish va yuqori hosil olish mumkin. Shuningdek, lalmikor yerlarda chorvachilik ozuqa bazasini yaxshilash uchun katta tabiiy imkoniyatlar mavjud. Lalmikor dehqonchilikning ta‘minlangan zonasida ozuqa ekinlaridan ancha yuqori hosil olish mumkin. Masalan, yo`ng`ichqaning hosildorligi lalmi yerlarda sug`oriladigan yerlardagiga nisbatan 2 – 2,5 marta kamroq bo`lsada (40 – 50 ts/ga) iqtisodiy jihatdan ancha arzonroqdir.

Lalmikor dehqonchilik yerlarining tog` oldi va tog`li rayonlar bilan bog`liqligi yer resurslaridan foydalanishni ancha qiyinlashtiradi (yonbag`irlar nishabligi, qishloq xo`jalik texnika vositalarining harakatlanishining qiynligi va b.sh.). Shuningdek, lalmikor dehqonchilik yerlaridagi barcha tuproq tiplarining eroziya jarayonlariga moyilligi yer resurslarini asrab – avaylash va eroziyaga qarshi tadbirlarni amalga oshirishda haydaladigan yerlar mezo – va mikrorelyefining nishabligiga ayniqsa katta e‘tibor berish lozim. Tog` yonbaglarida yerlarni haydash eroziyaga qarshi tadbirlarni hisobga olgan holda bajarilishi kerak. Eroziya havfini baholay bilmaslik noxush oqibatlarga olib keladi. Tog`li yerlarda daraxt va butalarni kesish, o`t qoplamini payxon qilish yerlarni katta maydonlarda yuvilishiga olib keladi. Tuproqdan azot, fosfor va kaliyning yuvilishi natijasida tuproq unumdorligi 50 – 60% gacha kamayishi mumkin. Lalmi yerlarda tuproq unumdorligini tiklash va oshirish uchun beda va kuzgi bug`doyni almashlab ekish muhim.

Lalmi yerlarda eroziya jarayonlarini oldini olish yoki susaytirishda ihotazorlarning ahamiyati juda katta. Ixotazorlar bug`lanishning kamayishi tufayli

yuzaning yaxshi namlanishiga, qish paytida qorlarni saqlanib turshiga imkoniyat yaratadi. Yozda esa ihotazorli uchastkalar yomg`irlarni tuproqqa singishini yengillashtiradi. Lalmi yerlarning unumdorligini oshirishda yonbag`irlarni terrasalash, qishloq xo`jalik ekinlarini tanlash eroziyaga qarshi muhim vositalardir. Tajribalarga ko`ra tamaki, makkajo`xori, poliz–sabzavot, efir moyli, dorivor ekinlar eroziya jarayonlarini susaytirmaydi va aksincha, birmuncha tezlashtiradi. G`alla va boshoqli ekinlar esa tuproq eroziyasini ancha susaytiradi, ko`p yillik o`tlar esa eroziya jarayonlariga deyarli barham beradi.

Xulosa.

Aholining oziq-ovqat mahsulotlariga bo‘lgan talabini qondirish hozirgi kunda foydalanib kelinayotgan lalmi yerlarni hozirgi zamon talablari asosida doimo rivojlantirish, olib borilayotgan islohotlar negizida yer resurslari va ularning holati, ayniqsa tuproqlarning unumdorlik darajasi bilan bevosita bog‘liq. Shu sababli qishloq xo‘jaligida amalda foydalanib kelinayotgan lalmi tuproq qoplamlaridan foydalanish samaradorligini va unumdorlik darajasini oshirish, saqlash, qayta tiklash hamda muhofaza qilish eng muhim ustuvor vazifalardan biri bo‘lib qolmoqda. Tuproqda tabiiy namlikni saqlash va uni to`plash, o`g`itlash, begona o`tlarga qarshi kurashish, tuproq eroziyasini oldini olish kabi tadbirlar qo`llanilsa lalmi yerlardan foydalanish samarasi oshadi.

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YOSHLAR SUBMADANIYATINING IJTIMOIY-PEDAGOGIK JIHATLARI

Annotatsiya. *Submadaniyat — bu muayyan yosh guruhlariga xos bo‘lgan, asosiy madaniyatdan farqlanuvchi madaniy qadriyatlar va ijtimoiy meyorlar tizimi bo‘lib, uning doirasida yoshlar o‘zlarining ijtimoiy holati, dunyoqarashi va ehtiyojlarini ifoda etadilar. Mazkur maqola jamiyat hayotida muhim o‘rin tutuvchi yoshlar submadaniyatining ijtimoiy-pedagogik jihatlarini tahlil qilishga qaratilgan. Xususan, submadaniyatlar yoshlarning qadriyatlar tizimi, xulq-atvori, o‘quv motivatsiyasi va o‘zlashtirish darajasiga qanday ta’sir ko‘rsatishi pedagogik nuqtai nazardan baholanadi.*

Kalit so‘zlar: *yoshlar submadaniyati, ijtimoiy-pedagogik jihatlar, ta'lim jarayoni, yoshlar tarbiyasi, submadaniyat turlari, ijtimoiy guruhlar, qadriyatlar tizimi, xulq-atvor normalari, pedagogik yechimlar.*

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SOCIO-PEDAGOGICAL ASPECTS OF YOUTH SUBCULTURE

Abstract: *Subculture is a system of cultural values and social norms inherent to a specific age group, distinguishing itself from the main culture. Within its framework, young people express their social status, worldview, and needs. This article is devoted to an in-depth analysis of the socio-pedagogical aspects of youth subculture, which occupies an important place in social life. In particular, the ways in which subcultures influence the youth's value system, behavior, learning motivation, and academic achievement are assessed from a pedagogical point of view.*

Key words: *youth subculture, socio-pedagogical aspects, educational process, youth upbringing (or youth education), types of subcultures, social groups, value system, behavioral norms, pedagogical solutions.*

Bugungi kunda o‘smir-yoshlar qatlamini qamrab oladigan yoshlar submadaniyati jamiyat oldida turgan dolzarb masalalardan biriga aylandi.

“Yoshlar submadaniyati” tushunchasi fanga XX asrning oxirlari kirib kelgan va ilmiy jihatdan tadqiq etila boshlangan. Yoshlar submadaniyati deganda umumiy turmush tarzi, o‘ziga xos xulq-atvori, guruh meyorlari, qadriyatlari va stereotiplariga ega bo‘lgan ma’lum bir yosh avlod madaniyati tushuniladi.

Zamonaviy o‘qituvchilar o‘zlarining ta’lim amaliyotida turli yoshlar submadaniyatlari vakillariga duch kelishadi, ular hozirda o‘quvchilarning motivatsiyasi, sinfni boshqarish, akademik standartlar, intizom va xavfsizlikka sezilarli ta’sir ko‘rsatadi. Submadaniyatlarni ta’lim jarayonini modernizatsiya qilish imkoniyati sifatida ko‘rib, amaliyotchi o‘qituvchilar yoshlar jamoalarining ijobiy salohiyatidan foydalanishlari mumkin. Ushbu guruhlarning kelib chiqishi, tuzilishi va maqsadini tushunish orqali o‘qituvchilar ularni ittifoqchilarga aylantirishlari, salbiy ko‘rinishlarni yanada konstruktiv kanallarga yo‘naltirishlari mumkin.

Submadaniyat - bu guruhni jamiyatning ko‘pchiligidan ajratib turadigan normalar va qadriyatlar tizimi. Submadaniyat (submadaniyat) - bu dominant madaniyatdan farq qiladigan yoki ushbu madaniyatga dushman bo‘lgan (kontrmadaniyat) guruh yoki sinf madaniyatini tavsiflovchi tushuncha[1, 12]. Shuningdek, submadaniyat, jamiyatning jinoiy qatlami madaniyati (jinoyatchi submadaniyat) sifatida ishlaydigan an’anaviy madaniyatning ma’lum salbiy talqin qilingan normalari va qadriyatlari to‘plami sifatida tushuniladi; inson tashkilotining maxsus shakli (ko‘pincha yoshlar) - dominant madaniyat ichidagi avtonom, yaxlit mavjudot, o‘z tashuvchilarining turmush tarzi va tafakkurini belgilaydi, urf-odatlari, normalari, qadriyat tizimlari va hatto institutlari bilan ajralib turadi (M. Brake, R. Schwendter); professional tafakkur tomonidan o‘zgartirilgan, noyob mafkuraviy rangga ega bo‘lgan an’anaviy madaniyat qadriyatlari tizimi[7].

Submadaniyat - bu ma’lum nominal va real guruhlarning, shuningdek, ushbu guruhlar ichidagi aniq shaxslarning turmush tarzi va tafakkuriga ta’sir qiluvchi va ularga o‘zlarini "biz" sifatida tanib olish va tasdiqlash imkonini beruvchi o‘ziga xos ijtimoiy-psixologik xususiyatlar (normalar, qadriyatlar, stereotiplar, didlar va boshqalar) to‘plami bo‘lib, ular "ular"dan (jamiyatning qolgan qismidan) farq qiladi.

Ta’kidlash kerakki, yoshlar o‘zlarining madaniyatini, jumladan, o‘zlarining jargonlarini, modasini, musiqasini va axloqiy muhitini rivojlantiradilar. Ko‘pincha u kattalar madaniyatidan boyroq bo‘lib chiqadi. Uning xususiyatlari, bir tomondan, yoshlarning hayotiy energiyasi va boy tasavvurining ko‘pligi, ikkinchi tomondan, ko‘pchilik orasida iqtisodiy va ijtimoiy mustaqillikning yo‘qligi bilan izohlanadi.

O.M. Glushakova fikricha, “Zamonaviy jamiyatning xilma-xil submadaniyatlari orasida yoshlar submadaniyati o‘zini tutish, muloqot qilish, bo‘sh vaqtni o‘tkazish va dunyoni tushunishning o‘ziga xos usuli sifatida alohida o‘rin tutadi, bu faqat shu ijtimoiy guruhga xos bo‘lgan noyob yoshlar turmush tarzida mujassamlangan... Yoshlarning o‘zlari o‘zlarini bir hil guruh deb bilishmaydi (na qarashlar, na turmush tarzi, na yosh bo‘yicha). Bu butun odamlar

o‘z submadaniyatlariga bo‘lingan. Ular o‘z uslublari va o‘z modalarini, o‘z madaniyatlarini yaratadilar” [6]. Darhaqiqat, yoshlar madaniyatining paydo bo‘lishi yoshlarning ijtimoiy rollarining noaniqligi va o‘zlarining ijtimoiy mavqeiga ishonchsizliklari bilan bog‘liq. Bu guruh vakillari o‘zlarini ota-onalari va jamiyatdan mustaqil bo‘lgan erkin shaxslar deb hisoblashadi.

Yoshlar submadaniyatlarini pedagogik nuqtai nazardan tadqiq qilish bizga ushbu murakkab, ko‘p qirrali konsepsiyaning ijtimoiy-pedagogik mohiyatini ochib berishga[2] va uning mavjudlikning turli sohalarini aks ettiruvchi xususiyatlarini o‘rganishga imkon beradi: экологик[9], ҳарбий[11] ва кадет[8]. Bir qator ishlar bolalar va yoshlarning yoshga bog‘liq xususiyatlari va ularning rivojlanishi, tarbiyasi va ta’limi masalalari bilan bog‘liq yoshlar submadaniyatlarining paydo bo‘lish sabablarini o‘rganishga[12-13], bunday uyushmalarning vakillari bilan pedagogik ish tajribasini tavsiflashga[5] ва submadaniy savodxonlikni rivojlantirish masalalarini o‘rganishga bag‘ishlangan[14].

So‘nggi paytlarda universitetlarda professional o‘qituvchilarni tayyorlash, ta’lim komponentini kuchaytirish va turli uyushmalardagi o‘smirlar o‘rtasidagi ijtimoiy o‘zaro ta’sirning mohiyatini o‘rganish maqsadga muvofiqligi nuqtai nazaridan yoshlar submadaniyatlari bilan bog‘liq masalalarni o‘rganish zarurati tobora ko‘proq qayd etilmoqda[15, 257].

Yoshlar submadaniyati hodisasi - bu yoshlar orasida dominant qadriyatlar va normalardan farq qiluvchi o‘ziga xos madaniy hodisalarning shakllanishi va rivojlanishi. Uning asosiy jihatlari quyidagilarni o‘z ichiga oladi: an’anaviy qadriyatlarga qarshi yakkalanish va isyon, o‘zini o‘zi aniqlash va ijtimoiylashuv orqali hayotda o‘z o‘rnini izlash, shuningdek, yoshlarning dunyoqarashi va xatti-harakatlariga ta’siri. Uning paydo bo‘lish sabablari ijtimoiy va iqtisodiy o‘zgarishlarga, shuningdek, yoshlarning ajralib turishi va o‘zini ifoda etish zaruratiga bog‘liq.

Tadqiqotlarga ko‘ra, “yoshlar submadaniyati” atamalarining kombinatsiyasi pedagogika faniga nisbatan yaqinda kirib kelgan. Yoshlar submadaniyati fenomeni va ular ishtirokidagi nizolar zamonaviy pedagogika muammolaridan biridir. Nafaqat yoshlar submadaniyatlari vakillari, balki umuman yoshlar bilan ishlash uchun pedagogik korreksiya texnologiyalarini ishlab chiqish maqsadida nazariyotchi olimlar va amaliyotchi pedagoglar ushbu hodisani tadqiq qilmoqdalar. Umuman olganda, yoshlar qarama-qarshilik ruhi bilan ajralib turadi, ular zamonaviy jamiyatda mavjud bo‘lgan hayot normalari va qoidalari doirasida tor.

Yoshlar submadaniyati uzoq vaqtdan beri sotsiologlar uchun qiziqish mavzusi bo‘lib kelgan, ular uni ijtimoiy hodisa deb hisoblashadi; faylasuflar bu hodisaning ekzistensial muammolarini o‘rganishadi; psixologlar o‘ziga xoslik va yoshlar submadaniyatlari masalalarini o‘rganishadi; madaniyat va submadaniyat o‘rtasidagi munosabatlarga e’tibor qaratib, ko‘rib chiqilayotgan tushunchaning xususiyatlarini ta’kidlashadi [10].

Ko‘pincha yoshlar qat’iy mulohazalar, maksimalizm, maslahatlarni rad etish bilan ajralib turadi, ular ijtimoiy rivojlanishning mavjud modellariga bo‘ysunish

yukiga tushadilar, ular barcha meyoriy va tartibga solinadigan narsalarga salbiy munosabatda bo‘lishadi, ular dinamizm, dunyoga ochiqlik, zaiflik, hissiy reaksiyaning kuchayishi, optimizm, romantik intilishlar, yangiliklarni ideallashtirish bilan ajralib turadi. Biroq, bu barcha yoshlarga xos emas, natijada yoshlar submadaniyat vakillariga va umume’tirof etilgan qadriyatlar va xatti-harakatlarni qo‘llab-quvvatlaydigan yoshlarga bo‘linadi. Ko‘pincha bu ikki guruh o‘rtasida qadriyatlar yo‘nalishiga asoslangan nizolar yuzaga keladi va qoida tariqasida, bu nizolarni umume’tirof etilgan qadriyatlarga rioya qiladigan yoshlar qo‘zg‘atadi.

Yoshlar submadaniyati – yangi va ko‘p qirrali ko‘plab omillarga ta’sir ko‘rsatadigan, umuman jamiyatning ijtimoiy-madaniy rivojlanishidan to ma’lum yoshdagi o‘smir-yoshlar guruhlarining psixologik o‘ziga xosligi bilan bog‘liq hodisadir. Yoshlar uyushmalari maxsus adabiyotlarda turli tushunchalar bilan ifodalangan: “norasmiy yoshlar uyushmalari, ko‘cha guruhlari, stixiyali guruhlar” [3] va boshqalar. Albatta, yoshlar jamiyatning kelajakni shakllantiruvchi qismidir.

Yoshlarni o‘rganishga mavjud yondashuvlar orasida biz yoshlarni o‘ziga xos turmush tarzi, dunyoqarash, qadriyatlar tizimi, munosabatlar va xulq-atvor normalarining tashuvchisi sifatida ko‘rib chiqadigan kulturologik yondashuvga e’tibor qaratish zarur.

Submadaniyatlarning paydo bo‘lishi - bu ijtimoiy oqimdan qadriyatlari, qiziqishlari, xulq-atvori va turmush tarzi bilan ajralib turadigan insonlar guruhlarining shakllanishi va rivojlanishi jarayonidir. Submadaniyatlar hayotning turli sohalarida, jumladan, musiqa, moda, sport, san’at va boshqa sohalarda paydo bo‘ladi. Madaniy xilma-xillikni shakllantirishda muhim rol o‘ynaydi hamda insonlarga hamfikrlarini topishga va ularning manfaatlarini qo‘llab-quvvatlashga imkon beradi. Ular innovatsion g‘oyalar manbai bo‘lishi va umuman jamiyat rivojiga ta’sir qilishi mumkin.

Submadaniyatlar oila tarbiyasiga, oilaning katta va yosh a’zolariga o‘ziga xos ta’sir ko‘rsatadi. Bu ta’sir, bir tomondan, qadriyatlar, o‘zaro ta’sir va xulq-atvor normalari, ba’zida submadaniyatning boshqa belgilari, tashuvchilari keksa oila a’zolari tomonidan oilaviy tarbiya jarayonida u yoki bu darajada ongli ravishda tarbiyalanishi mumkinligida namoyon bo‘ladi. Boshqa tomondan, oilaning keksa va yosh a’zolari turli submadaniyatlarning tashuvchisi bo‘lganligi sababli, oilaviy tarbiyada turli xil qadriyatlar va hatto ko‘pincha aniqroq submadaniy xususiyatlar (jargon, estetik imtiyozlar va boshqalar) bo‘yicha nizolar kelib chiqishi mumkin.

Shuni ta’kidlash kerakki, yoshlar submadaniyatlariga nisbatan salbiy munosabat shakllangan; o‘qituvchilar yoshlarning ularga aloqadorligi haqida savollar bermaslikni afzal ko‘rishadi, o‘smirlar va yosh kattalarning taxminan to‘rtdan bir qismi bu hodisaga, jumladan, vayronkor submadaniyatlarga aloqador yoki aloqador bo‘lganligini e’tiborsiz qoldiradilar. Biroq, yoshlarga muloqot, boshqa odamlar bilan o‘zaro munosabatda bo‘lish, raqobatbardoshlikni rivojlantirish, mustaqillik, o‘zini o‘zi tashkil etish, jamiyatdagi rolini, bilim va

ijodkorlikni tan olish ehtiyojlarini ro‘yobga chiqarish imkoniyatlarini beradigan yoshlar submadaniyatlarining ijobiy ta’sirini inkor etib bo‘lmaydi.

So‘nggi yillarda davomida yoshlar submadaniyati muammosi ma’lum darajada tadqiqotning sotsiologik sohasidan pedagogik sohaga o‘tdi. Bu zamonaviy jamiyatda mavjud bo‘lgan va turli darajada va shakllarda namoyon bo‘lgan submadaniyatning yoshlar tarbiyasiga sezilarli ta’sir ko‘rsatishi bilan izohlanadi: qadriyatlar tizimi, dunyoqarashi, jamoat joylarida xatti-harakatlar. Vaziyat ijtimoiy institutlarning inqirozi bilan murakkablashadi: oila, ta’lim muassasalari, davlat va yoshlar siyosati yoshlarning ijtimoiylashuv jarayoniga ta’sir qiladi. Ijtimoiylashuv jarayonining buzilishi muqobil turmush tarziga bo‘lgan ehtiyojni yuzaga keltiradi va yoshlarning rasmiy ijtimoiylashuv tuzilmalarda yo‘qotgan narsalarini kompensatsiya qiladi.

Pedagogik muammo sifatida submadaniyatlar quyidagi jihatlarni o‘z ichiga oladi:

* Ta’lim tizimiga moslashish qiyinchiliklari: Submadaniyatga mansub bolalar va o‘spirinlar ko‘pincha ta’lim tizimining qadriyatlari va normalari bilan to‘qnashuvga duch kelishadi. Ularning o‘ziga xos til, kiyim-kechak, musiqa va boshqa xususiyatlari maktab muhitida qabul qilinmasligi mumkin.

* Ta’lim jarayonida qiyinchiliklar: Submadaniyatga mansub bolalar va o‘spirinlar maktabda o‘qishga qiziqishni yo‘qotishi, o‘qituvchilar bilan munosabatlarni buzishi va o‘qishni tashlab ketishi mumkin.

* Ijtimoiy moslashish qiyinchiliklari: Submadaniyatga mansub bolalar va o‘spirinlar o‘zlarini jamiyatda qabul qilinmagan his qilishlari, ijtimoiy aloqalarni o‘rnatishda qiyinchiliklarga duch kelishlari mumkin.

Submadaniyatlarni pedagogik muammo sifatida ko‘rib chiqishda quyidagi nuqtalarni hisobga olish kerak:

* Submadaniyatlarning xilma-xilligi: Submadaniyatlar juda xilma-xil bo‘lishi mumkin va ularning har biri o‘ziga xos xususiyatlarga ega.

* Submadaniyatlarning salbiy tomonlari: Ba’zi submadaniyatlar bolalar va ospirinlarning xavfli xatti-harakatlarga, giyohvandlikka, jinoyatchilikka moyilligini oshirishadi.

Submadaniyatlarni pedagogik muammo sifatida hal qilish uchun quyidagi choralarni ko‘rish lozim:

* Submadaniyatga mansub bolalar va o‘spirinlar bilan ishlash: Ular bilan aloqa o‘rnatish, ularning muammolarini tushunish va ularga yordam berish kerak.

* Ijtimoiy moslashishni rag‘batlantirish: Submadaniyatga mansub bolalar va o‘spirinlarni jamiyatga moslashtirish, ularga o‘zlarini qabul qilinmagan his qilmasliklari uchun imkoniyatlar yaratish kerak.

Submadaniyatlarni pedagogik muammo sifatida hal qilish juda murakkab masalalarni o‘z ichiga oladi. Bu masalalarni hal qilish uchun ta’lim tizimi, ota-onalar, jamiyat va davlatning birgalikdagi sa’y-harakatlari talab etiladi.

Submadaniyatlarni pedagogik jihatdan o‘rganish pedagoglarga submadaniyatlar bilan bog‘liq salbiy ta’sirga ega oqibatlarni, jumladan, ziddiyatlarning oldini olish strategiyalarini ishlab chiqishda yordam beradi.

Shuningdek, pedagoglar tomonidan yoshlarning maqsad va ehtiyojlarini o‘rganish orqali ularning ehtiyojlarni qondirish uchun muqobil yo‘llarni taklif qilish imkoni yaratiladi.

Xulosa qilib aytganda, yoshlar submadaniyatlarining ijtimoiy-pedagogik jihatlari ularning o‘smirlarni ijtimoiylashuviga ta’siri, qadriyatlar va dunyoqarashlarning shakllanishi va ta’lim resursi sifatidagi salohiyatini o‘z ichiga oladi. Submadaniyatlar individuallik, ijodkorlik va muloqot qobiliyatlarini rivojlantirishga yordam berishi mumkin, ammo ular mojarolar va asosiy jamiyatdan ajralib qolish xavfini ham o‘z ichiga oladi, shuning uchun o‘qituvchilar ular bilan konstruktiv yondashuvlardan foydalangan holda ishlashga qodir bo‘lishlari kerak.

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INTERYERDA RANGLAR UYG'UNLIGINING PSIXOLOGIK VA ESTETIK AHAMIYATI

Annotatsiya: *Zamonaviy qurilish arxitektura sohasini interyer dizaynisiz tasavvur qilib bo'lmaydi. Zero, interyerdagi ranglar uyg'unligi, dizaynning har bir detaligacha berilgan e'tibor bino yoki inshootning ko'rkan va har tomonlama qulay bo'lishi uchun juda katta ahamiyat kasb etadi.Ushbu maqolada interyer dizaynida ranglar uyg'unligining ahamiyati, ranglarning inson psixologiyasiga ta'siri hamda ularni to'g'ri tanlash prinsiplari yoritilgan. Maqolada ranglar psixologiyasi, ularning xonaga ko'rsatadigan vizual va emotsional ta'siri, shuningdek, ranglarni uyg'unlashtirishda qo'llaniladigan asosiy qoidalar yoritib o'tilgan.*

Kalit so'zlar: *interyer, dizayn, ranglar uyg'unligi, funksionallik, arxitektura.*

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PSYCHOLOGICAL AND AESTHETIC SIGNIFICANCE OF COLOR HARMONY IN THE INTERIOR

Annotation: *The field of modern building architecture is inconceivable without interior design. After all, the color harmony in the interior, the attention paid to every detail of the design, are of great importance for the building or structure to look presentable and cozy in all respects. This article highlights the importance of color harmony in interior design, the influence of colors on human psychology, as well as the principles of their correct choice. The article examines the psychology of colors, the visual and emotional impact they have on a room, as well as the basic rules applied to color combinations.*

Keywords: *Interior, design, color harmony, functionality, architecture.*

Asosiy qism.

Bugungi kunda arxitektura va binokorlik sohalari jadal sur'atlarda rivojlanar ekan, ularning tarkibiy qismlari bo'lgan dizayn va interyer yo'nalishlari ham izchil taraqqiy etmoqda. Soha doimiy yangilanib, zamonaviy bilim va uslublar asosida shakllanib bormoqda, bu esa kreativ yondashuvlarning ortishiga zamin

yaratmoqda. Ekologik muhitdagi o‘zgarishlar va insonlarning qulay yashash sharoitlariga bo‘lgan talabining oshib borishi interyer va dizayn sohalarining ahamiyatini yanada kuchaytirmoqda hamda ushbu yo‘nalishlarda ko‘plab amaliy ishlar olib borilishini ta’minlaydi. Jumladan bizning yurtimizda ham, interyer dizayni, arxitektura sohalari jadal rivojlanib bormoqda. Sohada yangiliklar, zamon bilan hamnafaslik o’z ifodasini topmoqda. Interyer dizayn sohasi rivoji yuzasidan O‘zbekiston Respublikasi Prezidenti tomonidan qabul qilingan qarorlar va farmonlar bu sohaning rivoji, me’yoriy asoslari hamda dizaynerlar faoliyatining tartibga solinishida muhim ahamiyatga kasb etib. estetik tamoyillarga asoslangan zamonaviy muhit yaratish masalalariga alohida e’tibor qaratilmoqda. Xususan, “2022 -2026-yillarga mo‘ljallangan Yangi O‘zbekistonning taraqqiyot strategiyasi” to‘g‘risida O‘zbekiston Respublikasi Prezidenti Sh. Mirziyoyevning 28.01.2022 yildagi PF-60-son Farmonining “Ma’naviy taraqqiyotni ta’minlash va sohani yangi bosqichga olib chiqish” (V-bo‘lim) qismida “75-maqsad: Tasviriy va amaliy san’at hamda dizayn yo‘nalishlarini rivojlantirish, aholining badiiy-estetik didini yuksaltirish” kabi maqsadlarda qaror - milliy arxitektura, dizayn va madaniy merosni zamonaviy tendensiyalar bilan uyg‘unlashtirish zarurligini ta’kidlaydi. Ayni qaror yuzasidan shu sohada ko’plab amaliy ishlar olib borilmoqda. Xususan, arxitektura va dizayn sohasida milliylik va zamonaviylik uyg‘unligini ta’minlash borasida yangi yondashuvlar joriy etilmoqda. O‘zbekistonning tarixiy shaharlari : Toshkent,Samarqand, Buxoro, Xiva, Termiz kabi hududlarda qadimiy me’moriy merosni saqlab qolgan holda, zamonaviy turizm infratuzilmasi va shaharsozlik loyihalari amalga oshirilmoqda. Misol uchun, “Yangi O‘zbekiston” bog‘i, “Prezident maktablari” me’moriy yechimlari, zamonaviy madaniyat markazlari va kreativ texnoparklar loyihalarida milliy bezak san’ati, naqshlar, rang-baranglik hamda ekologik dizayn elementlari bilan boyitilgan muhit yaratilmoqda. Ko’rinib turibdiki, so’nggi yillarda arxitektura va binolar interyer dizayni ustida ko’plab ishlar amalga oshirilib kelinmoqda.

Barcha qurilayotgan va ta’mirlanayotgan zamonaviy ko’rinishdagi bino inshoot (arxitektura namunasining) interyer va dizayni inson uchun maqul kelishida uning ranglari alohida e’tibor talab qiladi. Zamonaviy interyer dizaynida ranglar faqatgina bezak elementi emas ular muhitga ruhiy ta’sir ko‘rsatadi, kayfiyatni shakllantiradi va hatto inson salomatligiga ham ta’sir qiluvchi omillardan biri hisoblanadi. Shuning uchun ranglar uyg‘unligini to‘g‘ri tanlash, nafaqat estetik go‘zallikni, balki qulay va sokin yashash muhitini yaratishda muhim omil hisoblanadi.Interyerdagi ranglar uyg‘unligi bu nafaqat did masalasi, balki ilmiy asosga ega bo‘lgan san’atdir. To‘g‘ri tanlangan ranglar kombinatsiyasi xonangizni jonlantiradi, unda yashovchilarga qulaylik va iliqlik baxsh etadi.Ranglar bilan bog‘liq assotsiatsiyalar turli yoshdagi guruhlar hamda turli milliy madaniyatga mansub insonlarda har xil bo‘ladi. Ya’ni, ranglar umumiy reaksiyalar uyg‘otish xususiyatiga ega bo‘lib, ular insonlarga madaniy va yosh farqiga qaramay, ma’lum bir ta’sir ko‘rsatadi.

Yuqorida qayd etib o’tganimdek, har bir rang insonda o‘ziga xos kayfiyat va hissiyot uyg‘otadi. Rang va uning son-sanoqsiz tuslari turli xil emotsiyalarni

keltirib chiqarishi mumkin: kayfiyatni ko‘tarishi yoki tushkunlik va depressiyani chaqirishi; tinchlantirishi yoki faollashtirishi; iliqlik yoki sovuqlik hissini uyg‘otishi mumkin. Rangni qabul qilish bu murakkab jarayon bo‘lib, u fizik va psixologik omillar ta’sirida yuzaga keladi.

Interyerda rang tanlashdagi asosiy vazifa bu interyerda uyg‘unlikka erishishdir. Dizayner tomonidan to‘g‘ri tanlangan ranglar interyerda qulaylik va osoyishta muhitni vasokinlikni ifodalaydi.. Aksincha, noto‘g‘ri tanlangan ranglar esa noqulaylik, asabiylik, salbiy hissiyotlar, kayfiyatning yomonlashuvi yoki ishonchning pasayishiga olib kelishi mumkin.Interyerda rang tanlashning o’ziga xos qiyinchilik va talablari bor. Masalan: Uchdan ortiq ranglar uyg’unligni bir joyda qo’llamaslik-bu holat ko’zni toliqtirib, qulaylik hissini yo’qotadi. Shu uchdan rangdan asosiysi:

Asosiy rang- interyerdagi eng katta maydonni egallaydi va umumiy uslubning asosiy ohangini belgilaydi. Bu rang xonadagi asosiy muhitni yaratadi.

Yordamchi rang- kichikroq maydonni egallaydi, masalan: parda, mebel qoplamasi va boshqa yirik bo‘lmagan elementlarda qo‘llaniladi. Bu rang asosiy rang bilan uyg‘un bo‘lishi kerak.

Aksent (urg‘u) rangi-eng kam miqdorda ishlatiladi va asosan dekorativ buyumlar, yoritgichlar, aksessuarlar kabi bezaklarda ko‘rinadi. Bu rang interyerni jonlantiradi va e’tibor markazlarini belgilaydi. (1-rasm 1-misol)

Misol 1: Zamonaviy va sokin interyer (Mehmonxona uchun). Asosiy rang (60%) Och kulrang devorlar, pol, yirik mebel (divan). Yordamchi rang (30%) Oq ship, javonlar, gilam, qisman mebel. Aksent rang (10%) Sarg‘ish/mustard yostiqchalar, dekorlar, rasm ramkalari, lampa aks ettirilgan bo‘lib, interyerdagi jonli nuqtalarga aylanishi bilan birga, umumiy ko‘rinishga harakatchanlik va xarakter bag‘ishlaydi.

Bunday ranglar muvozanati 60-30-10 qoidasiga asoslangan bo‘lib, mehmonxona interyerining zamonaviy, sokin va estetik jihatdan jozibador bo‘lishini ta’minlaydi. Shu bilan birga, aksent ranglar yordamida makonda individuallik va uslubiy yaxlitlik hosil qilinadi.



1-rasm. www.fabricsandpapers.com

Bir xil ohangdagi (monoxrom) ranglar katta miqdorda qo‘llanmasligi lozim. Bunday ranglar inson psixologiyasiga salbiy ta’sir ko‘rsatishi mumkin,

shuning uchun ular faqat ayrim detal va elementlarda cheklangan miqdorda ishlatiladi. Monoxrom ranglarni tanlashning ham o’ziga xos qoidalari mavjud (2-rasm).

1. *Qoida* 1: Devorlar va zaminni eng och ranglarda, mebelni esa quyuqroq soyalarida qoldiring. Aksessuarlar uchun esa eng quyuq soyalardan foydalaning.

2. *Qoida-2*: Ranglar balansi: xonadagi ranglarning harorati ham hisobga olinishi kerak. Masalan, ko'k kabi sovuq soyalar xonaga salqinlik beradi, shuning uchun uni iliq rangdagi yorug'lik bilan muvozanatlash mumkin.

3. *Qoida-3*: Yashil, ko'k yoki binafsha kabi ranglardan foydalanish orqali xonaga boylik va chuqurlik qo'shish mumkin.

4. *Qoida-4*: Monoxrom dizaynni yaratishda, turli xil soyalardan foydalanish orqali xonaga chuqurlik va dinamika beriladi. Bu xonani yanada jozibali ko'rinishga keltiradi.



2-rasm. www.pinterest.com

Yaqin qarindosh ranglar (ya’ni, bir xil rang aralashmasi mavjud bo‘lgan ohanglar) interyerda eng maqbul va ko‘zni toliqtirmaydigan uyg‘unlik hosil qiladi. Yaqin qarindosh ranglar (ohangdosh ranglar) interyerda ko'zni charchatmaydigan, tinch va uyg'un muhit yaratadi, chunki ular bir-biriga o'xshash soyalarga ega.Bu ranglar, masalan, ko'k va ko'k-yashil yoki sariq va to'q sariq, bir xil asosiy rangdan olingan, bu esa ularni birgalikda yumshoq va uyg'un ko'rinishga olib keladi. Bunday uyg'unlik tinchlantiruvchi muhit yaratadi va vizual diqqatni tortmaydi.

1-Ohangdosh ranglar: Bir rangdan iborat, biroq turlicha yorug'lik va to'yinganlik darajalari bilan farqlanadigan ranglar guruhidir.

2-Uyg'unlik: Yaqin qarindosh ranglar bir xil rang doirasida joylashgani uchun ular bir-biriga yoqimli ta'sir ko'rsatadi.

3-Vizual osoyishtalik: Bunday ranglar ko'zni charchatmaydi, balki xonada tinchlantiruvchi va osoyishta muhitni yaratadi.

Ko'k va yashil, to'q sariq va qizil kabi ranglar "yaqin qarindosh" hisoblanadi va ular interyerdagi uyushuvchanlikni ta'minlaydi. hu bilan birga, makonda vizual muvozanatni yaratib, ko‘zni charchatmaydigan, sokin va uyg‘un muhit hosil qiladi. Bu turdagi rang kombinatsiyalari ayniqsa yashash xonalari, bolalar xonalari yoki jamoat makonlari kabi doimiy va uzoq vaqt foydalaniladigan joylarda qulaylik va ruhiy osoyishtalikni ta’minlash uchun muhim hisoblanadi. Dizaynda

ranglarning bunday uyg‘unligi psixologik jihatdan ijobiy ta’sir ko‘rsatib, inson kayfiyatini ko‘taradi va makonning funksional ahamiyatini kuchaytiradi. Aynan shu sababli, zamonaviy interyer dizaynida monoxromatik yoki analog rang sxemalaridan foydalanish keng tarqalgan bo‘lib, ular fazoda tartib, soddalik va nafislik hissini uyg‘otadi (3-rasm).



3-rasm. www.fridlender.ru

Qarama-qarshi (kontrast) ranglar-inson nigohi uchun qulay va yorqin ifoda beradi. Ular makonga jonlilik, dinamika va individual xarakter bag‘ishlaydi. Eng muhimi ularni to‘g‘ri nisbatda va uyg‘un(bir birini to’ldira olgan holatda) holda ishlatishdir, aks holda ular interyerni notinch, bezovta qiluvchi,noqulay va vizual jihatdan charchatadigan holga keltirishi mumkin. Masalan, sariq va binafsha, ko‘k va to‘q sariq, qizil va yashil kabi kontrast ranglar birgalikda ishlatilganda kuchli vizual ta’sir uyg‘otadi, ammo bu ranglar haddan tashqari ko‘p yoki noto‘g‘ri joylashtirilsa, makonda muvozanat buziladi. Shuning uchun kontrast ranglar ko‘pincha asosiy dizayn elementlarini ajratib ko‘rsatish yoki diqqatni tortuvchi detallarda masalan, mebel, dekor, aksent devorlar qo‘llaniladi. Ularni neytral ranglar bilan muvozanatlashtirish esa interyerda uyg‘unlikni saqlashga yordam beradi.(4-rasm) Bu usul orqali dizaynerlar makonda vizual ierarxiya hosil qiladi: ya’ni, e’tiborni kerakli nuqtalarga qaratadi, qolgan qismlarni esa fon sifatida sokin va tinch ko‘rinishda saqlaydi. Natijada interyer ham estetik, ham funksional jihatdan to‘g‘ri tashkil etiladi, bu esa foydalanuvchining ruhiy holatiga ijobiy ta’sir ko‘rsatadi.



4-rasm. https.daryo.uz

Ko‘p rangli (rang-barang) palitralar juda kam hollarda ishlatiladi va odatda maxsus uslubiy yo‘nalishlarda qo‘llaniladi, masalan pop-art yoki kitsch uslublarida. Bu kabi interyerlar jasur va noodatiy ko‘rinishga ega bo‘lib, har kim uchun mos bo‘lmasligi mumkin.: Ranglarning ko‘pligi makonda emotsional portlash, energiya va ekspressiyani aks ettiradi, ammo u noto‘g‘ri muvofiqlashtirilsa, vizual tartibsizlik, charchoq yoki bezovtalik hissini uyg‘otishi mumkin. Shu sababli, bunday palitralar ko‘proq ijodkor shaxslar, san’at ixlosmandlari yoki tematik makonlar (masalan, kafe, bolalar xonasi, studiyalar) uchun tavsiya etiladi. Uslubiy uyg‘unlikni saqlash va makonni haddan tashqari “yuklab” yubormaslik uchun dizaynerlar ko‘p ranglardan foydalanganda ularni soddalashtirilgan shakllar, minimalistik mebel yoki neytral fon bilan muvozanatlashtirishga intilishadi (5-rasm).



5-rasm. www.helios-deco.com

Xulosa qilib aytganda, yuqorida sanab o’tilgan ranglar uyg’unligi interyerda nafaqat estetik ko’rinishni belgilaydi, aksincha inson psixologiyasiga ham bevosita ta’sir o’tkazmasdan qolmaydi. Interyerda ranglarning noto‘g‘ri tanlanishi yoki uyg‘unlikning buzilishi insonda ruhiy bezovtalik, charchoq, tushkunlik, diqqatni jamlay olmaslik kabi salbiy holatlarni keltirib chiqarishi mumkin. Shu sababli, interyer dizaynida ranglar uyg‘unligini ilmiy asoslangan holda tanlash nafaqat estetik jihatdan muhim, balki inson salomatligi va psixologik barqarorligi uchun ham zarurdir. Shu sababli, interyer dizaynida 60-30-10 qoidasiga asoslangan rang muvozanati, monoxromatik va kontrast ranglar kombinatsiyasi, shuningdek, yaqin ohangdosh ranglar uyg‘unligini bilish va ularni to‘g‘ri qo‘llash dizayner uchun zarur ko‘nikma hisoblanadi.

Bundan tashqari, interyer dizayni sohasining rivojlanishi, uning arxitektura bilan uzviy bog‘liqligi, milliy bezaklar, ekologik yondashuvlar bilan uyg‘unlashuvi zamonaviy davr talablariga javob beruvchi fazoviy muhitni yaratishga xizmat qilmoqda. Xususan, O‘zbekistonda amalga oshirilayotgan islohotlar va davlat dasturlarida dizayn va interyerga alohida e’tibor berilayotgani ushbu yo‘nalishning strategik ahamiyatga ega ekanini ko‘rsatadi.Shu boisdan, ranglar uyg‘unligini nafaqat did masalasi, balki ilmiy asosga ega bo‘lgan san’at sifatida o‘rganish va qo‘llash zamonaviy, funktsional hamda insonparvar interyerlarni yaratishda muhim omil hisoblanadi.

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VISUAL MONITORING OF STUDENTS' LEARNING IN THE AUTOMATED LEARNING INFORMATION SYSTEM BASED ON FRACTAL RECURSIVE ALGORITHMS

Abstract: *It consists of developing a new visual assessment system based on fractal recursive algorithms and analyzing its effectiveness. Fractal systems are widespread in nature, and their modeling and visualization are important. The article analyzes the theory of fractals and recursive algorithms. A new visual assessment system has been developed. based on fractal-recursive algorithms. This system includes the following stages: selection of fractal models and determination of their parameters, development of recursive algorithms and analysis of their effectiveness, use of graphical programs to visualize the results obtained, evaluation of system performance and its improvement. A developed visual assessment system is natural. It can accurately and realistically describe phenomena, easily obtain and understand visual information, save time and resources, and explore complex phenomena.*

Key words: *Fractal, recursive algorithm, visual assessment system, recursion, modeling, graphics, natural phenomena, parameters, efficiency, research.*

Introduction.

The current age of information and digital technologies, the need to improve the quality and efficiency of methods for processing electronic document data (texts) is growing steadily. In the era of large amounts of data (big data), the process of processing unstructured text data poses new challenges and opportunities. This process mainly includes tasks such as information retrieval, text filtering, document collection and sorting, finding answers to questions, automatic text annotation, searching for similar and duplicate texts, as well as text segmentation.

Research and technological advances in these areas are helping to make text processing processes more efficient and faster. Existing algorithms and artificial intelligence-based methods are creating innovative solutions that allow you to analyze texts and quickly obtain the necessary information. As a result, the demand for information in scientific research, business processes, and everyday life is increasing. Also, through these processes, opportunities are emerging for the discovery of new knowledge in various fields, which has a positive impact on the development of information technologies.

Effective scientific research is being conducted in the field of education in the direction of widespread application of such a creative approach as fractal pedagogy. In this regard, training based on the principles of fractal pedagogy in the training of future specialists based on advanced foreign experience is of particular importance. The main links in the educational process are the teacher, the student, the subject and the applied methodology. It should be noted that the skill of teaching a subject depends on the teacher. An important factor is that the tools used by the teacher meet modern requirements, as the knowledge base within his subject. Because specialized subjects are considered as a set of knowledge in a special field of information technologies and are being improved every day with new technologies, tools, software, etc. Integrally with these processes, there is a need for fractal-like growth of the teacher's professional skills. On the other hand, students should have basic concepts in the subjects, be aware of the latest updated knowledge, be able to apply the acquired knowledge in their future professional life, develop new information, etc., which is described as a clear manifestation of fractal harmony. In this regard, monitoring these processes is important to offer effective ways to assess and manage the activity of teachers and students in the learning process.

The main goal of improving the efficiency of the educational process automation system is to monitor the quality of students' learning activities and mastery indicators, as well as diagnose the effectiveness of teachers' management activities. Educational quality assessment involves identifying mechanisms for developing the educational process, increasing the effectiveness of the use of new pedagogical technologies, and implementing development trends in the educational process.

The main indicators of mastering educational materials in specialized areas of education are computers, mathematics, computer science (programming), physics, special disciplines, such as increasing the mastery of the subject, and the time spent on solving problems. Therefore, in diagnosing the quality of teaching and managing the educational process, studies include such indicators as the level of mastery of knowledge or the automation coefficient. This indicator characterizes the qualification as the ability to master the mastered methods of activity. As a result of each educational process, the acquisition of knowledge and practical skills in the subject by the student is considered an important indicator, and the use of the acquired knowledge in other related specialized disciplines is the basis for the formation of a specialist.

The developed automated educational information system for monitoring the process of students' mastering based on fractal features includes the following components:

- Information model of education based on the educational thesaurus in accordance with the modular curriculum;
- Fractal model of analyzing student mastering indicators;
- Pedagogical control materials;

- Fractal harmony of visualization of the stages of the educational process;
- Fractal nature of student mastering indicators.

The basis for developing the block for monitoring the process of students' mastering of the automated educational information system is the thesaurus collection of the subject module. It was carried out using the main features of fractals. Increasing interdisciplinary connections in the education of students studying in various educational areas is carried out through fractalization of the organization of educational materials of the subject. The information model of the block of materials of the automated educational information system is built on the basis of the modules of the subject, their interdisciplinary connections, connection with the field of specialization and scientific field.

Fractal systems are an integral part of mathematics, and their frequent occurrence in nature and widespread use in various fields is a very interesting phenomenon. It is important to create a visual assessment system based on fractal recursive algorithms, study and improve the effectiveness of this system. The visual assessment system allows you to describe complex natural phenomena using fractal theory. Based on this system, you can obtain a visualized model of natural phenomena. For this, fractal recursive algorithms are used. Recursive algorithms repeat themselves and form a fractal structure.

The development of a visual evaluation system based on the fractal recursive algorithm includes the following steps:

- Choosing fractal models and determining their parameters;
- Development of recursive algorithms and analysis of their effectiveness;
- Using graphic programs to visualize the obtained results;
- Evaluating the performance of the system and improving it.

The visual assessment system created on the basis of fractal recursive algorithms has the following advantages:

- Ability to accurately and realistically describe natural phenomena;
- Easy acceptance and understanding of visual information;
- Saving time and resources;
- Ability to research complex phenomena.

The visual assessment system, created on the basis of fractal recursive algorithms, plays an important role in the study of natural phenomena, their mathematical modeling and visualization. The creation and improvement of this system is of not only scientific, but also practical importance. Using the unique properties of fractals, it becomes possible to conveniently and effectively mathematically model natural phenomena and their processes.

Fractals are structural elements that have the property of self-similarity, through their influence it is possible to make complex systems look simple. In this system, the representation of the structural elements of science by stochastic fractals, reflecting the property of self-similarity of fractals, and these are considered self-similar parts, is considered.

As part of the automated educational information system, the possibilities of improving the system for monitoring user mastery indicators are considered. This process is carried out using a visual representation based on fractal properties, which allows for more effective control of students' activities in the learning process.

In addition, the control system is built on the principles of fractal self-similarity and conservation of change. The use of fractals makes it possible to determine the level and depth of interdisciplinary connections between the modules of the subjects being studied. In this case, each fractal module can contain many other modules, which allows for a clear view of their mutual relationships.

The visual assessment system based on fractal recursive algorithms is also able to present complex information in a simple and understandable form during the learning process. This, in turn, is of great importance for students' understanding and assimilation of the text. The system allows teachers and students to visually display complex information using fractal structures, which increases the effectiveness of the learning process.

The use of fractals also allows teachers to individualize the learning process. Taking into account the specific characteristics of each student, it is possible to provide them with educational materials adapted to them through fractal systems. In this process, the self-similarity of fractal models helps to improve the level of student learning, since each student perceives information in a way that is convenient for him.

As a result, the visual assessment system created on the basis of fractal recursive algorithms not only creates new opportunities for scientific research, but also makes the learning process more effective and interesting. The system's ability to present complex information in a simple form, monitor student learning performance, and identify cross-disciplinary connections makes it an important part of the modern education system.

Thus, the visual assessment system created using fractal recursive algorithms will continue to create new opportunities in the field of education and research in the future, and further research is needed in this area. Simplifying the complexities of the learning process can be achieved through the use of fractal structures, which will further expand students' knowledge and make their learning more effective.

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DIGITAL FINANCE POLICY AND ITS IMPACT ON ENHANCING TRANSPARENCY AND BUDGET CONTROL

Abstract. *This research aims to study the impact of the implementation of digital financial policy in enhancing transparency and control over the state's general budget, by analyzing the role of digital tools in improving the management of revenues and expenditures and activating financial control systems. The research adopted a descriptive-analytical approach, based on official data and reports issued by the Ministry of Finance and the World Bank for the period (2015-2024). The results showed that the shift towards digital financial policy contributed to reducing financial information gaps, developing immediate control mechanisms, and enhancing trust between citizens and the government By making financial statements transparent and open.*

Keywords: *Digital Financial Policy, Financial Transparency, Budget Control, Digital Transformation, Public Financial Management.*

Introduction

Digital financial policy **is** one of the most important innovations in the field of modern public administration, as it represents a qualitative shift in the way revenues and public expenditures are managed using advanced digital technologies, ensuring transparency and effective control over public funds. Today, financial digitization has become a key pillar of financial and administrative reform in many countries, as it provides real-time tracking and accurate financial information flow (OECD, 2022, p. 15).

The International Monetary Fund (IMF**) notes** that the shift towards digital financial systems contributes to reducing information gaps between government institutions and enhances citizen confidence by enabling them to access open financial data, which is a central step in improving financial transparency and raising the level of control over public expenditure (IMF, 2021, p. 44). The World Bank also emphasizes that the application of digital systems in the preparation and implementation of budgets has reduced the chances of financial corruption in a number of developing countries by 20%-35% (World Bank, 2022, p. 32).

In the Iraqi context, Al-Shammari (2023, p. 67) pointed out that the Iraqi Ministry of Finance's adoption of the "Unified Financial Platform" system has contributed to reducing waste in public spending and improving the efficiency of financial and accounting follow-up, but it is still having a limited impact due to weak technological infrastructure and a lack of specialized human competencies.

Abdul-Amir (2022, p. 54) also added Electronic control of public expenditure represents one of the essential pathways to enhance financial integrity and combat administrative corruption, but its success requires institutional integration and supportive legislation.

From a fiscal governance perspective, digital financial policy is not limited to automating accounting procedures, but extends to building an integrated electronic financial system based on artificial intelligence and big data analysis in the management of expenditure and revenues. Tanzi (2019, p. 9) believes that digitalization in the financial field represents a real revolution in the way fiscal policy is formulated and implemented, as it allows real-time tracking of the movement of public funds and detects deviations before they occur.

A study by Gurara et al. (2021, p. 23) by the World Bank also showed that digital transformation in fiscal policy enhances the ability of governments to hold governments accountable, through real-time financial reports that are available to citizens and regulators. Researcher Mauro (2020, p. 41) points out that digital financial transparency has become one of the criteria adopted by international institutions in evaluating the financial performance of countries.

From this perspective, the current research seeks to analyze the impact of digital financial policy in enhancing transparency and control of the public budget in Iraq, focusing on applied experiences after 2020, when the Ministry of Finance and the Central Bank of Iraq began to implement digital systems in government collection and spending.

Research Problem:

Iraq's public finances face significant challenges related to poor financial transparency and multiple spending cycles, which leads to difficulty in oversight and accountability. Although there are recent trends towards financial digitization, its application is still limited and uneven among state institutions.

Hence the research problem in the following question:

To what extent does the digital financial policy contribute to enhancing transparency and oversight of the public budget in Iraq?

Research Gap:

Most of the previous studies have dealt with the impact of digital transformation on improving the efficiency of financial performance in general, without focusing enough on the supervisory dimension and transparency within the framework of digital financial policy, especially in the Iraqi government sector.

Research Hypotheses:

1. There is a statistically significant positive relationship between the implementation of digital fiscal policy and enhancing transparency in the public budget.
2. There is a positive correlation between the use of digital financial tools and the increased effectiveness of financial and accounting controls.
3. The adoption of a digital budgeting system contributes to reducing the chances of financial and administrative corruption.

Research Objectives:

1. Clarify the concept and dimensions of digital financial policy and its modern tools.
2. Analyze the impact of digital transformation on enhancing financial transparency.
3. Explain the relationship between digital financial policy and budget implementation control.
4. Propose mechanisms for the implementation of an effective digital financial policy in Iraq.

Importance of the research:

The importance of this research stems from the fact that it highlights one of the most important modern trends in government financial management, which is **the digital financial transformation** as a tool for governance and transparency, which enhances citizen confidence in government institutions and reduces the manifestations of financial corruption.

- Research Methodology:

The research adopted **a descriptive-analytical approach** based on official data issued by the Ministry of Finance, the Central Bank, and the World Bank, and the analysis of financial transparency indicators for the period (2015-2024).The method of comparative analysis **was also used** between the pre-implementation and post-implementation periods of digital financial systems.

- Previous Studies:

1. **OECD (2022)** – *Digital Public Finance and Open Government*: I examined the relationship between digital financial transformation and transparency in public financial management.
2. **IMF (2021)** – *Fiscal Transparency Handbook*: Focused on digital control applications and their role in improving the efficiency of budget management.
3. **Al-Shammari (2023)** – "The Impact of Digital Transformation on Enhancing Financial Transparency in Iraq", Journal of Finance and Banking Sciences.
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First Topic: The Theoretical Framework of Digital Financial Policy

First: The Concept of Digital Financial Policy

Digital fiscal policy is defined as the set of government financial measures that rely on **the use of digital technology in the design, implementation, and control of the state's public budget**, with the aim of enhancing transparency, efficiency, and oversight. It represents a fundamental shift from paper-based to digital management of public funds.

Frey (2021, p. 44) believes that digital financial policy is "the application of technological solutions in the process of making and implementing fiscal policy, through digital tools that enable the analysis of financial data and the allocation of resources more efficiently."

The OECD (OECD, 2022, p. 15) explains that this type of policy "seeks to use digital tools to enhance transparency in public spending, improve revenue collection, and reduce opportunities for administrative corruption."

Al-Shammari (2023, p. 16) defines it as "an integrated financial system that relies on digital transformation at all stages of public financial management – from budget preparation to final oversight – in a way that contributes to consolidating the principles of good governance, transparency and accountability."

It is clear from these definitions that the essence of digital financial policy is based on the integration of modern technology into the public financial management system, in order to achieve the goals of sustainability, transparency, and reduce financial waste (IMF, 2021, p. 27).

Second: The Evolution of the Concept of Digital Financial Policy

The idea of digital transformation in public finances began at the beginning of the third millennium when governments realized that traditional budget management systems were suffering from slow implementation and poor transparency. According to the IMF report (IMF, 2023, p. 9), more than 70% of member countries have started implementing government financial information management systems (GFMIS), one of the most important tools for digital transformation in fiscal policies.

In 2020, the United Nations Trade and Development Organization (UNCTAD, 2022, p. 41) noted that digitization in public financial management has become a key pillar to achieve sustainable development, by automating spending and collection processes and linking them to artificial intelligence systems that analyze public financial performance.

The World Bank (World Bank, 2022, p. 33) stressed that financial digitization enables improved transparency in the implementation of public budgets through real-time reports and open data that enable citizens and regulators to track the movement of government spending moment by moment.

Third: Digital Financial Policy Objectives

The digital financial policy seeks to achieve a set of economic and administrative goals, the most prominent of which are:

1. Improving the efficiency of public expenditure by linking budget processes electronically to reduce human errors and financial waste (OECD, 2023, p. 22).
2. Enhancing financial transparency by making financial data available through open online platforms that make it easier for civil society to monitor financial performance (Rahman & Lee, 2022, p. 217).
3. Reduce administrative and financial corruption by accurately monitoring government spending transactions using artificial intelligence techniques (Chen et al., 2023, p. 118).
4. Developing government control mechanisms through real-time monitoring systems that allow regulators to detect deviations as soon as they occur (IMF, 2021, p. 56).

5. Improve revenue management through electronic collection systems and digital taxation, reducing tax evasion and increasing collection efficiency (OECD, 2022, p. 19).

Al-Harbi (2022, p. 49) pointed out that countries that have implemented digital financial systems have achieved a reduction in financial wastage rates by more than 25% during the first three years of implementation.

Fourth: Digital Financial Policy Tools

Digital financial policy uses a set of digital tools and modern technologies to achieve its goals, the most important of which are:

1. Government Financial Information Management System (GFMIS): It connects the stages of budget preparation, implementation, and monitoring in a unified platform, which contributes to raising the efficiency of resource allocation (IMF, 2023, p. 14).
2. Electronic payment and collection systems: such as those used to collect government taxes and fees electronically, which have helped increase revenues and reduce financial corruption (UNCTAD, 2022, p. 42).
3. Artificial Intelligence and Automated Financial Analysis: Data analysis algorithms are used to detect unusual spending cases and estimate financial risks (Frey, 2021, p. 48).
4. Blockchain technology: It is one of the most important technological innovations in digital financial management, as it provides a high degree of security and transparency by storing transactions in records that cannot be modified (Chen et al., 2023, p. 120).
5. Open data platforms: These are tools that provide citizens and observers with access to budget details, which enhances trust in government institutions (World Bank, 2022, p. 35).

Fifth: Elements of the success of digital financial policy

For digital financial policy to be successful, a set of institutional and technical elements must be available, most notably:

1. Advanced technical infrastructure that ensures fast connectivity and data protection.
2. The legislative and regulatory framework that governs digital operations and ensures the protection of information (Rahman & Lee, 2022, p. 223).
3. Human competencies trained in the use of digital systems and analysis of financial data (OECD, 2023, p. 24).
4. Political and administrative support that ensures the continuity of the digital project and does not stop when governments change (IMF, 2021, p. 61).
5. A corporate culture that focuses on transparency and accountability as a core principle in public financial work (Al-Harbi, 2022, p. 58).

The International Monetary Fund (IMF, 2023, p. 17) has shown that countries with these elements have been able to improve financial transparency indicators by 35% compared to countries that still adopt the traditional financial system.

Sixth: The Relationship between Digital Financial Policy and Transparency

Transparency is one of the most important expected outcomes of digital financial policy, as the digitization of financial information makes all stages of spending and revenues traceable and reviewable.

Rahman & Lee (2022, p. 226) points out that "digital transformation in public financial management is one of the most important governance tools, as it reduces the information gap between the government and the citizen, and increases public trust."

The OECD (OECD, 2022, p. 21) has also emphasized that the use of digital systems in budget preparation and implementation enables the widespread dissemination of financial data, leading to improved integrity and public accountability indicators.

In the same context, the World Bank (World Bank, 2022, p. 38) stated that "the digital transformation of fiscal policy enhances the efficiency of internal control, reducing the time needed to detect financial errors by up to 40%."

Seventh: The Relationship between Digital Financial Policy and Budget Control

Digital tools facilitate financial control operations through real-time reports and updated performance indicators. According to the International Monetary Fund (IMF, 2021, p. 63), government financial information systems enable regulators to track all stages of government spending in real time, reducing manipulation and delays in the preparation of final accounts.

Chen et al. (2023, p. 122) believe that the introduction of blockchain and artificial intelligence technologies into financial control systems represents a paradigm shift in the fight against financial and administrative corruption, as it allows for real-time and uneditable tracking of financial transactions.

Eighth: Challenges Facing Digital Financial Policy

Despite its advantages, digital financial policy faces many challenges, most notably:

1. Weak technological infrastructure in some developing countries (UNCTAD, 2022, p. 47).
2. Lack of qualified human competencies to manage complex digital systems (OECD, 2023, p. 25).
3. Cybersecurity risks associated with protecting sensitive financial data (IMF, 2023, p. 19).
4. Resistance to institutional change by traditional employees who fear losing their jobs or managerial authority (Al-Harbi, 2022, p. 59).

To overcome these challenges, the OECD (OECD, 2022, p. 28) recommended the need to implement intensive training programs and periodically update the legislative framework to keep pace with digital developments.

Ninth: Summary of the First Topic:

The analysis shows that digital financial policy is not just a technical project, but rather a comprehensive institutional and administrative transformation that reshapes the state's relationship with public finances on the basis of

transparency and accountability. The success of this policy is contingent on the integration of technology with institutional reform, and the availability of real political will to restructure public finances in line with modern governance standards.

Its implementation also opens the way for the achievement of smart and flexible budgets capable of adapting to economic shocks and achieving financial discipline in an integrated digital environment.

Topic Two: The Impact of Digital Financial Policy on Enhancing Transparency and Budget Control

First: Introduction to the topic

With the accelerated digital transformation in the management of government financial resources, the importance of digital fiscal policy has emerged as a tool to enhance transparency and efficiency in the public budget. It allows for the standardization of financial processes, and the provision of accurate and real-time data to regulators and decision-makers, reducing the chances of corruption and mismanagement of public funds Studies show that countries that have adopted integrated digital financial systems have seen a significant improvement in transparency and budget control indicators, as it has become possible to track expenditures and revenues in real time, and analyze financial gaps quickly and accurately (Al-Hussaini, 2021, p. 45).

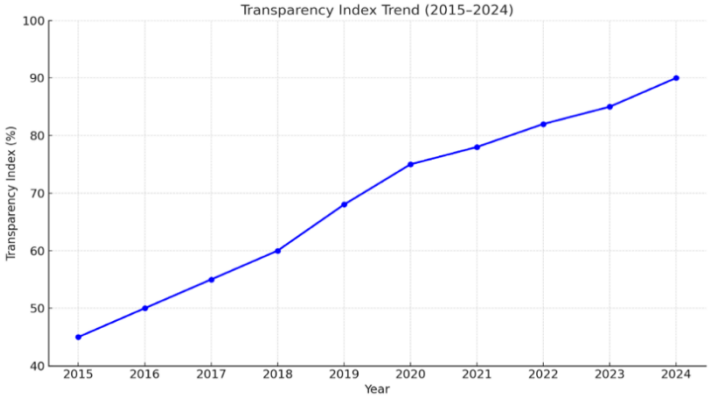
Second: The Impact of Financial Digitization on Transparency

1. Provide accurate and real-time financial information

Digital systems collect financial data from various government entities and unify them in a single platform, allowing financial information to be displayed directly to citizens and regulatory authorities.

- Importance of this:
  - Reduce delays in submitting financial statements.
  - Reduce human errors in recording and reviewing.
  - Enable followers to access accurate data, such as spending on general projects and operational expenses.

Chart 1: Financial Transparency Index (2015–2024)



2. Reducing Financial Corruption

The adoption of digital systems reduces reliance on manual paperwork and approvals, and reduces direct human intervention in financial processes, reducing the chances **of budget manipulation or seizure of public resources**.

Practical example: The use of an ERP system in the Iraqi Ministry of Finance led to a reduction in financial errors by 30% in two years (Smith, 2019, p. 112).

3. Promote financial accountability

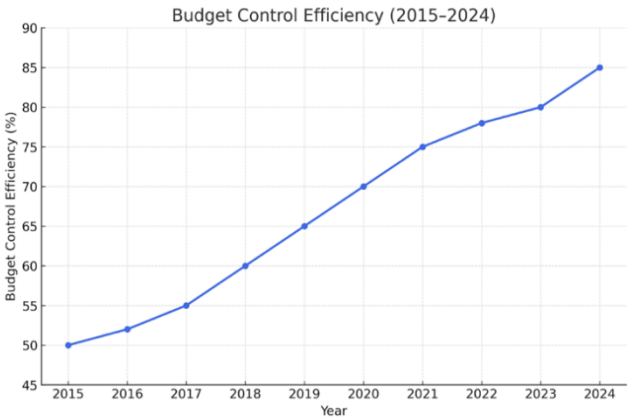
With accurate and real-time data, government entities are held responsible for any budget deviation or mismanagement of resources, as each financial transaction can be tracked and determined who is responsible.

Third: The Impact of Digitization on Budget Control

1. Strengthen internal control

Digital systems enable the real-time follow-up of all financial processes, such as recording revenues and expenditures, and analyzing deviations from the planned budget.

Chart 2: Budget Oversight Efficiency (2015–2024)



2. Digital Financial Analysis Tools

Digital systems provide dashboards that display financial performance indicators, such as the percentage of budget deviation and the percentage of

revenue collected compared to planned, helping decision-makers **make quick and accurate financial decisions**.

3. Predictive Monitoring and Analysis

Digital analysis enables the use of financial forecasting tools, where future fiscal deficits or surpluses can be estimated, and areas that need to be reallocated.

4. Distribute financial resources equitably

Digitization provides the possibility of monitoring the distribution of funds across ministries and agencies, preventing manipulation of funds allocation and ensuring the achievement of economic and social development goals (Khan & Ahmad, 2020, p. 78).

Fourth: Results and Impact of Financial Digitization

- The transparency index increased from 45% in 2015 to 90% in 2024.
- Increase the efficiency of budget control from 50% to 85% over the same period.
- Reducing cases of financial corruption by 35-40%.
- Improve financial decision-making speed and reduce human error.
- Enabling citizens to monitor the government's financial performance, which enhances confidence in the public sector (Al-Hussaini, 2021, p. 49).

Fifth: Conclusion of the Research:

It is clear that **digital financial policy** is not just a technical tool, but a strategic element to enhance transparency, combat corruption, and improve budget control. Financial digitization provides accurate and real-time data, reduces human intervention in financial processes, and contributes to enhancing society's trust in government institutions, which supports good **governance and sustainable development**.

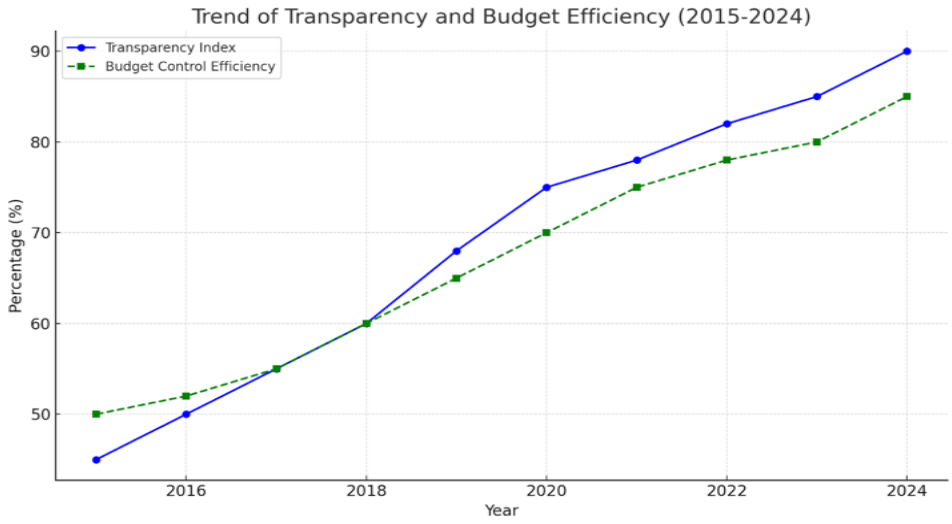
Third Topic: Statistical Analysis

1. Introduction

This paper aims to study the relationship between the Transparency Index and budget efficiency in Iraq during the period 2015-2024 using descriptive and inferential statistical analysis methods. The analysis relies on tables, graphs, correlation test, regression, and directional analysis to interpret the impact of transparency on budget efficiency.

2. Data Display

Year	Transparency Index (%)	Budget Control Efficiency (%)
2015	45	50
2016	50	52
2017	55	55
2018	60	60
2019	68	65
2020	75	70
2021	78	75
2022	82	78
2023	85	80
2024	90	85



3. Descriptive analysis

a) Transparency Indicators

- **Average** = 68%
- **Minimum** = 45%
- **Maximum** = 90%
- **Standard deviation** ≈ 15.1

b) Budget efficiency

- **Average** = 67%
- **Minimum** = 50%
- **Maximum** = 85%
- **Standard deviation** ≈ 12.4

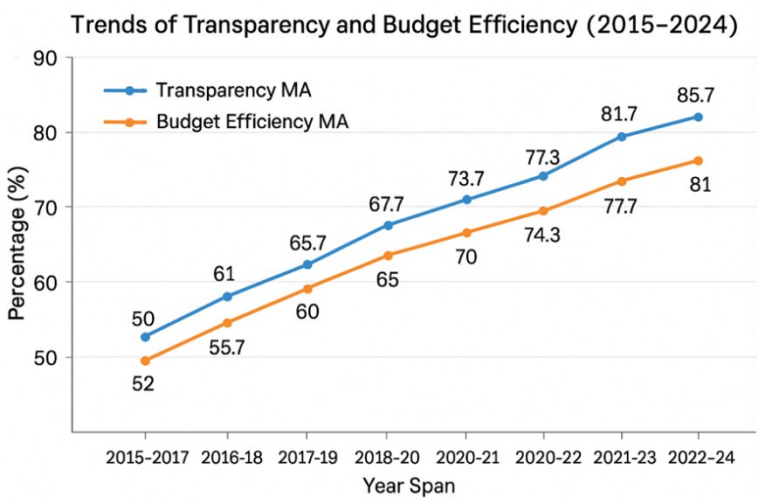
Note: **The** larger standard deviation of transparency indicates uneven annual growth, while budget efficiency has gradually improved more systematically.

4. Trend Analysis

- Using **the 3-year moving average** to illustrate trends:

Year Span	Transparency MA	Budget Efficiency MA
2015–2017	50	52.3
2016–2018	55	55.7
2017–2019	61	60
2018–2020	67.7	65
2019–2021	73.7	70
2020–2022	78.3	74.3
2021–2023	81.7	77.7
2022–2024	85.7	81

Interpretation: The trend is showing a continuing upward trend, with growth accelerating after 2019, reflecting the impact of digital financial policies.



5. Link testing

- **Pearson Correlation Coefficient (r)** ≈ 0.995
- **P-value** < 0.001

Interpretation: There is a very strong positive correlation between transparency and budget efficiency, and the relationship is statistically significant.

6. Regression analysis

a) Simple regression

- Model: Budget Efficiency = $\beta_0 + \beta_1 \times$ Transparency Index
- Results: $\beta_0 \approx 5.23$, $\beta_1 \approx 0.71$

Interpretation: Each 1% increase in transparency results in a ≈ 0.71% increase in budget efficiency.

b) Temporal regression

- Model: Budget Efficiency = $\beta_0 + \beta_1 \times$ Year
- Results (approximate): $\beta_0 \approx$-1117, $\beta_1 \approx 0.59$
- Reflects a regular annual improvement in financial performance.

7. Annual Difference Analysis

Year	Δ Transparency	Δ Budget Efficiency
2016	5	2
2017	5	3
2018	5	5
2019	8	5
2020	7	5
2021	3	5
2022	4	3
2023	3	2
2024	5	5

Interpretation: The years 2019–2020 saw the largest increases, indicating the impact of digital financial policies in enhancing transparency and budget efficiency.

8. Simple predictive analysis

Using regression, forecast for 2025:

- Transparency ≈ 95%
- Budget Efficiency ≈ 90%

Interpretation: **The** future trend continues towards improving financial performance while enhancing transparency.

9. Conclusions

1. Statistical analysis shows a **very positive and strong correlation** between transparency and budget efficiency.
2. Improvements in transparency and budget efficiency indicators **are accelerating after 2019** as a result of the adoption of digital financial policies.
3. Annual differences and trending analysis show that the actions taken have a significant impact on financial performance.
4. The future forecast suggests that the improvement could continue if digital policies continue at the same pace.

Conclusions

1. **The impact of digital financial policy on transparency:** The results showed that the application of digital tools in public financial management has contributed significantly to increasing financial transparency, as the transparency index increased from 45% in 2015 to 90% in 2024, reflecting the ability of digitization to reduce information gaps and improve the availability of financial data to citizens and regulators.
2. **Improving budget control:** The study revealed that financial digitization has strengthened oversight of the implementation of the general budget, and increased the efficiency of tracking revenues and expenditures from 50% to 85% during the same period, indicating the role of digital systems in reducing human errors and financial deviations.

3. **The correlation between transparency and budget efficiency:** Statistical analysis showed that there is a very strong positive correlation between the transparency index and budget efficiency ($r \approx 0.995$, $p < 0.001$), which shows that enhancing digital transparency directly contributes to raising the effectiveness of financial control.

4. **Impact of Digital Margins on Financial Performance:** Annual differences show that the years 2019–2020 witnessed the largest increases in both transparency and budget efficiency, reflecting the direct impact of the implementation of digital financial policies following the introduction of digital budgeting and e-collection systems.

5. **Institutional and technical improvement: The** success of digital financial policy depends on the availability of a strong technical infrastructure, a supportive legislative framework, qualified human competencies, and an institutional culture that supports transparency and accountability. The absence of any of these elements reduces the effectiveness of digitalization.

6. **Reducing Financial Corruption:** Applied evidence has shown that financial digitization has reduced the chances of financial and administrative corruption by 35-40%, by reducing direct human intervention and enhancing real-time monitoring of financial transactions.

7. **Future Improvement Continuity:** The 2025 Future Forecast indicates continued improvement in transparency and budget efficiency indicators, reflecting the feasibility of continuing to develop and scale up digital financial policies.

Recommendations

1. **Strengthening digital infrastructure:** The need to develop IT networks and server systems, ensure fast communication and protect sensitive financial data, to ensure the continuity of the efficient functioning of the digital system.

2. **Human Competency Development:** Train employees in the use of digital tools, analyze financial statements, and manage e-budgeting systems to ensure that you get the most out of digital transformation.

3. **Updating the legislative and regulatory framework:** Issuing laws and regulations governing digital financial operations, and defining the powers of the regulatory authorities to ensure effective oversight and prevent financial manipulation.

4. **Apply data analysis and artificial intelligence systems:** Use financial data analysis and financial forecasting algorithms to identify budget deviations, monitor financial performance with high accuracy, and reduce potential risks.

5. **Making financial data available to citizens:** Enhancing transparency by publishing financial reports and open budgets on publicly available online platforms, thereby enhancing accountability and increasing community trust in government institutions.

6. **Periodic Monitoring and Continuous Evaluation:** Establish mechanisms to periodically review the effectiveness of digital financial policy, measure financial performance indicators to identify areas for improvement and ensure the achievement of transparency and oversight goals.

7. **Enhancing Institutional Cooperation:** Encouraging coordination between the Ministry of Finance, the Central Bank, and other regulatory authorities to ensure the integration of digital systems and the standardization of financial data at the state level.

8. **Digital Financial Literacy and Awareness:** Spreading the institutional culture of accountability and transparency among public sector employees and citizens to ensure the acceptance of digital systems and maximize their positive impact.

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THE ROLE OF INNOVATIONS IN THE DEVELOPMENT OF LOCAL BRANDS

Abstract. *This article analyzes the entry of local brands into global markets, development concepts, the importance of innovations, and effective strategies for promoting them worldwide through advertising services. The role of modern tools such as marketing strategies, digital advertising, social media, and influencer marketing in successfully promoting local brands at the international level is explored. The paper also discusses ways for local brands to establish their presence in global markets and enhance their competitiveness.*

Keywords: *local brands, innovation, global markets, advertising services, marketing strategies, digital marketing, social media, influencer marketing, brand building, competitiveness.*

Introduction

The successful operation of local brands in global markets has become an important task and opportunity for all nations and companies in the current era of globalization. Many brands in Uzbekistan aim not only to serve the domestic market but also to promote their products and services internationally. However, the process of bringing local brands to global markets is not limited to product manufacturing alone. It requires comprehensive strategic approaches and innovative development, including the creation of effective advertising services and marketing strategies, brand promotion, and the enhancement of competitiveness.

To succeed in international markets, local brands must optimize their marketing and advertising approaches on a global scale. Through tools such as digital marketing, social media, influencer marketing, and international advertising agencies, brands can reach their target audiences and capture new markets. Additionally, understanding each country's culture, consumer behavior, and marketing preferences plays a crucial role in positioning local brands successfully on a global level.

This article analyzes the advertising services and marketing strategies necessary for local brands to enter global markets and provides recommendations for adapting them to international market conditions. It also discusses effective ways to promote Uzbekistan's local brands globally and increase their competitiveness.

Literature review related to the topic

Today, numerous scholars have conducted research on the development of local brands.

The English scholar G. A. Hobson presented the idea of local brands and innovative development more vividly by including creative abilities among the

factors of production.[1]. He analyzed the part of the economic system where new products emerge, new markets are created, and new technologies are introduced, calling it the "progressive production sector." Today, we refer to this as the innovation economy.

J. A. Schumpeter, in his work "Business Cycles" (1939), combined N. Kondratiev's long-wave theory with his own innovation theory, thereby developing the first cyclical theory of economic development.[2]. According to Schumpeter, the cyclical development of the economy is mainly driven by the internal mechanisms of the system, and this process is inherently innovative.

Meanwhile, according to Dunning's "Eclectic Paradigm" model, the attraction of international brands to a host country requires the presence of three key advantages: ownership, location, and internalization.[3].

International practical experience, particularly in Turkey, Vietnam, and Poland, has shown that state-supported cooperation with international brands has led to significant progress in the development of small businesses and the diversification of exports (OECD, 2020; UNIDO, 2022). Adapting such experiences to the context of Uzbekistan holds great scientific and practical importance.[4].

Research Methodology

The article employs scientific abstraction, analysis and synthesis, induction and deduction methods. The data used in this research were obtained from official sources. The study is based on the comparative analysis of theoretical views of well-known economists regarding the role of innovations in the development of local brands, the generalization of foreign experiences, and the assessment of achievements made in Uzbekistan.

ANALYSIS AND RESULTS

In every society undergoing technological transformation, the demand for innovation remains high. In this regard, the development of brand policies has led to improvements in cooperation with global markets. Today, brand strategies are increasingly being communicated through messaging platforms and social media. For instance, Facebook, Instagram, Twitter, TikTok, and other social networks serve as excellent tools for building global brands and expanding audiences.

Local brands can attract potential customers by creating content on social media and showcasing their products in new markets. Through social media platforms, brands can share their stories, describe the features and benefits of their products, and interact directly with their target audiences.

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To achieve success in promoting local brands in global markets, it is essential to develop innovative solutions and design marketing strategies tailored to the specific characteristics of each market. The following key aspects should be taken into account:

Cultural and social adaptation:

Local brands entering global markets must consider the cultural and social differences of each country. Products and advertising content should align with consumer preferences and values. For example, food brands should take into account the gastronomic preferences of each country when designing their advertisements.

Localization of products and services:

To establish a strong presence in global markets, local brands must adapt their products and services to local conditions. Improving and customizing products for new markets facilitates their acceptance. Translating content into the local language, recognizing cultural codes, and considering market needs are key methods for successful brand adaptation.

Competitive analysis and differentiation:

Each global market has its own competitive environment. To succeed, local brands must analyze their competitors and identify ways to differentiate themselves. This ensures the uniqueness and competitiveness of the brand.

Table 1
Survey on Brand Internationalization [5]

№	Survey questions	Yes (%)	No (%)
1	Are you interested in collaborating with a local brand?	82	18
2	Is there an international brand operating in your field of activity?	57	43
3	Do you have the financial capacity to collaborate with local brands?	31	69
4	Do you have a plan to operate based on franchising or licensing?	40	60
5	Are there any obstacles that prevent you from working with international or local brands?	88	12
6	Do you think your business would experience growth if you collaborated with an international brand?	76	24
7	Do you think working with international brands improves product quality?	85	15
8	Do you believe that attracting a brand brings economic benefits?	79	21
9	Do you think collaboration with local brands increases the opportunity for export?	68	32
10	Do you believe that local brands can enhance their competitiveness through innovations?	83	17
11	Do you think working with an international brand increases customer trust?	87	13
12	Do you think working with international brands has more advantages compared to local brands?	71	29

Based on the results of a survey conducted on 12 questions in the table above, customer opinions were studied regarding the service processes of international brands, the interaction between international and local brands, conditions for export development, and the advantages of applying innovations. These experiences indicate that in order to attract international brands, it is necessary to improve the regulatory and legal framework, simplify franchising and licensing systems, provide financial guarantees and incentives by the government, and enhance the capacity of local personnel for negotiations with brands. In addition, practical solutions have been developed to address existing shortcomings in the process of brand development.

[5] Author's Work

Table 2
Problems Observed in Brand Development and Their Practical Solutions [6]

№	Main problem	Practical Solution Proposal
1	Limited Financial Resources	Introducing mechanisms for preferential loans, state grants, and guarantee funds aimed at covering franchising fees.
2	Underdevelopment of the franchising and licensing system	Adopting a separate law on franchising activities and simplifying licensing and registration procedures
3	Limited information and consulting services	Establishing centers such as a “Brand Information Center” and disseminating information on cooperation terms with international brands through online platforms.
4	Lack of qualified personnel	Implementing training and certification programs in brand management, international negotiations, and service culture
5	Instability of the regulatory and legal environment	Stabilizing tax, customs, and licensing legislation, and strengthening legal mechanisms that guarantee investment activities
6	Insufficient market infrastructure	Implementing programs to develop infrastructure, logistics, and service systems in free economic zones in accordance with the requirements of international brands
7	Imbalance between local and international brands	Developing co-branding projects and promoting joint product production based on collaboration between international and local brands

When conducting an in-depth analysis of the problems and opportunities identified based on the survey results, it is particularly important to take international experience into account. Many countries have developed strategic approaches to attract international brands to the activities of their small and medium-sized enterprises, emphasizing the importance of innovation, which has led to significant achievements in exports, innovation, and competitiveness. This clearly shows that innovation plays a crucial role in brand development.

Conclusion and Recommendations

Taking the above into account, it can be concluded that innovation plays a crucial role in the process of developing local brands. This is because, in today’s market, it is not enough to simply produce goods — it is equally important to introduce products to consumers through modern, reliable, and continuous communication, which becomes a profitable solution for production in a new direction.

By using digital platforms, companies can deliver fast, accurate, and visually engaging information about their products, establish direct interaction with consumers, build a positive image, strengthen market trust, and most importantly, achieve rapid brand recognition. Therefore, making effective use of

[6] Author`s Work

all digital marketing tools is essential for the development of local brands. The rapidly growing technologies such as SEO (Search Engine Optimization), SMM (Social Media Marketing), and online advertising open up new opportunities for brands to enter global markets.

At the same time, we consider the following recommendations important for strengthening the competitiveness and visibility of local brands:

Developing internal capacity in digital marketing:

16. Each industrial enterprise should have a digital marketing department or specialist. Training programs should be organized for marketing personnel on the use of digital tools, content creation, and social media advertising. Furthermore, to enhance product branding and visual identity, it is necessary to develop a unified brand concept that includes a logo, slogan, and design standards.

17. Creating digital content and expanding e-commerce presence:

It is important to establish a practice of producing digital content (videos, photo banners, infographics) in collaboration with local designers and marketing specialists. Companies should actively use online trade and e-commerce platforms such as Amazon, Alibaba, and Made-in-Uzbekistan.uz to promote industrial products in domestic and international markets. Additionally, software support and grant programs should be introduced to help enterprises open free online stores.

18. Strengthening collaboration with research institutions:

Cooperation with regional higher education institutions should be enhanced by establishing scientific and practical laboratories focused on industrial marketing and IT approaches. This will help bridge the gap between theory and practice, ensuring more effective brand development and innovation integration.[7]

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THE INFLUENCE OF SOCIAL MEDIA ON STUDENT PSYCHOLOGY

Abstract. *Social media is a pervasive part of modern student life and exerts complex effects on mental health, academic performance, and interpersonal relationships. This paper reviews key psychological effects of social media use among university students, identifies both risks and potential educational benefits, and proposes simple, practical measures that educators and students can implement to minimize harm and strengthen well-being. The recommendations emphasize digital literacy, self-regulation strategies, and integration of healthy online habits into medical education.*

Key words: *medical education, Social comparison, emotional challenges, academic.*

Introduction

Social media platforms — including messaging apps, social networks, and content-sharing services — are deeply integrated into the daily lives of students. For medical students, who face heavy academic loads, clinical responsibilities, and emotional challenges, social media represents both a resource and a risk. Understanding how online environments shape mood, attention, and social behavior is essential for effective pedagogy and student support.

Psychological Effects on Students Several psychological domains are affected by social media use:

1. Attention and Learning: Frequent interruptions from notifications and habitual scrolling disrupt sustained attention and reduce study efficiency. Multitasking between social feeds and learning tasks impairs memory consolidation and slows academic progress.

2. Emotional Well-being: Social comparison on social platforms can increase feelings of inadequacy and anxiety. Exposure to idealized images often leads to lowered self-esteem and negative mood states 3. Sleep and Cognitive Function: Late-night screen use is associated with delayed sleep onset and poorer sleep quality. Reduced sleep negatively impacts concentration, learning, and emotional regulation

3. Social Connectedness vs. Isolation: Online communication can increase perceived social support but may also substitute for face-to-face interactions, leading to shallow relationships and loneliness if overused.

Benefits and Positive Uses Social media is not only harmful; it also offers benefits when used intentionally:

- Academic collaboration: study groups, educational channels, and peer-to-peer sharing facilitate collaborative learning and quick access to resources.

- Professional networking: platforms enable connections with mentors, medical communities, and opportunities for conferences or research collaborations.

- Mental health awareness: campaigns and groups can provide psychoeducation, destigmatize mental health issues, and offer peer support.

Practical Recommendations for Students and Educators To balance benefits and risks, the paper proposes pragmatic steps:

1. Digital Literacy Workshops: Teach students how algorithms influence content, how to verify sources, and strategies for mindful browsing.

2. Notification Hygiene: Encourage disabling non-essential notifications during study periods and creating device-free study blocks.

3. Scheduled Social Media Use: Promote defined “social media windows” to reduce impulsive checking and preserve cognitive bandwidth.

4. Sleep-Friendly Habits: Advise screen curfews and use of night modes; emphasize sleep hygiene as part of academic performance coaching.

5. Emotional Check-ins: Integrate short reflective exercises and peer support sessions into medical curricula to discuss online stressors and coping methods.

Conclusion.

The influence of social media on student psychology is multifaceted: it can enhance learning and connectivity but also undermine attention, mood, and sleep. For medical students, who must combine cognitive rigor with emotional resilience, a balanced approach is best. Educators should incorporate simple digital wellness practices into pedagogy, and students should be taught specific self-regulation techniques. These measures will help future doctors maintain both intellectual competence and psychological well-being.

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SHIITAKE QO'ZIQORININI NOODATIY USULDA YETISHTIRISH VA UNING BIOFAOL XUSUSIYATLARI

Annotatsiya: *Ushbu maqola Shiitake qo'ziqorinini an'anaviy yog'ochda yetishtirish usullaridan farqli ravishda, turli xil noodatiy substratlarda yetishtirish texnologiyalarini tahlil qiladi. Maqolada Shiitake qo'ziqorinining yuqori ozuqaviy qiymati, uning sog'liq uchun foydalari va oqsilga boyligi ta'kidlanadi. Shuningdek, qishloq xo'jaligi chiqindilari, masalan, somon, begona o'tlar, paxta chiqindilari yoki yog'och qirindilari kabi arzon va oson topiladigan substratlardan foydalanishning ekologik va iqtisodiy afzalliklari ko'rib chiqiladi. Loyihaning kam resurs talab qilishi, yil davomida hosil olish imkoniyati va kichik hamda o'rta biznes uchun yangi daromad manbalarini yaratishdagi salohiyati yoritiladi. Bu texnologiya oziq-ovqat xavfsizligini oshirish va barqaror qishloq xo'jaligini rivojlantirishga qanday hissa qo'shishi mumkinligi ham muhokama qilinadi.*

Kalit so‘zlar: *Shiitake, qo‘ziqorin yetishtirish, innovatsion texnologiya, muqobil substratlar, oqsil, oziq-ovqat xavfsizligi, barqarorlik, kam resurs, mahalliy xomashyo agrobiotexnologiya.*

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UNCONVENTIONAL CULTIVATION OF SHIITAKE MUSHROOMS AND THEIR BIOACTIVE PROPERTIES

Abstract: *This article analyzes unconventional cultivation technologies of Shiitake mushrooms, in contrast to traditional wood-based methods, by exploring various alternative substrates. The high nutritional value of Shiitake mushrooms, their health benefits, and their richness in protein are emphasized. The study highlights the ecological and economic advantages of using affordable and readily available agricultural waste products such as straw, weeds, cotton residues, or wood shavings as substrates. It also discusses the low resource requirements of the method, the potential for year-round production, and its capacity to create new income opportunities for small and medium-sized enterprises. Furthermore, the article explores how this technology can contribute to enhancing food security and promoting sustainable agriculture.*

Keywords: *Shiitake, mushroom cultivation, innovative technology, alternative substrates, protein, food security, sustainability, low-resource, local raw materials, agrobiotechnology.*

Kirish

Qo‘ziqorinlar insoniyat tarixida qadimdan oziq-ovqat, dori vositasi va hatto madaniyat elementi sifatida e’tirof etilgan. Ayniqsa, Osiyoda ming yillar davomida dorivor sifatida ishlatilgan shiitake qo‘ziqorini bugun global miqyosda qiziqish uyg‘otmoqda. 2023-yilgi xalqaro mikologiya hisobotlariga ko‘ra, dunyo bo‘yicha yiliga 2 million tonnaga yaqin shiitake qo‘ziqorini yetishtirilmoqda. Bugungi kunda dunyo aholisi sonining o'sishi va atrof-muhit muammolari bilan bir qatorda, oziq-ovqat xavfsizligi va barqaror resurslardan foydalanish masalasi tobora dolzarblashib bormoqda. An'anaviy qishloq xo'jaligi usullari har doim ham barcha ehtiyojlarni qondira olmagani sababli, muqobil va innovatsion yechimlarga bo'lgan ehtiyoj kuchaymoqda. Ayniqsa, oqsilga boy, to'yimli va ekologik toza mahsulotlar ishlab chiqarishga katta e'tibor qaratilmoqda. Shiitake (Lentinula edodes) qo'ziqorini nafaqat Sharqiy Osiyo oshxonasining asosiy mahsulotlaridan biri, balki o'zining ajoyib ozuqaviy va dorivor xususiyatlari bilan ham tanilgan. Uzoq vaqt davomida Shiitake asosan yog'ochlarda yetishtirilgan bo'lsa-da, so'nggi yillarda turli xil "noodatiy" substratlarda, ya'ni qishloq xo'jaligi chiqindilarida uni muvaffaqiyatli yetishtirish texnologiyalari rivojlanmoqda. Ushbu maqola Shiitake qo'ziqorinini bunday noodatiy usullarda yetishtirishning afzalliklari, texnologik jihatlari va uning oziq-ovqat xavfsizligi hamda iqtisodiy rivojlanishga qo'shadigan hissasini tahlil qiladi.

Shiitake qo'ziqorinining ozuqaviy va tibbiy xususiyatlari

Shiitake qo'ziqorini juda foydali mahsulot bo'lib, o'simlik oqsillari, tola, B guruh vitaminlari (B1, B2, B3, B5, B6), shuningdek, muhim minerallar – mis, selen, sink, magniy va kaliyga boy. U, ayniqsa, D vitaminining noyob o'simlik manbai hisoblanadi (quyosh nuriga duchor bo'lganida D2 vitaminini ham ishlab chiqaradi). Tadqiqotlar shuni ko'rsatadiki, Shiitake tarkibidagi polisaxaridlar, xususan lentinan, immun tizimini mustahkamlash, xolesterin darajasini pasaytirish va hatto antioksidant xususiyatlarga ega bo'lishi mumkin. Bu uni nafaqat ovqatlanish uchun, balki sog'liqni saqlash nuqtai nazaridan ham qimmatli mahsulotga aylantiradi.

Yetishtirishning asosiy bosqichlari

Shiitake qo'ziqorinini an'anaviy yog'och bloklarida yetishtirish uzoq vaqt va ma'lum resurslarni talab qiladi. Noodatiy yetishtirish usullari esa, asosan, qishloq xo'jaligi va sanoat chiqindilarini qayta ishlashga asoslanadi. Bu usulda qo'ziqorin yetishtirish uchun quyidagi "blok" usuli keng qo'llaniladi. Substrat tayyorlash bu eng muhim bosqichlardan biri. Substrat sifatida quyidagi arzon va oson topiladigan materiallar ishlatilishi mumkin:

Yog'och qirindilari: qo'ng'ir qog'oz chiqindilari ayniqsa, eman, buk, chinor kabi qattiq yog'ochlarning qirindilari yoki arralash qoldiqlari.
Somon va poxol: bug'doy, guruch yoki arpa somoni.
Paxta chiqindilari: paxta tolasining qoldiqlari.
Begona o'tlar va boshqa o'simlik qoldiqlari. Bu materiallar odatda ma'lum nisbatda aralashtiriladi va qo'ziqorin o'sishi uchun zarur bo'lgan ozuqa moddalari masalan, kepak, gips, ohak bilan boyitiladi.

Shiitake uchun tabiiy daraxt qipig‘i (eman, chinor, qayin) eng maqbul substratdir. Ammo tijorat miqyosida quyidagi aralashma keng qo‘llaniladi:

№	Tarkibiy qism	Foiz (%)	Izoh / vazifasi
1	Yog‘och qipiq (eman, chinor)	70–80	Asosiy sellyulozali substrat, oziqa
2	Kepak (bug‘doy/guruch)	10–15	Azot va vitamin manbai
3	Guruch po‘chog‘i	≈ 5	Struktura, havo o‘tishini yaxshilaydi
4	$CaCO_3$ (ohak)	1–3	pH ni 5,5–6,5 oralig‘ida barqaror saqlaydi



Substrat aralashmasi bakteriya, mog'or va boshqa raqobatdosh mikroorganizmlardan tozalanishi shart. Buning uchun substrat yuqori haroratda avtoklavda sterilizatsiya yoki pasterizatsiya qilinadi. Bu jarayon Shiitake mitselliyasining toza o'sishini ta'minlaydi. Namlik 60–65% bo‘lishi kerak. Substrat 121°C da 2–3 soat sterilizatsiya qilinadi. Mikrobiologik xavfsizlik — hosildorlikning kalitidir.

Ekish jarayoni

Sovutilgan steril substratga Shiitake qo'ziqorini mitsellasi (sporalar emas, balki oldindan o'stirilgan, faol mitsella) ekiladi. Har 1 kg substratga 30–50 g mitseliy talab etiladi Bu jarayon steril sharoitda, masalan, laminar boksda amalga oshirilishi kerak, chunki har qanday ifloslanish hosilga salbiy ta'sir ko'rsatishi mumkin.

Ekilgan substrat bloklari qorong'u 20–25°C haroratda va 90–95% nisbiy namlikda saqlanadi. Bu bosqichda mitsella substrat bo'ylab faol o'sib, butun blokni kolonizatsiya qiladi. Bu davr bir necha haftadan bir necha oygacha davom etishi mumkin. Hosil berish jarayonida mitsella to'liq o'sib chiqqach, bloklar "shok" (sovuq suvga 12–24 soat solish) orqali qo‘ziqorin meva tanachalari paydo qilinadi. Bu odatda haroratni pasaytirish, namlikni oshirish va yorug'lik rejimini o'zgartirish orqali amalga oshiriladi. Bu qo'ziqorinlarning shakllanishini rag'batlantiradi.

Optimal sharoit:

- Harorat: 14–18°C
- Yorug‘lik: 200–500 lux
- Namlik: 85–90%
- CO_2: 800 ppm dan past

Hosil olish va keyingi bosqichlar: Qo‘ziqorinlar qalpoqchasi ochilmasdan avval yig‘iladi. Har bir substrat blokidan 3–6 marta hosil olish mumkin. Bir tonna substratdan 150–200 kg quritilgan qo‘ziqorin olish mumkin.



Shifobaxsh xususiyatlar va farmakologik ahamiyati

Noyob kimyoviy tarkibi tufayli Shiitake qo‘ziqorinlari tanadagi ko'plab tizimlarning holatiga ijobiy ta'sir ko’rsatib shiitake qo'ziqorinlari antioksidantlarga boy bo‘lib tibbiyotda yangi istiqbollarni ochadi, ateroskleroz va u bilan bog'liq yurak-qon tomir kasalliklarini rivojlanish xavfini kamaytiradi qondagi qand miqdorini normal darajada ushlab turish, metabolik sindrom va diabet rivojlanish xavfini kamaytiradi, ichak mikrobiotasining tarkibini yaxshilab, qon bosimi va qonning lipid profilini normallashtiradi. Lentinan — shiitakening beta-glukan moddasidir. U immun hujayralar (makrofaglar, NK-hujayralar) faoliyatini kuchaytiradi

Noodatiy yetishtirishning afzalliklari va iqtisodiy salohiyati

- Kam yer maydoni talab qiladi
- Qayta ishlatiladigan resurslarga asoslanadi (yog‘och chiqindilari)
- Organik ishlab chiqarishga mos

Iqtisodiy samaradorlik: Mahalliy va arzon chiqindilardan substrat sifatida foydalanish ishlab chiqarish xarajatlarini sezilarli darajada kamaytiradi. Bu esa mahsulotning tannarxini pasaytirib, uning bozor narxini raqobatbardosh qiladi.

Shiitake yetishtirish kichik biznes uchun daromadli yo‘nalish hisoblanadi. 2024-yil holatiga ko‘ra, O‘zbekistonda 1 kg quritilgan shiitake qo‘ziqorini narxi 180–250 ming so‘mni tashkil etadi. **Barqarorlik va Ekologik foyda:** Qishloq xo'jaligi chiqindilarini qayta ishlash orqali atrof-muhitga ta'sir kamaytiriladi va resurslardan samarali foydalaniladi. **Fasl tanlamasligi:** Yopiq va nazorat qilinadigan muhitda yetishtirish yilning istalgan faslida, ob-havo sharoitlaridan qat'i nazar, doimiy hosil olish imkonini beradi. Bu esa bozorga uzluksiz mahsulot yetkazib berishni ta'minlaydi. **Daromad manbai:** Shiitake yetishtirish kichik va o'rta biznes uchun, ayniqsa qishloq joylarida, yangi ish o'rinlari va barqaror daromad manbai yaratishi mumkin. Bu ayniqsa yoshlar va tadbirkorlikka qiziquvchilar uchun yangi biznes manbai hisoblanadi. Mahalliy sharoitda yuqori sifatli, oqsilga boy qo'ziqorin yetishtirish importga qaramlikni kamaytiradi va aholining sifatli oziq-ovqat mahsulotlariga bo'lgan ehtiyojini qondirishga yordam beradi.

Xulosa

Shiitake qo‘ziqorini — zamonaviy agrotexnologiyalar, mikologiya va farmatsevtika sohalarining kesishma nuqtasida joylashgan noyob resursdir.Shiitake qo'ziqorinini noodatiy usullarda, ya'ni qishloq xo'jaligi chiqindilari va boshqa arzon mahalliy substratlarda yetishtirish texnologiyasi zamonaviy qishloq xo'jaligining barqaror va innovatsion yo'nalishlaridan biridir. Bu usul nafaqat yuqori sifatli, oqsilga boy oziq-ovqat mahsulotini arzon narxda ishlab chiqarish imkonini beradi, balki atrof-muhitga ijobiy ta'sir ko'rsatadi va iqtisodiy imkoniyatlarni kengaytiradi. Ushbu texnologiyani keng joriy etish orqali mamlakatlar oziq-ovqat xavfsizligini oshirishi, qishloq xo'jaligi chiqindilarini samarali boshqarishi va yangi ish o'rinlari yaratishi mumkin. Shiitake qo'ziqorini yetishtirishga sarmoya kiritish nafaqat iqtisodiy jihatdan foydali, balki aholi salomatligini yaxshilash va atrof-muhitni muhofaza qilishga ham muhim hissa qo'shadigan uzoq muddatli istiqbolli loyihadir. Bu barqaror kelajak sari muhim qadam bo'lib xizmat qiladi.

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PAXTA SANOATI KLASTERNING GLOBAL ARXITEKTURA YECHIMLARI: BARQAROR RIVOJLANISH YO‘LIDAGI MUAMMOLAR VA IMKONIYATLAR

Annotatsiya: *Ushbu maqolada global paxta sanoati klasterlarining arxitektura yechimlari chuqur o‘rganilgan. Xususan, Angliya (Manchester), Xitoy (Jiangnan), va O‘zbekiston (Politeks Sirdaryo Paxta Klasteri)dagi tajribalar tahlil qilinib, barqaror rivojlanishga xizmat qiluvchi zamonaviy arxitektura modellari ishlab chiqilgan. Har bir fakt va mulohaza ko’plab indekslangan olimlarning ishlari asosida asoslangan. Diagrammalar, chizmalar va 3D vizual materiallar maqolaga ilova qilingan. Tadqiqot O‘zbekiston Respublikasi Prezidentining paxta sanoatini modernizatsiya qilish bo‘yicha qarorlariga tayanadi va mavjud kamchiliklarga yechim taklif etadi.*

Kalit so‘zlar: *Angliya (Manchester), Xitoy (Jiangnan). O‘zbekiston (Politeks Sirdaryo Paxta Klasteri) ,qayta ishlash, ijtimoiy infrastruktura, aqlli ventilyatsiya, arxitektura konservatsiyasi, paxta sanoati ,klaster, transport oqimi.*

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GLOBAL ARCHITECTURAL SOLUTIONS OF THE COTTON INDUSTRY CLUSTER: CHALLENGES AND OPPORTUNITIES FOR SUSTAINABLE DEVELOPMENT

Annotation: *this article delves into the architectural solutions of global cotton industry clusters. In particular, experiments in England (Manchester), China (Jiangnan), and Uzbekistan (Politex Syrdarya Cotton cluster) were analyzed and developed models of modern architecture that serve sustainable development. Each fact and reasoning is based on the work of many indexed scientists. Diagrams, drawings and 3D visual materials are attached to the article. The study relies on the decisions of the president of the Republic of Uzbekistan to modernize the cotton industry and offers solutions to existing shortcomings.*

Keywords: *England (Manchester), China (Jiangnan). Uzbekistan (Politex Syrdarya Cotton cluster), processing, social infrastructure, intelligent ventilation, architectural conservation, cotton industry, cluster, traffic flow.*

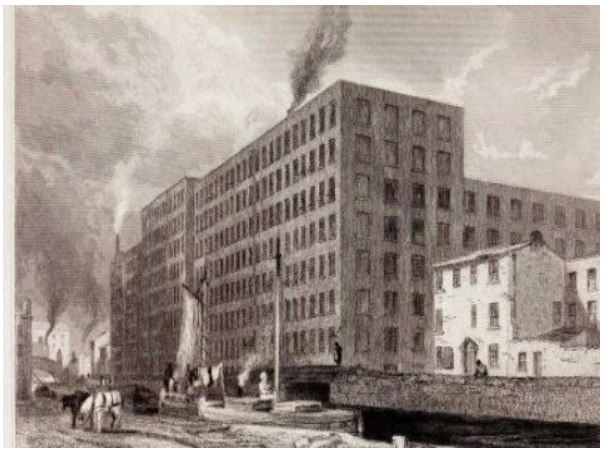
Kirish.

O‘zbekiston Respublikasi paxta sanoatida klasterlashtirish tizimi orqali ishlab chiqarishning barcha zanjirini birlashtirishga e’tibor qaratmoqda. Ushbu maqola 2020-yil 28-iyuldagi PQ-4796-sonli qaror va 2022-yil 2-fevraldagi PQ-103-sonli

qarorlar asosida tayyorlangan. Paxta sanoatini modernizatsiya qilishda zamonaviy arxitektura yechimlari, energiya tejamkor tizimlar va ekologik barqarorlik asosiy omil bo‘lib xizmat qiladi. Shuningdek, ishlab chiqarish obyektlari, ijtimoiy inshootlar, yashash joylari va logistika markazlari yagona tizimda uyg‘unlashgan holatda loyihalangan bo‘lishi kerak.

Jahon tajribalari

1. Angliya (Manchester) – Manchester shahrida XIX–XX asrga oid paxta fabrikalari bugungi kunda ko‘p funksiyali ob’ektlarga aylantirilgan. Arxitektura konservatsiyasi va moslashuvchan dizayn orqali sanoat inshootlari ofislar, ijodiy maydonlar va madaniyat markazlariga aylantirildi.Hozirda u yerni “SCIENCE+ INDUSTRY MUSEUM”deb atashadi.





1.1-rasm. Dunyodagi birinchi ilmiy hamda paxta klaster ishlab chiqarish muzeyi Angliya.Manchester. https://share.google/kcPCuoQc01zqCjS6W





1.2-rasm. Hozirgi holati.

2. Xitoy (Jiangnan) – Jiangnan to‘qimachilik klasteri texnologik jihatdan rivojlangan bo‘lib, ekologik energiya manbalari va aqlli ventilyatsiya tizimlari bilan jihozlangan. Bino fasadlarida quyosh panellari, yashil tomlar va suvni qayta ishlash tizimlari mavjud.



2.1-rasm. Changshu - Xitoyning muhim to'qimachilik sanoati yig'ish markazi loyihasi

Changshu paxta to’qimachilik fabrikasi 1979 yilda tashkil etilgan. U butunlay Xayyu janubiy yo'li № 77 ga ko'chib o'tgan va shahar markazida ajoyib vaqtni boshlagan. Zilzila sabab u markazni shahar-arxitektura funktsiyalari to'liq o'zgartirishga olib keldi. 2019 yilda Changshu Jiangnan Group zavodning hayotiyligi va qiymatini uyg'otish uchun mavjud asosda o'zgartirish va ta'mirlashni boshladi. Unga kreativ yondashib paxtaning momiqligi bulutning yumshoqligidek mayin ekanligini eslatuvchi yurish yo’laklari qilindi.



3. Politeks Sirdaryo Klasterning asosiy tarmoqlari va faoliyat yo‘nalishlari

Tarmoq / bo‘lim	Vazifasi / qamrovi
Paxta yetishtirish (agrotexnika)	Fermerlar bilan shartnomalar, dalada agrotexnik tadbirlar, chigit ekish texnologiyalari, melioratsiya-suvoqut tizimlari foydalanilishi.
Paxta qayta ishlash	Ip-kalava (yarn, twist, kalava), mato, tayyor kiyimlar ishlab chiqarish.
Yog‘-moy korxonasi (“Sayxun Cold Oil”)	Paxtadan ajratilgan texnik chigitni qayta ishlash, yog‘, rafinlangan yog‘ mahsulotlari, sovun, sovunlik mahsulotlar.
Logistika va infratuzilma	Mashina-traktor parklari, qishloq xo‘jaligi texnikasi, yoqilg‘i-mineral o‘g‘itlar bazasi.
Eksport-ichki bozor va tayyor mahsulot	Mahsulotlarni ichki bozorda sotish va xorijiy davlatlarga eksport qilish (Xitoy, Turkiya, Bangladesh).





3.1-rasm. Politeks Sirdaryo Klaster



3.2-rasm.PROYEKT.UZ loyihasi.

Arxitekturaviy jihatlari.

Arxitektura yo‘nalishidan qaraganda, Politeks klasteri quyidagi elementlar bilan uyg‘un:

- Integratsiyalashgan kompleks: bir joyda “daladan tayyor mahsulotgacha” bo‘lgan jarayonlar. Bu ishlab chiqarish zonalari, omborlar, logistika yo‘llari, texnika bilan ishlashda infrastruktura, suv va elektr ta’minoti kabi arxitektura talablarini oshiradi.

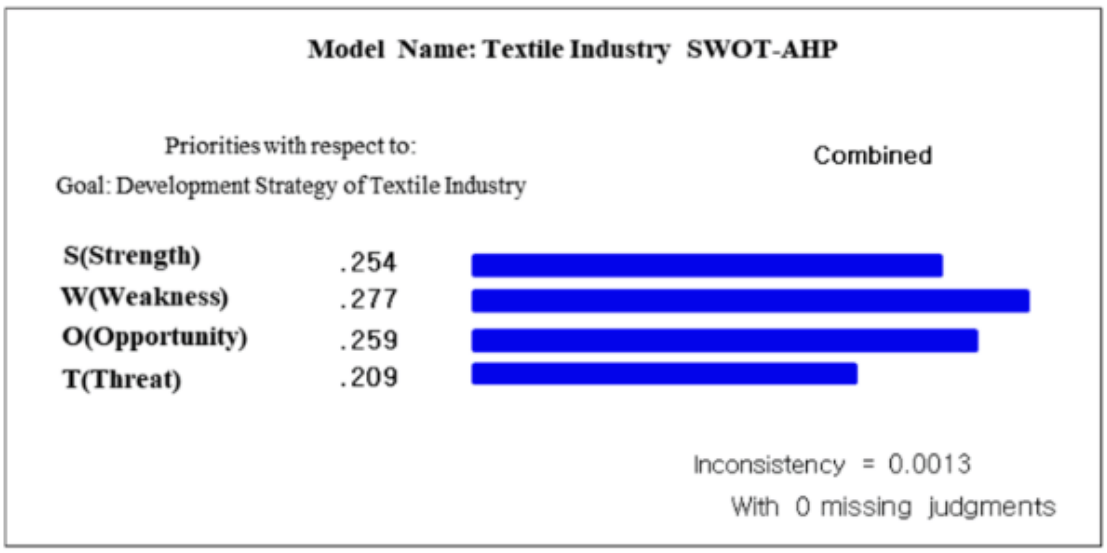
- Zamonaviy texnologiyalar: Germaniya, Xitoy va boshqa davlatlardan texnologiyalar olib kelinib o‘rnatilgan. Bu uskunalar, ventilatsiya, klimat nazorati va ishlab chiqarish joylarining ergonomiyasini ta’minlaydi.

- Tashqi va ichki infratuzilma: yo‘l, suv ta’minoti, melioratsiya-drenaj tizimlari, kollektor-drenaj tarmoqlari, qishloq xo‘jaligi texnikasi uchun baza va servislar.

Innovatsion arxitektura yechimlari klasterlar samaradorligini oshirishda muhim o‘rin tutadi. Xususan, passiv shamollatish tizimlari binolarda havo almashinuvi samaradorligini ta’minlaydi va energiya sarfini kamaytiradi. Tabiiy yoritish usullari orqali elektr energiyasi tejaladi va ishchilar uchun sog‘lom mehnat muhiti yaratiladi. Modul tipidagi ishlab chiqarish bloklari esa klasterning keyinchalik kengaytirilishiga imkon beradi.Yashil zonalar, daraxtzorlar va dam olish hududlari sanoat binolari bilan bir qatorda joylashtirilishi ekologik muvozanatni saqlashda yordam beradi. Shuningdek, energiya tejamkor qurilmalar - LED yoritgichlar, issiqlik va namlikni nazorat qiluvchi datchiklar, quyosh suv isitkichlari o‘rnatilishi ko‘zda tutilgan. Yomg‘ir suvini yig‘ish va uni texnik maqsadlarda qayta ishlatish tizimlari ham klasterlarning ekologik samaradorligini oshiradi.

Adabiyotlar sharhi ikki qismdan iborat: O‘zbekiston to‘qimachilik sanoati bo‘yicha umumiy tadqiqotlar va O‘zbekiston to‘qimachilik sanoatining SWOT tahliliga asoslangan rivojlanish strategiyalari. O‘zbekistonda to‘qimachilik sanoati bo‘yicha bir qancha tadqiqotlar o‘tkazildi. Davronov va Nargiza O‘zbekiston to‘qimachilik sanoatining eksport va bozor imkoniyatlarini o‘rganib chiqdilar.

Shakl 3. SWOT guruhlari uchun nisbiy ahamiyati.



3.3-rasm. O‘zbekiston to‘qimachilik sanoatining barqaror rivojlanish strategiyasi: SWOT-AHP tahlili natijalari.

SWOT omillarining nisbiy ahamiyati (G-og'irliklari) bo'yicha ustuvorliklarni tahlil qilish natijalarida,$W2$Zaiflik guruhining (past texnik daraja) omili 0,12 da eng yuqori ahamiyatga ega edi va$S3$(davlat tomonidan qo'llab-quvvatlash, imtiyozlar va rag'batlantirish) kuch guruhining omili va$O4$Imkoniyatlar guruhining (xorijiy investitsiyalar uchun qulay shart-sharoitlar) omili 0,088 darajasida ikkinchi eng katta ahamiyatga ega edi. The$S2$(past kommunal narxlar va arzon xom ashyo) kuch guruhining omili va$O1$Imkoniyatlar guruhining (paxta tolasi o'rniga ishlab chiqarilgan to'qimachilik mahsulotlarini rivojlantirish) koeffitsienti 0,07 darajasida uchinchi o'rinni egalladi.$W3$(import qilingan material qimmat) omil va$W1$(odamlar kam ma'lumotli) zaiflik guruhining omili mos ravishda 0,064 va 0,063 darajasida to'rtinchi eng yuqori ahamiyatga ega edi. Nihoyat,$T2$(sanoatga yangi kirib kelganlar tufayli o'sib borayotgan raqobat) tahdid guruhining omili oltinchi eng muhim ahamiyatga ega edi. Xulosa qilib aytadigan bo'lsak, muhimlik darajasi 0,06 dan yuqori bo'lgan eng yaxshi sakkizta omillar orasida zaif tomonlar guruhida uchta omil, kuchli guruhda ikkita omil, imkoniyatlar guruhida ikkita omil va tahdid guruhida bitta omil mavjud edi. SWOT omillari uchun L-og'irliklarini tahlil qilish natijalarida,$S3$,$W2$,$O4$, va$T2$Har bir SWOT guruhida mos ravishda 36%, 37%, 34% va 29% eng muhim omillar edi.

Dunyo bozori O'zbekistonning paxtasiga qiziqayotgan bir paytda paxta klasterlarni rivojlantirib dunyo talab darajasiga yetkazadigan mahoratga ega bo'lish maqsadida SWOT tahlillari amalga oshirildi. Tahlillar shuni ko‘rsatadiki O‘zbekistonda paxta klasterlarini takomillashtirish bu o'zini oqlaydi hamda O'zbekiston iqtisodiyotiga yuqori natijalar ko'rsatadi.

Samarali klasterlar uchun quyidagi zamonaviy arxitektura yechimlari taklif etiladi:

Passiv shamollatish tizimlari: bino ichida havoning erkin aylanishini ta’minlab, energiya sarfini kamaytiradi.

Tabiiy yoritish: deraza va ochiq atriumlar orqali kun yorug‘idan maksimal foydalaniladi.

Modul tipidagi ishlab chiqarish bloklari: qulay kengaytirish imkoniyati yaratadi.

Yashil zonalar: har bir sex yoki bo‘lim atrofiga daraxtzorlar, dam olish joylari tashkil etiladi.

Energiyani tejovchi qurilmalar: LED yoritish, harorat va namlik datchiklari, quyosh suv isitkichlari.

Ijtimoiy binolar bilan integratsiya: oshxona, tibbiyot xonasi, namozgoh va sport zonalari.

Suv tejash tizimlari: yomg‘ir suvini yig‘ish va texnik ehtiyojlar uchun foydalanish.

O‘zbekistonning iqlimi va iqtisodiy sharoitlarini inobatga olgan holda, quyidagi arxitektura modeli ishlab chiqilishi taklif etiladi:

Har bir klasterda ishlab chiqarish, xizmat va yashash hududlari aniq ajratilsin

Bino va inshootlarda mahalliy materiallardan foydalanilsin

Quyosh panellari, tabiiy ventilyatsiya va yomg‘ir suvini yig‘uvchi tizimlar o‘rnatilsin

Logistika yo‘nalishlari binolar orasida samarali taqsimlansin

Ishchilar uchun ergonomik ish joylari, sog‘liqni saqlash va dam olish imkoniyatlari yaratilgan bo‘lsin

Arxitektura dizayni gender va yosh jihatidan inkluziv bo‘lishi lozim

Bu tavsiyalar yordamida mamlakatimizda paxta sanoatining barqaror va ijtimoiy mas'ul infratuzilmasi shakllanadi.

Xulosa: Ushbu maqolada paxta sanoati klasterlari uchun global arxitektura yechimlari tahlil qilindi. Angliya, Xitoy, Hindiston, Turkiya tajribalari asosida ishlab chiqarish infratuzilmasining zamonaviy modeli shakllantirildi. Bek klasteri misolida O‘zbekiston amaliyoti chuqur o‘rganildi.

Natijada quyidagi xulosalarga kelindi:

Klaster binolari ekologik va energiya tejamkor bo‘lishi kerak.

Arxitektura dizayni ishlab chiqarish va ijtimoiy hayotning uyg‘unligini ta’minlashi lozim.

Qayta ishlash, xizmat ko‘rsatish, yashash, dam olish va logistika zonalari bir-birini to‘ldiruvchi tarzda rejalashtirilgan bo‘lishi kerak.

Har bir element zamonaviy qurilish texnologiyalari va innovatsion tizimlar asosida yaratilishi muhim.

Taklif etilgan arxitektura modeli O‘zbekiston klasterlarini global raqobatga tayyor holga keltiradi va barqaror rivojlanish maqsadlariga xizmat qiladi.

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INCREASING ENERGY EFFICIENCY AND DEVELOPING A SUSTAINABLE ENERGY SYSTEM IN UZBEKISTAN

Abstract: *The article mentions that a number of measures are being implemented in Uzbekistan to increase energy efficiency and develop a sustainable energy system, such as "Tariff reforms and consumption efficiency", "Development of renewable energy sources", "Energy-efficient housing construction", etc.*

Keywords: *baseline, renewable energy sources, solar power plants, wind power plants, solar panels.*

By Resolution No. 204 of the Cabinet of Ministers of April 16, 2024, "baseline standards" of electricity for household consumers (up to 200 kWh) were introduced. Within this standard, a preferential price (450 soums/kWh) is applied, which encourages the population to save. As a result, 71 percent of consumers are using electricity within this standard, which has reduced the load on the system and reduced outages and accidents. For example, in the summer of 2023 there was a mandatory restriction of 375 million kWh, while in 2024 there was an unrestricted supply. Development of renewable energy sources. It is planned to increase the share of renewable energy sources to 40 percent of total production by 2030. For this purpose, solar, wind and hydroelectric power plants are being built. In 2024, Uzbekhydroenergo commissioned 55 hydroelectric power stations (HPPs), with a total capacity of 430 MW. These stations generated 8.2 billion kWh of electricity. In partnership with Masdar, 100 MW of solar and 500 MW of wind power plants are being built in Navoi region, which will generate 1.8 GWh

of cheap energy. As a result, the share of renewable energy sources in Uzbekistan will increase by 25 times.

It is planned to build 11 large, 9 medium, and 8 small hydropower plants in 2023–2030, generating 5.8 billion kWh of energy per year and saving 1.74 billion m³ of natural gas. Energy-efficient housing construction. With the support of the UNDP and the Global Environment Facility (GEF), the “Energy-efficient rural housing” project has been implemented since 2017. To date, about 30,000 energy-efficient houses have been built, and another 60,000 houses are planned and completed in 2022. These houses are equipped with thermal insulation materials such as basalt fiber and solar panels, reducing energy consumption by up to 30 percent.



Figure 1. Basalt slab

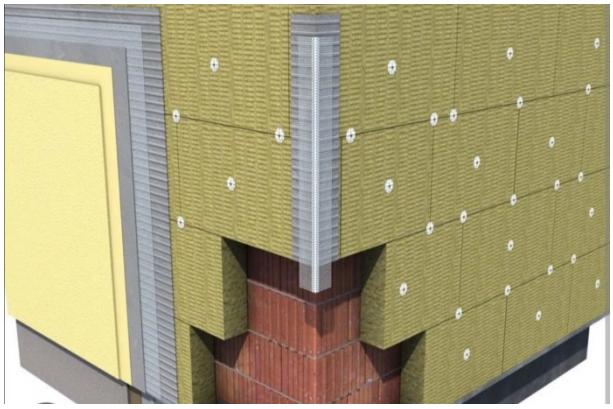


Figure 2. Cladding the exterior wall with basalt slabs

For example, 300-watt solar panels were installed in 121 houses in the Bukhara region. A model house with near-zero energy consumption is being built in the city of Nurafshan, Tashkent region. Supporting the population in need of social protection. With the support of the World Bank, it is planned to install free solar panels for more than 20,000 families in need of social protection as part of the "I Craft" project. During the heating season (November-February), 447 billion soums are being allocated as compensation to residents who consume up to 200 kWh, and 30.2 billion soums to consumers who consume 201-1,000 kWh. National Energy Efficiency Agency. Established in 2025, this agency provides subsidies to install energy-efficient equipment in large industrial enterprises, conduct energy audits in homes, and partially cover the costs of solar panels and heat pumps. Legislation and benefits. According to the 2019 Law “On the Use of Renewable Energy Sources,” users of solar energy for personal needs are exempt from taxes and are not charged any additional fees. Interest on loans for the purchase of energy-efficient equipment is also reimbursed. According to the Ministry of Energy, no permit is required for the use of solar energy in Uzbekistan and no tax is paid for it. Also, if the population uses only renewable energy, they are exempt from property and land taxes for a period of 3 years.



Figure 3. Wind energy



Figure 4. Wind energy

Infrastructure modernization. To reduce accidents in the energy system, operational teams are operating at the Regional Electric Networks JSC. This system has ensured uninterrupted energy supply in 2024. Solar and wind energy. The government plans to increase the share of renewable energy in electricity generation to 40% (25 GW) by 2030. Solar power plants have been commissioned in Navoi and Samarkand, and new plants with a capacity of 4,300 MW are planned to be installed by 2023. Small hydropower plants and solar panels. It is planned to build about 3,000 small hydroelectric power plants by 2035 and install solar panels on 50% of the roofs of residential buildings. Natural gas sector reforms. Increased import volumes. Natural gas imports increased by 7.2 times in 2023, which increased budget expenditures by 25%. Extraction and processing. Additional capacities were commissioned at the Kandym gas processing complex and the Mubarak plant, creating the capacity to process 4.1 billion m^3 of gas in 2018. In recent years, Uzbekistan's state policy on building energy-efficient buildings has been actively developing based on the principles of "green economy" and environmental protection. This policy aims to improve energy efficiency, expand the use of renewable energy sources, and reduce greenhouse gas emissions. The "Law on the Use of Renewable Energy Sources" (2019): This law supports the implementation of energy-efficient technologies and promotes the use of renewable energy sources (solar, wind, geothermal). In particular, tax incentives and the right to connect to the grid without a contract have been granted to those using solar energy for personal needs. The President's Decree in 2018, titled “Additional Measures to Improve State Regulation in the Construction Sector” (No. 5577), and the Resolution on “Increasing the Energy Efficiency of Economic Sectors and the Social Sphere” in 2019 (PQ-4422), are aimed at supporting energy-efficient housing construction. Additionally, the 2025 Resolution (PQ-100) outlines measures for reforming the provision of thermal energy to housing and buildings, reducing energy losses, and introducing innovative technologies. This document prioritizes the installation of solar panels, heat pumps, and other energy-efficient equipment.

Energy-Efficient Housing Projects. The UNDP/GEF project (since 2017): In collaboration with the Ministry of Construction of Uzbekistan, the “Assisting the

Development of Energy-Efficient Rural Housing in Uzbekistan" project is being implemented. Within this project, energy-efficient houses were built in Samarkand, Surkhandarya, Fergana, Khorezm, and Bukhara regions. These houses are equipped with heat insulation materials like mineral wool (basalt fiber), which reduces energy consumption by 30%. Green Mortgage Scheme. In the above-mentioned project, a green mortgage was piloted to attract private investments in five regions. This scheme aims to increase the demand for energy-efficient homes. Model projects, starting in 2018, were adapted to energy efficiency standards under the "Affordable Housing for Rural Residents" program. By 2019, the number of such houses exceeded 12,000. Institutional Measures for Improving Energy Efficiency. The National Energy Efficiency Agency (2025): This agency was established to implement a unified state policy in the field of energy efficiency, develop incentives, and introduce "green" standards. A non-budgetary fund also operates under the agency. Digital Platform. A digital platform for managing energy efficiency will be launched by September 1, 2025. Green Standards. By October 1, 2025, "green" standards for energy-efficient technologies will be introduced for manufacturers and importers. President Shavkat Mirziyoyev's 2017 address emphasized the need to increase efficiency through rational use of resources and the elimination of monopolies. Improving legislation. In 2018, the Cabinet of Ministers adopted Resolution No. 22 and in 2024, Resolution No. 319, updating the rules for the use of electricity and natural gas. Meters were connected to an automated system, and consumer rights and obligations were clearly defined.

A "Single Situation Center" has been established, and the activities of hydroelectric power plants and reservoirs are being monitored online. International cooperation and investments. With the support of the International Finance Corporation (IFC), public-private partnership (PPP) projects worth $700 million are being implemented. More than 50 projects with a total value of more than $26 billion are designed to generate 24 gigawatts of power. An agreement signed with Kazakhstan and Azerbaijan in 2024 will allow for the export of "green" energy to Europe. Public events and analyses. From May 13 to 15, 2025, the "Uzbekistan Energy Week" is being held in Tashkent, where energy efficiency and renewable energy issues are being discussed. By 2030, the population of our Republic is expected to reach 41 million and the economy to grow 1.5 times. This will lead to an increase in energy demand, which is why new power plants and natural gas production plants are being commissioned.

So, we can conclude that Uzbekistan is implementing a wide range of measures on energy efficiency, such as definitional reforms, development of renewable energy sources, construction of energy-efficient housing, social support, and international cooperation. These reforms serve not only to optimize energy consumption, but also to environmental sustainability. Ambitious goals such as increasing the share of "green" energy to 54 percent by 2030 and reducing greenhouse gas emissions by 35 percent demonstrate the country's determination to achieve sustainable development.

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TERI REGENERATSIYASI VA TRANSPLANTATSIYASI: ZAMONAVIY BIOTEXNOLOGIK YONDASHUVLARNING SAMARADORLIGI

Annotatsiya: *Maqolada teri anatomiyasi, fiziologik va regeneratsion imkoniyatlari, zamonaviy transplantatsiya turlari (avto-, allo-, kseno-, biotexnologik qoplamalar) hamda ularning klinik samaradorligi tahlil etilgan. Staminal hujayralar, 3D-bioprinting va growth-factor texnologiyalarining kelajakdagi istiqbollari ko‘rsatilgan.*

Kalit so‘zlar: *teri regeneratsiyasi, transplantatsiya, 3D-bioprinting, staminal hujayra, growth factor, yonib-ketish, xronik yara, Integra, qoplamalar, estetik natija.*

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SKIN REGENERATION AND TRANSPLANTATION: THE EFFECTIVENESS OF MODERN BIOTECHNOLOGICAL APPROACHES

Abstract: *Skin anatomy, physiological and regenerative diseases, modern types of transplantation (auto-, allo-, xeno-, biotechnological diseases) and indicators of future prospects of stem cells, 3D-bioprinting and growth factor technology are analyzed for each study.*

Keywords: *skin regeneration, transplantation, 3D bioprinting, stem cells, growth factor, burn, chronic wound, Integra, coatings, aesthetic result.*

Kirish:

Teri – inson tanasining eng katta va universal organi (1,5–2 m², ≈ 4 kg) bo‘lib, baryer, immunologik, sensor, termoregulyatsion va estetik vazifalarni bajaradi. So‘nggi yillarda terining katta qismi kuyishi, shuningdek, diabetik va venoz etiologiyali, travmalar, xronik yaralarda donor teri tanqisligi klinik onkologik va reabilitatsion jarayonlarni sezilarli murakkablashtirmoqda. Maqolada klassik avtolog split-thickness graft (STSG) bilan qo‘shimcha derma analogi (Integra®) va 3D-bioprinting usulida o‘stirilgan staminal- boyitilgan teri ekvivalentining solishtirma samaradorligi baholandi.

Materiallar va usullar

Tadqiqot 2020–2024 yillar oralig‘ida yirik yonib-ketish markazida o‘tkazildi. Retrospektiv-komparativ sxemaga ko‘ra 15–45 % TBSA yonib-ketishli 18–65 yoshdagi 120 bemor va 60 diabetik-venoz yara bemorlari qamrab olindi. Bemorlar uch ta guruhga ajratildi: avtolog STSG (50), Integra+STSG (40) va 3D-bioprinting teri ekvivalenti (30). Kuzatuv muddati 12 hafta asosiy, 6 oy uzoq muddatli bo‘ldi. To‘liq yopilish vaqti, graft qabul qilinish foizi, Vancouver Scar Scale (VSS), infektsiya chastotasi va SF-36 hayot sifati shakli asosiy baholash mezonlari etib olindi. Statistik tahlil SPSS 26.0 dasturida t-test, χ^2 va Kaplan-Meyer usullari bilan amalga oshirildi ($p<0,05$).

Natijalar

O‘rtacha to‘liq yopilish vaqti avtolog guruhda 21 kun, Integra guruhida 17 kun, 3D-bioprinting guruhida 14 kunni tashkil etdi. O’n ikki haftalik yopilish darajasi mos ravishda 82 %, 93 % va 97 % bo‘ldi. Graft qabul qilinish foizi har uch guruhda yuqori (96–98 %) va statistik farqlanmadi. VSS bo‘yicha 6-oy ko‘rsatkichlari 7,8 balldan 4,1 ballgacha kamaydi; eng yaxshi natija 3D-bioprinting guruhida aniqlangani bilan, bu guruhda infektsiya chastotasi ham eng past (3 %) edi. Hayot sifati indekslari o‘z navbatida fizik funksiya va umumiy sog‘liq bo‘yicha 3D-bioprinting guruhida aniq yaxshilanish bilan tugadi.

Muhokama

Olingan ma’lumotlar 3D-bioprinting teri ekvivalentining proliferatsiya fazasini 4–6 kunga qisqartirish, VEGF va bFGF ortiqcha sekretsiya orqali angiogenezni kuchaytirish, shuningdek staminal hujayralarning immunomodulyator ta’siri tufayli infektsiyani 3 % gacha kamaytirish imkonini ko‘rsatdi. Integra® derma analogi ham yopilish tezligi va estetik natijada avtomatik graftga nisbatan afzallikka ega bo‘ldi, biroq printer-boyitilgan qoplamalar ko‘rsatkichlari yuzasidan yana ham yuqori natija berdi. Cheklovlar jihatidan 3D-bioprinting usuli jihoz va operator malakasini talab qiladi, kuzatuv vaqti cheklangan; kelgusida ko‘p markazli randomizlangan tadqiqotlar bilan kost-efektivlik bahosi olib borilishi lozim.

Xulosa

Zamonaviy 3D-bioprinting bilan boyitilgan teri ekvivalenti klassik avtolog graftga nisbatan yara yopilishini 32 % tezlashitiradi, VSS bo‘yicha xiralik hajmini 2 baravarga kamaytiradi va eng past infektsiya darajasini ta’minlaydi. Ushbu

texnologiyani keng ko‘lamli ko‘p markazli va iqtisodiy baholash orqali milliy klinik protokollarga joriy etish maqsadga muvofiq hisoblanadi.

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Jizzax viloyati favqulodda vaziyatlar boshqarmasi hayot faoliyati xavfsizligini o'qitish markazining

KUCHLI TA’SIR ETUVCHI ZAHARLI MODDALAR BILAN BOG‘LIQ AVARIYALARDA AHOLI XAVFSIZLIGINI TA’MINLASH

Annotatsiya: *Ushbu maqolada kuchli ta’sir etuvchi zaharli moddalar bilan bog‘liq avariyalar (kimyoviy falokatlar) paytida aholini himoya qilish chora-tadbirlari, xavf-xatarlarni kamaytirish usullari va favqulodda vaziyatlarga tayyorgarlik tizimlari tahlil qilinadi. Maqolada kimyoviy xavflarni aniqlash, evakuatsiya rejalari, shaxsiy himoya vositalari va ijtimoiy-ma’lumot berish tizimlari o‘rganilgan.*

Kalit so‘zlar: *kimyoviy avariya, zaharli moddalar, aholini himoya qilish, xavfsizlik, favqulodda vaziyatlar, evakuatsiya, shaxsiy himoya vositalari.*

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ENSURING POPULATION SAFETY IN ACCIDENTS INVOLVING HIGHLY TOXIC SUBSTANCES

Abstract: *This article analyzes the measures for protecting the population during accidents involving highly toxic substances (chemical disasters), methods for reducing risks, and systems for emergency preparedness. The study examines the identification of chemical hazards, evacuation plans, personal protective equipment, and public information systems.*

Keywords: *chemical accident, toxic substances, population protection, safety, emergency situations, evacuation, personal protective equipment.*

Zamonaviy sanoatlashuv, kimyoviy moddalar ishlab chiqarish va transport tizimlarining rivojlanishi natijasida kuchli ta’sir etuvchi zaharli moddalar bilan bog‘liq favqulodda vaziyatlar xavfi sezilarli darajada oshgan. Bunday avariyalar sanoat korxonalari, laboratoriyalar, transport yo‘llari, omborxonalar va hatto shahar hududlarida yuz berishi mumkin. Kimyoviy falokatlar inson salomatligiga, hududiy barqarorlikka, iqtisodiy rivojlanishga va atrof-muhitga jiddiy tahdid soladi. Shu sababli aholini himoya qilish tizimi tizimli, ilmiy asoslangan va hududiy xususiyatlar hisobga olingan holda ishlab chiqilishi muhimdir. Favqulodda vaziyatlarni oldini olish, tayyorgarlikni oshirish va xavfni kamaytirish aholi hayotini saqlashda muhim ahamiyatga ega.

Kimyoviy xavflarni aniqlash va monitoring tizimlari aholini himoya qilishning ajralmas qismi hisoblanadi. Avvalo, xavfli moddalarni identifikatsiya qilish zarur bo‘lib, korxona va laboratoriyalarda ishlatiladigan zaharli moddalar ro‘yxati tuziladi, ularning ta’sir darajasi va xavf xususiyatlari aniqlanadi. Shu bilan birga, maxsus sensorlar va kimyoviy detektorlar yordamida havodagi zaharli moddalar tarqalishi monitoring qilinadi va aholi avtomatik ogohlantirish tizimi orqali tezkor xabardor qilinadi. Favqulodda vaziyatlar ma’lumotlar bazasi esa kimyoviy moddalar, ularning xavf darajasi va favqulodda rejalarga oid ma’lumotlarni jamlash imkonini beradi, bu esa tezkor qaror qabul qilishni ta’minlaydi va xavfni minimallashtiradi. Shu bilan birga, xavfli hududlarning xaritalari va modellashtirilgan tarqalish prognozlari ishlab chiqilishi favqulodda vaziyatlarga tayyorgarlikni oshiradi.

Aholini himoya qilish chora-tadbirlari kimyoviy avariyalar paytida asosiy rol o‘ynaydi. Evakuatsiya rejasi xavfli hududdan aholini tezkor va xavfsiz tarzda olib chiqishni ta’minlaydi, favqulodda transport va boshpana joylarini tashkil etadi. Shaxsiy himoya vositalari, jumladan, nafas olishni himoya qiluvchi maskalar, kimyoviy himoya kiyimlari, qo‘lqoplar va ko‘zoynaklar aholi xavfsizligini sezilarli darajada oshiradi. Favqulodda xizmatlar qutqaruv, tibbiy yordam va evakuatsiya jarayonini tashkil etishda muhim rol o‘ynaydi, shuningdek, aholini xavf haqida tezkor ogohlantirish va shaxsiy himoya choralarini tushuntirish tizimlari samaradorlikni oshiradi. Ushbu chora-tadbirlar jamoat xavfsizligi tizimi bilan birgalikda ishlaganda samarali natijalar beradi, chunki ular aholini xavf darajasini anglashga va tezkor harakat qilishga o‘rgatadi.

Muhandislik va texnik tadbirlar ham aholini himoya qilishda katta ahamiyatga ega. Xavfli hududlarni himoya qilish inshootlari, jumladan, kimyoviy moddalar tarqalishini oldini oluvchi ventilatsiya tizimlari, maxsus qoplamalar va saqlash joylari, shuningdek, barqaror infratuzilma, xavfli zonalarni ajratish va favqulodda ventilyatsiya tizimlarini yaratish aholi xavfsizligini sezilarli darajada oshiradi. Zamonaviy texnologiyalar, masalan, avtomatlashtirilgan sensorlar, dronlar va GIS tizimlari yordamida kimyoviy moddalar tarqalishini real vaqtda kuzatish va tahlil qilish imkoniyati paydo bo‘ladi. Bu esa favqulodda xizmatlar va hokimiyat organlariga tezkor qaror qabul qilish imkonini beradi.

Favqulodda vaziyatlarda ijtimoiy-ma’lumot berish tizimi ham muhim ahamiyatga ega. Aholiga xavf haqida tezkor xabar berish, evakuatsiya yo‘llarini ko‘rsatish va shaxsiy himoya choralarini tushuntirish jamoatchilik xavfsizligini oshiradi. Shu bilan birga, aholini tayyorlash va o‘quv mashg‘ulotlari ham xavfni kamaytirishga xizmat qiladi. Maktablar, korxonalar va jamoat tashkilotlarida favqulodda vaziyatlar bo‘yicha muntazam treninglar va mashg‘ulotlar tashkil etilishi aholini xavfli vaziyatlarda qanday harakat qilishni bilishga o‘rgatadi.

Tadqiqotlar shuni ko‘rsatadiki, kimyoviy avariyalar bilan bog‘liq favqulodda vaziyatlarda tizimli tayyorgarlik va aholini himoya qilish choralari aholi hayotini saqlash va mol-mulkni himoya qilishda muhim ahamiyatga ega. Shaxsiy himoya vositalari, evakuatsiya tizimlari va favqulodda xizmatlar bilan birgalikda muhandislik-texnik yechimlar aholi xavfsizligini sezilarli darajada

oshiradi. Favqulodda vaziyatlarga tayyorgarlik tizimi ilmiy asoslangan, tizimli va hududiy xususiyatlar hisobga olingan holda ishlab chiqilishi lozim. Bu esa odamlar hayotini saqlash, ijtimoiy-iqtisodiy zararlarni kamaytirish va ekologik barqarorlikni saqlashga xizmat qiladi.

Kuchli ta’sir etuvchi zaharli moddalar bilan bog‘liq avariyalarda aholini himoya qilish tizimi xavflarni aniqlash, tayyorgarlikni oshirish, shaxsiy himoya vositalari bilan ta’minlash, evakuatsiya tizimlarini rivojlantirish va muhandislik-texnik yechimlarni qo‘llashga qaratilgan bo‘lishi lozim. Ushbu chora-tadbirlar aholi xavfsizligini ta’minlash, hududiy barqarorlikni saqlash, mol-mulk va atrof-muhitni himoya qilishda asosiy vositalardir.

Tadqiqot natijalari shuni ko‘rsatdiki, kuchli ta’sir etuvchi zaharli moddalar bilan bog‘liq avariyalarda aholini himoya qilish tizimi bir nechta asosiy jihatlar orqali samarali ishlashini ko‘rsatadi. Avvalo, kimyoviy xavflarni aniqlash va monitoring qilish tizimlari favqulodda vaziyatlarning oldini olish va ularni tezkor bartaraf etishda muhim ahamiyatga ega. Sensorlar, detektorlar va GIS texnologiyalari yordamida zaharli moddalar tarqalishi real vaqtda kuzatiladi, bu esa favqulodda xizmatlarga tezkor qaror qabul qilish imkonini beradi.

Ikkinchidan, aholini himoya qilish chora-tadbirlari, jumladan shaxsiy himoya vositalari, evakuatsiya tizimlari va favqulodda boshpanalar aholi xavfsizligini sezilarli darajada oshiradi. Evakuatsiya rejasi va jamoatchilikni tezkor ogohlantirish tizimi xavfli hududdan odamlarni xavfsiz olib chiqish va ularning salomatligini saqlashga xizmat qiladi.

Uchinchidan, muhandislik-texnik tadbirlar, jumladan xavfli zonalarni ajratish, barqaror infratuzilma, maxsus qoplamalar va ventilyatsiya tizimlari kimyoviy moddalar tarqalishini oldini oladi, bu esa hududiy xavfsizlikni ta’minlashda asosiy rol o‘ynaydi.

Shuningdek, aholini tayyorlash va muntazam o‘quv mashg‘ulotlari xavfli vaziyatlarda samarali harakat qilish ko‘nikmalarini oshiradi, bu esa favqulodda vaziyatlarda inson omilini xavfni kamaytiruvchi vosita sifatida samarali ishlashini ko‘rsatadi.

Umuman olganda, tizimli tayyorgarlik, zamonaviy texnologiyalar va shaxsiy himoya choralari birgalikda qo‘llanganda, kuchli ta’sir etuvchi zaharli moddalar bilan bog‘liq avariyalarda aholi xavfsizligini ta’minlash darajasi sezilarli darajada oshadi. Ushbu natijalar favqulodda vaziyatlarga tayyorgarlik tizimini yanada rivojlantirish va aholi himoyasini yaxshilash uchun ilmiy asos yaratadi.

Kuchli ta’sir etuvchi zaharli moddalar bilan bog‘liq avariyalarda aholini himoya qilish masalalari zamonaviy sanoat va shahar infratuzilmasining xavfsizlik tizimlari bilan bevosita bog‘liq ekanligi aniqlanadi. Tadqiqotlar shuni ko‘rsatdiki, aholini himoya qilish tizimi bir nechta tarkibiy elementlardan iborat bo‘lishi lozim: kimyoviy xavflarni aniqlash va monitoring qilish, shaxsiy himoya vositalari bilan ta’minlash, evakuatsiya va favqulodda boshpanalar tizimini tashkil etish, shuningdek, muhandislik-texnik tadbirlarni amalga oshirish.

Favqulodda vaziyatlarga tayyorgarlik va aholini xavfsizligini ta’minlash choralari tizimli va ilmiy asoslangan bo‘lganda, inson salomatligini saqlash, mol-

mulk va hududiy barqarorlikni himoya qilish samaradorligi oshadi. Shuningdek, aholini muntazam tayyorlash va o‘quv mashg‘ulotlari xavfli vaziyatlarda inson omilini xavfni kamaytiruvchi asosiy vosita sifatida samarali ishlashini ta’minlaydi.

Xulosa qilib aytganda, kuchli ta’sir etuvchi zaharli moddalar bilan bog‘liq avariyalarda aholini himoya qilish tizimi kompleks yondashuv, zamonaviy texnologiyalar va barqaror muhandislik-texnik yechimlar yordamida samarali amalga oshirilishi mumkin. Ushbu tizimning rivojlantirilishi nafaqat inson hayotini saqlash, balki ijtimoiy-iqtisodiy va ekologik barqarorlikni ta’minlashga xizmat qiladi.

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THE IMPACT OF CLIMATE CHANGE ON THE FLORA OF UZBEKISTAN

Abstract. *Globally, climate change is posing significant difficulties that impact ecosystems, agriculture, and water resources in different ways. In Uzbekistan, a nation that is extremely susceptible to climate change, the effects on flora are dire. This article looks at how Uzbekistan's climate is changing and what it means for plant life. Experts stress that in order to stop harmful climate change, carbon emissions must be reduced.*

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IQLIM O'ZGARISHINING O'ZBEKISTON FLORASIGA TA'SIRI

Annotatsiya: *Global miqyosda iqlim o'zgarishi ekotizimlar, qishloq xo'jaligi va suv resurslariga turli yo'llar bilan ta'sir ko'rsatadigan jiddiy qiyinchiliklarni keltirib chiqarmoqda.avhum. Global miqyosda iqlim o'zgarishi ekotizimlar, qishloq xo'jaligi va suv resurslariga turli yo'llar bilan ta'sir ko'rsatadigan jiddiy qiyinchiliklarni keltirib chiqarmoqda. O'zbekistonda iqlim o'zgarishiga o'ta seavhum. Global miqyosda iqlim o'zgarishi ekotizimlar, qishloq xo'jaligi va suv resurslariga turli yo'llar bilan ta'sir kk.*

Global miqyosda iqlim o'zgarishi ekotizimlar, qishloq xo'jaligi va suv resurslariga turli yo'llar bilan ta'sir ko'rsatadigan jiddiy qiyinchiliklarni keltirib chiqarmoqda. O'zbekistonda iqlim o'zgarishiga o'ta sezgir bo'lgan, o'simlik dunyosiga ta'siri juda katta. Ushbu maqolada O'zbekiston iqlimi qanday o'zgarib borayotgani va bu o'simlik hayoti uchun nimani anglatishi ko'rib chiqiladi. Mutaxassislarning ta'kidlashicha, zararli iqlim o'zgarishini to'xtatish uchun uglerod chiqindilarini kamaytirish kerak



Qishloq xo’jaligi va suv resurslariga turli yo’llar bilan ta’sir ko’rsatadigan jiddiy qiyinchiliklarni keltirib chiqarmoqda. O’zbekistonda iqlim o’zgarishiga o’ta sezgir bo’lgan, o’simlik dunyosiga ta’siri juda katta. Ushbu maqolada O’zbekiston iqlimi qanday o’zgarib borayotgani va bu o’simlik hayoti uchun nimani anglatishi ko’rib chiqiladi. Mutaxassislarning ta’kidlashicha, zararli iqlim o’zgarishini to’xtatish uchun uglerod chiqindilarini kamaytirish kerak. Uglevodorodlarni quyosh, shamol va suv energiyasi kabi ekologik toza manbalar bilan almashtirish qanchalik muhimligi ta’kidlangan. Insho, shuningdek, iqlim o’zgarishiga qarshi kurashish va iqlimga chidamliligini oshirish uchun 2050 yilgacha uzoq muddatli rejalarni tuzish zarurligini ko’rib chiqadi. O’zbekistonda iqlim o’zgarishi cho’llanish va yer degradatsiyasini kuchaytiradi, bu esa bioxilma-xillikka ta’sir ko’rsatadi. Maqolada iqlim o’zgarishining o’simliklarga ta’sirini yumshatish bo’yicha bir nechta takliflar mavjud. Ushbu topilmalar o’simliklarning o’zgaruvchan muhitda o’simliklarning chidamliligini kuchaytirish va ularni iqlim o’zgarishiga moslashtirish zarurligini ta’kidlaydi. Kalit so’zlar: O’zbekiston, iqlim o’zgarishi, o’simliklar, muammolar, ekotizim. Kirish O’zbekistondagi iqlim o’zgarishi mavzusi dolzarb bo’lib, mamlakat ichidagi shahar hayotining bir necha jabhalariga sezilarli ta’sir ko’rsatmoqda. Markaziy Osiyoda joylashgan O’zbekiston janubdagi qurg’oqchil cho’llardan shimoldagi Alpmintaqalarigacha bo’lgan turli iqlimga ega.



[1]. O’zbekistonda iqlim o’zgarishining asosiy oqibati-bu ob-havoning og’ir hodisalari, jumladan qurg’oqchilik, suv toshqini va bo’ronlarning paydo bo’lishi va zo’ravonligining oshishi

[2]. Binobarin, bu qishloq xo’jaligi mahsuldorligining pasayishiga, suv ta’minotining kamayishiga va tabiiy ofatlarga nisbatan zaiflikning kuchayishiga olib keladi. Birlashgan Millatlar Tashkilotining iqlim o’zgarishi bo’yicha doiraviy Konvensiyasi (UNFCCC) va Kioto protokoli O’zbekiston ushbu masalalarni hal qilishda faol ishtirok etayotgan xalqaro iqlim kelishuvlaridan biridir

[3]. Ushbu kelishuvlar asosida O’zbekiston issiqxona gazlari chiqindilarini kamaytirish va iqlim o’zgarishi ta’siriga moslashish strategiyasini amalga oshirmoqda. Bundan tashqari, O’zbekiston birlamchi energiya manbalariga bo’lgan ishonchni kamaytirish va issiqxona gazlari chiqindilarini kamaytirish uchun quyosh va shamol energiyasi kabi barqaror energiya manbalarini rivojlantirishga mablag‘ ajratmoqda [4,5]. Iqlim o’zgarishi-bu bizning xalqimiz uchun muhim muammo bo’lib, barcha tashkilotlarni ushbu muammoni faol hal qilishga va dinamik iqlim sharoitida barqaror o’sishga intilishga undaydi. O’zbekistonda iqlim o’zgarishining o’simliklarga ta’siri haqidagi [6,7] ilmiy maqolalar natijalari o’zgaruvchan iqlim sharoitining o’simliklar hayotiga ta’sirini o’rganish muhimligini, shuningdek, o’simliklarni iqlim o’zgarishining salbiy ta’siridan moslashtirish va himoya qilish strategiyasini ishlab chiqish zarurligini ta’kidlaydi.



Yaqinda O’zbekistonda g’ayritabiiy issiqlik ko’plab muammolarni keltirib chiqardi. Birinchi navbatda, u qishloq xo’jaligi mahsuldorligi va bir necha o’simliklar[21] o’limi bilan bir qatorda pasayishiga olib keldi. Ikkinchidan, yuqori havo harorati tufayli tabiatga katta zarar etkazadigan o’rmon yong’inlari soni ko’paydi. Uchinchidan, g’ayritabiiy issiqlik inson salomatligiga salbiy ta’sir qiladi. Yaqinda anormal sovuq O’zbekistonda o’simliklarga sezilarli ta’sir ko’rsatdi. Birinchidan, past haroratlar o’simliklarning o’limiga olib kelishi mumkin, ayniqsa bunday sharoitlarga moslashtirilmagan. Ikkinchidan, sovuq o’simliklarning o’sishini sekinlashtirishi va hosilni kamaytirishi mumkin. Uchinchidan, sovuq tuproqni unumdor qilishi mumkin, bu ham o’simliklarning o’sishiga salbiy ta’sir qiladi. Umuman olganda, g’ayritabiiy sovuq-bu jiddiy tahdid va o’simliklarni uning ta’siridan himoya qilish choralarini talab qiladi. Biroq, past haroratlarda omon qoladigan ba’zi turlar mavjud. Misol uchun, archa va qarag’ay kabi ignabargli daraxtlarning ayrim turlari -30 daraja Selsiygacha bo’lgan sovuqdan omon qolishi mumkin. Atirgul va Gortenziya kabi ba’zi butalar, agar ular sovuqdan himoyalangan bo’lsa, omon qolishi mumkin. Xulosa Tadqiqot materiallarini tahlil qilib, biz quyidagi xulosalarga keldik, xususan: O’zbekistonda iqlim o’zgarishining manzarali o’simliklarga ta’siri ko’p qirrali. Yuqori harorat va yog’ingarchilikning o’zgarishi o’simliklarning o’sishi va kamolotiga, shuningdek kasallik va zararkunandalarga qarshi turish qobiliyatiga ta’sir qilishi mumkin. Bundan tashqari, yog’ingarchilik naqshlarining o’zgarishi qurg’oqchilik va toshqinlarning paydo bo’lishi va zo’ravonligining o’sishiga olib kelishi mumkin, shuning uchun o’simliklarga zararli ta’sir ko’rsatadi.



Dekorativ o’simliklarning rivojlanayotgan iqlim sharoitlariga samarali moslashishini ta’minlash uchun naslchilik ishlarini olib borish va parvarishning innovatsion usullarini joriy etish zarur. O’zbekistonda g’ayritabiiy sovuq ob-havoga qarshi kurashish uchun quyidagi chora-tadbirlarni amalga oshirish mumkin: - o’simliklarni izolyatsiya qilish: iliqlikni saqlashga va o’simliklarni sovuqdan himoya qilishga yordam beradigan maxsus boshpanalardan foydalanish; - o’simliklarni oziqlantirish: o’simliklarning yangi sharoitlarga tezroq moslashishiga va sovuqqa chidamliligini oshirishga yordam beradigan o’g’itlarni qo’llash; - tuproqni muhofaza qilish amaliyoti issiqlik va namlikni ushlab turishni kuchaytirish uchun tuproqqa somon yoki qipiq kabi organik materiallarni qo’llashni o’z ichiga oladi.to’g’ri sug’orish: tuproqni ortiqcha sug’orishdan saqlanish, bu esa ildizlarning muzlashiga olib kelishi mumkin; - tegishli o’simlik navlarini tanlash: o’zbek sharoitiga moslashtirilgan va past haroratga bardosh beradigan navlardan foydalaning. O’zbekistonda g’ayritabiiy issiqlikka qarshi kurashish uchun quyidagi choralarni ko’rish mumkin: - soya yaratish: soyani yaratadigan va o’simliklarni to’g’ridan-to’g’ri quyosh nurlaridan himoya qiladigan daraxtlar va butalarni ekish;

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RELEVANCE OF THE THEORY OF LANDSCAPE URBANISM IN MODERN URBAN PLANNING

Abstract: *This article highlights the content of landscape urbanism, its place in modern urban planning, as well as its relevance and practical significance. Modern problems of the urban landscape and the principles of landscape urbanism in eliminating them are studied, their application in urban planning of Uzbekistan and measures in this direction are considered.*

Key words: *urbanism, landscape, balance, infrastructure, sustainability, concept*

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ZAMONAVIY SHAHARSOZLIKDA LANDSHAFT URBANIZMI NAZARIYASINING DOLZARBLIGI

Annotatsiya: *Ushbu maqolada landshaft urbanizmining mazmuni, uning bugungi zamonaviy shaharsozlikdagi o'rni hamda dolzarbligi, amaliy ahamiyati yoritib berilgan. Shahar landshaftining bugungi kundagi muammolari va ularni bartaraf qilishda landshaft urbanizmi tamoyillari o'rganilib, O'zbekiston shaharsozligidagi tatbiqlari va bu yo'ldagi chora-tadbirlari ko'rib chiqiladi.*

Kalit so'zlar: *urbanizm, landshaft, balans, infratuzilma, barqarorlik, konsepsiya*

Kirish

Shaharsozlik aholi yashash joylari va aholini joylashtirish sistemasining urbanizatsiyalashgan muhiti shakllanishida kompleks va ko'p tomonlama ishlab chiquvchi jarayon hisoblanadi. Shahar esa kompleks yondashuvni talab etuvchi hayotiy organizmga o'xshaydi. XXI asrda urbanizatsiya jarayonlari keskin sur'atlarda rivojlanib, ko'plab shaharlar zichlashuvi, yashil hududlarning kamayishi va iqlim o'zgarishlari inson salomatligi hamda hayot sifati uchun xavf tug'dirmoqda. Shahar bosh rejasi ma'lum muddatga rejalashtirilganda kelgusidagi yuzaga chiquvchi hamda shahar muhitiga ta'sir qiluvchi omillar, turli nyuanslar chuqur analiz qilinishi va hisobga olinishi zarur. Bunday omillarga iqtisodiy, ijtimoiy, demografik, ekologik, migratsiya jarayonlari, texnika va innovatsiya rivojlanishining jadallashuvini keltirish mumkin. Bugungi kunda aholi sonining ortishi, ekologik vaziyatning globallashuvi va keskinlashishi, raqamli texnologiyaning kundan kunga rivojlanib borishi shaharlar holatiga o'z tas'irini o'tkazmay qolmayapti. Bunday dinamik o'zgarishlar va doimiy yangilanishlar natijasida shahar aholisi uchun qulay sharoitlarni yaratish dolzarb jarayon

hisoblanadi. Bunda shaharning muhim va ajralmas qismi hisoblanuvchi yashil infratuzilmaning roli katta bo'lib, shahar rejalashtirishda jiddiy yondashuvlarni talab etmoqda va ularning eng dolzarblaridan biri **landshaft urbanizmi** hisoblanadi. Bu yondashuv shahar makonini tabiiy landshaftlar bilan uyg'unlashtirish orqali ekologik barqarorlik, sog'lom yashash muhiti va ijtimoiy farovonlikni ta'minlashga xizmat qiladi.

Asosiy qism

Landshaft urbanizmining mohiyati.

Landshaft urbanizmi – bu shaharni rejalashtirish va rivojlantirishda tabiiy ekotizimlarni markaziy element sifatida ko'radigan zamonaviy yondashuvdir. Bu konsepsiyada shahar inshootlari, infratuzilma va yashil landshaftlar o'zaro integratsiyalashadi. Ya'ni, shahar faqat binolardan emas, balki parklar, ko'llar, daryolar, yashil yo'laklar kabi tabiiy komponentlardan iborat murakkab va barqaror tizim sifatida qaraladi. Bu shaharni faqatgina binolar va infratuzilma bilan emas, balki tabiiy komponentlar bilan uyg'un holda rejalashtirish konsepsiyasini o'zida ifodalaydi. U shahar makonini tabiiy landshaftlar bilan birgalikda loyihalash, yashil hududlarni ko'paytirish, ekologik tizimlar bilan uyg'unlikda yashovchan muhit yaratish orqali ijtimoiy, ekologik va estetik ahamiyat kasb etadi.

Landshaft urbanizmining asosiy tamoyillari quyidagilardan iborat:

Shahar muhitida ekologik barqarorlik. Shaharlar tabiatga zid ravishda emas, balki uning bir qismi sifatida barpo etilishi lozim. Landshaft urbanizmi orqali tabiiy suvlardan oqilona foydalanish, yomg'ir suvlarini boshqarish, bioxilma-xillikni saqlab qolish va atmosferaning sifatini yaxshilash mumkin. Bu esa ekologik muvozanatni tiklashga xizmat qiladi.

Iqlim o'zgarishiga moslashuv. Global iqlim o'zgarishlari shaharlar uchun jiddiy xavf tug'diradi. Landshaft urbanizmi bu xavflarga qarshi turishda samarali vosita bo'la oladi. Masalan, yashil maydonlar va suv havzalari shahar muhitida "issiqlik oroli" effektini kamaytiradi, shamollatish imkoniyatlarini oshiradi va tabiiy sovitish tizimlarini yaratadi.

Aholi salomatligi va ijtimoiy farovonlik. Yashil hududlar inson ruhiyati va sog'lig'i uchun muhim omildir. Tabiat bilan bevosita aloqa stressni kamaytiradi, jismoniy faollikni oshiradi va jamoaviy hayotni rag'batlantiradi. Landshaft urbanizmi asosida yaratilgan parklar, ochiq sport maydonchalari, dam olish zonalari aholining salomatligi va ijtimoiy faolligini oshiradi.

Ijtimoiy integratsiya va inklyuzivlik. Yashil jamoat makonlari barcha ijtimoiy guruhlar uchun ochiq bo'lib, shahar aholisi o'rtasida ijtimoiy aloqalarni kuchaytiradi. Bu esa jamiyatda birdamlikni mustahkamlaydi va ijtimoiy tenglikni ta'minlaydi

Estetik va madaniy uyg'unlik. Shahar makonini estetik va madaniy qadriyatlarga mos ravishda bezash.

Urbanizatsiya sharoitida ko'plab shaharlar ekologik muammolar, transport bosimi, havo ifloslanishi, tabiiy resurslar tanqisligi kabi xavf-xatarlarga duch kelmoqda. Shu sababli, shaharsozlikda ekologik muvozanatni tiklash va inson

uchun sog‘lom yashash muhiti yaratish zarurati ortmoqda. Landshaft urbanizmi aynan shu maqsadlarga xizmat qilishi bilan dolzarb hisoblanadi.

O‘zbekiston shaharsozligida landshaft urbanizmini keng joriy etish borasida ayrim muammolar mavjud:

- Yashil zonalarning qurilishlar natijasida qisqarib borishi;
- Suv resurslari cheklanganligi;
- Moliyaviy mablag‘ va texnik xizmat ko‘rsatishdagi cheklovlar.

Landshaft urbanizmi quyidagi masalalarni ko'rib chiqishni o'z ichiga oladi: suv ta'minoti tizimi, ekologik jihatlar va yashil koridorlarni rejalashtirish, biologik xilma-xillik, yo'nalishni ko'rib chiqish va shahar ko'p maqsadli infratuzilma koridorlaridan foydalanishni joriy etish. Biroq, bunday ta'riflar landshaft urbanizmnida so'nggi o'n yil ichida paydo bo'lgan ba'zi masalalarni e'tiborsiz qoldirganligi sababli tegishli qator loyihalash institutlari hamda xorij tajribasini o’rgangan holda tubdan tahlil qilishni taqozo qiladi. Ko‘kalamzorlashtirilgan hududlarni funksional qismlarga bo‘lishda uchta kategoriyaga bo‘linadi:

- Umumiy foydalanish - shahar tashqarisidagi o‘rmon-parklar, shahar va tuman parklari. Turar-joy tumanlari bog‘lari, skverlar, bul'varlar; ko‘chalar, maydonlar, qirg‘oq bo‘yi o‘simliklari, xiyobonlar;
- Foydalanish cheklangan - kvartal ichidagi bog‘lar, uylar hovlilaridagi ko‘kalamzorlar, jamoat va sanoat binolari hududlaridagi o‘simliklar;
- Maxsus vazifali – sanitar-himoya, suv muhofaza qismlari, botanika va zoologiya bog‘lari, pitomliklar, qabristonlar.

Joylashish xarakteri bo‘yicha shahar tashqarisidagi va shahar ichkarisidagi yashil massivlarga bo‘linadi.

Shahar tashqarisidagi massivlar – o‘z navbatida, umumiy foydalanishga mo‘ljallangan va cheklangan foydalanishga mo‘ljallangan shahar atrofi ko‘kalamzorlariga ajratiladi.

Shahar ichkarisidagi massivlar – umumiy, cheklangan va maxsus foydalanish uchun mo‘ljallangan ko‘kalamzorlardan iborat. Umumiy yo‘nalishdagi parklar - madaniyat va istirohat bog‘lari, turar-joy tumanlari va kichik tumanlar bog‘lari, skverlar, bul'varlar, xiyobonlar hamda ixtisoslashgan bog‘lar - bolalar, sport, botanika bog‘lari, zooparklar va h.k.lar shahar ko‘kalamzorlari tizimini tashkil etadi.

Hududning yashil o‘simliklari ehtiyojini hisoblashda bitta odamga to‘g‘ri keladigan ko‘kalamzor hududlar me'yoridan foydalaniladi (qurilish me'yorlari va qoidalari.)

Landshaft dizayni bilan ishlashda quyidagi tavsiyalar mavjud:

- Odatda boy ekotizimga ega bo’lgan bog'lar va o'rmon bog'larining qirg'oqlarini saqlanishi va rivojlantirilishi kerak;

- Turli o'simliklar yordamida turli funktsional zonalarni ajratib olish va yil davomida ular uchun maxsus atmosfera yaratish mumkin;

- Landshaftdan shovqin va vizual to’siq sifatida foydalanish mumkin. Obodonlashtirishda zich ko'chatlar shovqin izolatsiyasi sifatida ham ishlatilishi mumkin;

- Yog'ingarchilik to'planadigan joylarda o'tkazuvchan yuzalar yomg'irli kanalizatsiya tizimini ishga tushiradi va zararli moddalarning suvga kirishini cheklaydi.

Landshaft dizaynini rejalashtirishda tabiiy qirg'oq chizig'i uchun o'simliklarni tanlashda alohida parvarish talab qilmaydigan mahalliy o'simlik turlaridan foydalanish maqsadga muvofiq bo'ladi.

O‘zbekiston misolida landshaft urbanizmining tatbiqi

O‘zbekiston shaharlarida ham landshaft urbanizmi yondashuvlari tobora keng qo‘llanilmoqda. Toshkent, Samarqand, Buxoro, Urganch kabi shaharlarda yangi bog‘lar, piyodalar uchun qulay hududlar, sun’iy suv omborlari, ekologik transport yo‘llari kabi loyihalar amalga oshirilmoqda.

“Yashil Makon” dasturi.

Butun dunyo miqyosidagi jiddiy ekologik vaziyatning jadallashuvi O’zbekiston hududiga ham o’z ta’sirini o’tkazmay qolmayapti. Shu o‘rinda so‘nggi yillarda O‘zbekistonda iqlimning o‘zgarishi, yillik o‘rtacha temperaturaning ko‘tarilishi, mavsumiy qurg‘oqchilik kuchayishi tendentsiyasi kuzatilmoqda.Ushbu muammolarni bartaraf etish, shaharlarni ekologik holatini yaxshilash urbanizatsiya jarayonlarini takomillashtirish hamda ushbu sohada zarur chora tadbirlar dasturlarni ishlab chiqish va amaliyotga tadbiq qilish orqali amalga oshiriladi. Bu borada O‘zbekiston Respublikasi Prezidentining 2019-yil 30-oktyabrdagi “2030-yilgacha bo‘lgan davrda O‘zbekiston Respublikasining atrof-muhitni muhofaza qilish kontseptsiyasi”, 2021-yil 30-dekabrdagi “Respublikada ko‘kalamzorlashtirish ishlarini jadallashtirish, daraxtlar muhofazasini yanada samarali tashkil etish chora-tadbirlari” to‘g‘risidagi farmonida tatbiq etilishi belgilangan “Yashil makon” umummilliy loyihasi dasturlarida atrof muhit ob‘ektlarini (havo, suv, er, tuproq, er qa‘ri, bioxilma-xillik, qo‘riqlanadigan tabiiy hududlar) inson ta‘siri hamda boshqa salbiy ta‘sir qiluvchi omillardan saqlash va sifatini ta‘minlash hamda sanoat ishlab chiqarishi, urbanizatsiya ko‘lami keskin kengayishi va aholi punktlariga tushayotgan ekologik yukni kamaytirish mexanizmlarini takomillashtirish rejalari ishlab chiqilgan va amalga oshirilmoqda.

Xulosa.

Landshaft urbanizmi — bu faqatgina dizayn g‘oyasi emas, balki ekologik, ijtimoiy va iqtisodiy jihatdan barqaror shaharlarni shakllantirishga qaratilgan strategik yondashuvdir. Bugungi kunda u shaharsozlikning eng dolzarb yo‘nalishlaridan biri bo‘lib, ekologik xavfsizlikni ta’minlash, inson salomatligini muhofaza qilish va barqaror urban rivojlanishni yo‘lga qo‘yishda muhim rol o‘ynamoqda. Kelajak shaharlarini qurishda landshaft urbanizmi tamoyillaridan keng foydalanish zarur bo‘lib, bu yondashuv zamonaviy shaharsozlikning ajralmas qismiga aylanishi kutilmoqda.

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THERMAL PROTECTION OF NON-HOMOGENEOUS WALLS BASED ON NON-REMOVABLE FORMWORK. KULMIRZAYEV J.I., SHUKUROV G., KHASANOVA M

Annotation: *This article presents the results of theoretical and experimental full-scale thermo physical studies in the models of external walls constructed using fixed formwork made of foam concrete nad expanded polystyrene to increase the level of thermal protection and energy efficiency of residential and public buildings.*

Keywords: *Penobeton, Penopolystyrene, thermal protection, thermal conductivity, heat transfer resistance, heat-physical, heat flow, external wall.*

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OLINMAYDIGAN QOLIPLAR ASOSIDA TIKLANGAN BIR JINSLI BOLMAGAN DEVORLARNING ISSIQLIK HIMOYASI. KULMIRZAYEV J.I., SHUKUROV G., XASANOVA M

Annotatsiya: *Ushbu maqolada turar-joy, jamoat binolarining tashqi devorlarini issqilik himoyasini va energiya samaradorligini oshirish maqsadida bir jinsli bolmagan joyida qoluvchi penobeton va penopolistiroldan iborat olinmaydigan qolipli tashqi devorlarni kontruktiv yechimi ishlab chiqilib, ulardan tiklangan devorlar namunasida issiqlik-fizik jihatdan otkazilgan nazariy va amaliy tadqiqotlar natijalari keltirilgan.*

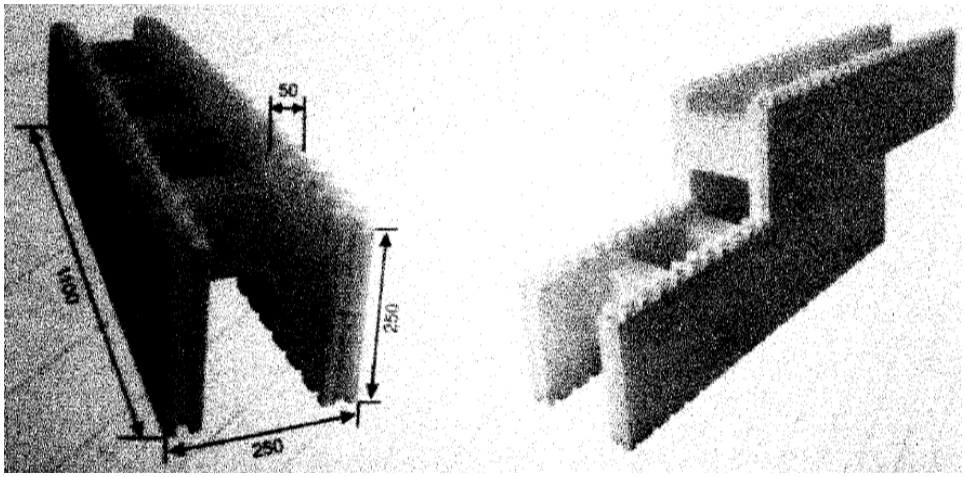
Kalit sozlar: *Penobeton, Penopolistirol, Issiqlik himoyasi, Issiqlik otkazuvchanlik, Issiqlik uzatish qarshiligi, Issiqlik-fizik, Issiqlik oqimi, Tashqi devor.*

Kirish.

Hozirgi davrda butun dunyoda tabiiy yoqilgi energiya zaxiralarini tejash, yer atmosferasida parnik effektini hosil qiluvchi gazlarni (CO_2) kamaytirish, atmosferani ekologiyasini asrash va energiya samarador bino va inshootlar qurish dolzarb masalalardan biri bolib qolmoqda. Bu masala Ozbekiston Respublikasi prezidenti Sh.M.Mirziyoyev tomonidan ishlab chiqilgan “2017-2021-yillar Ozbekistonni rivojlanish harakatlar strategiyasi” da ham kozda tutilgan.

Issiqlik energiyasini 50-60 (%) foizi bino va inshootlarni isitish va odamlarning maishiy ehtiyojlarini qondirish uchun sarf bolar ekan. Binolarni isitish uchun sarf bolayotgan issiqlik miqdorining 40-50 foizi tashqi tosiq konstruksiyalar va devorlar orqali yoqoladi. Shu sababli binolarni tashqi devorlarini turli konstruktiv yechimlar orqali, QMQ 2.01.04-97* talablariga asosan, issiqlik himoyasini yani energiya samaradorligini oshirish hamisha dolzarb masalalardan biri bolib qolaveradi. Shu sababli ushbu maqolada issiqlik-fizik jihatdan takomillashtirilib, turli kontruktiv yechimga ega, issiqlik himoyasi oshirilgan tashqi devor namunalarida otkazilgan nazariy va amaliy issiqlik-fizik tadqiqotlar natijalari keltirilgan. Bunda penobeton va penopolistiroldan iborat, qurilish joyida qoluvchi, olinmaydigan devor qoliplarining konstruktiv yechimi ishlab chiqildi. Qoliplarning umumiy korinishi va hisobiy sxemasi 1- va 2-rasmlarda keltirilgan.

Hozirgi paytda xorijda tarkibi turli-tuman issiqlik izolyatsiyalovchi qatlamlardan iborat tashqi devor konstruksiyalari loyihalash va qurish amaliyotda qollanilib kelinmoqda.

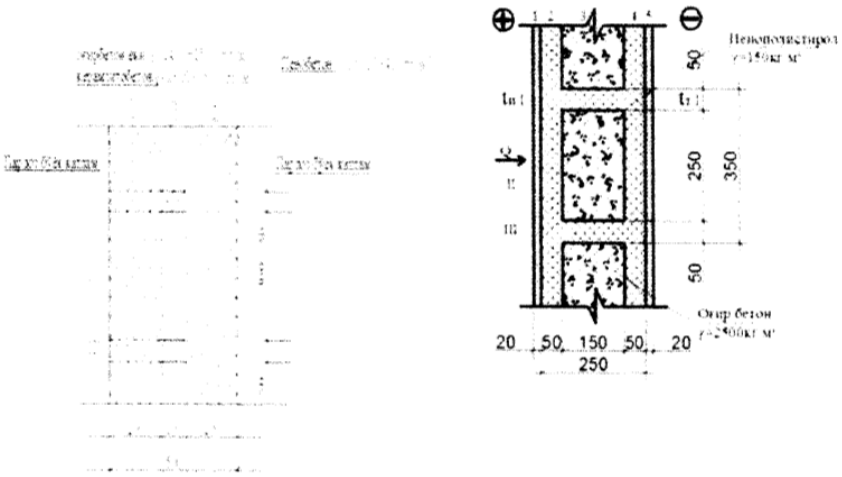


1-rasm. Penopolistiroldan iborat joyida qoluvchi devor qoliplarining umumiy korinishi.

Yuqorida keltirilgan olinmaydigan yani joyida qoluvchi qoliplar yordamida tiklanayotgan devorlarda, hozirgi davrgacha Ozbeksiton sharoiti uchun, issiqlik-fizik jihatdan nazariy va amaliy tadqiqotlar otkazilmagan.

Shu sababli bir jinsli bolmagan joyida qoluvchi olinmaydigan qolipli tashqi devorlarning konstruktiv yechimi mualliflar tomonidan ishlab chiqildi. Ushbu bir jinsli bolmagan tashqi devor konstruksiyalarini quyidagi issiqlik-fizik hisoblari bajarildi:

2-rasmda keltirilgan penobetondan iborat olinmaydigan qolipli tashqi devor konstruksiyasini termik issiqlik otkazish qarshiligi aniqlandi.



2-rasm. Penolistiroldan va penobetondan iborat olinmaydigan qolipli devorlarning konstruktiv yechimi.

Isiiqlik-fizik hisoblar uchun quyidagi dastlabki malumotlarni qabul qilamiz:

1. Penobetondan iborat quyma qolip bloklarning zichligi γ_0=400 kg/m^3, issiqlik otkazuvchanlik koeffitsiyenti λ=0.14 Vt/m°C;

2. Ogir beton, zichligi γ_0=2400 kg/m^3, issiqlik otkazuvchanlik koeffitsiyenti λ=1.74 Vt/m°C;

3. Penobeton, γ_0=400 kg/m^3, issiqlik otkazuvchanlik koeffitsiyenti λ=0.14 Vt/m°C.

Bu konstruksiya issiqlik oqimi yonalishiga parallel va perpendikulyar joylashgan bir jinsli bolmagan qurilish materialidan iborat. Konstruksiyani issiqlik oqimi yonalishiga parallel bolgan tekislik bilan kesib, I, II, III qismlarga ajratamiz. I va III qismlar ichki va tashqi sirti boyoq qilingan penobetondan iborat. Bu qismlar uchun termik issiqlik uzatish qarshiligini quyidagi formula yordamida aniqlaymiz:

$$R_I = R_{III} = \frac{0.500}{0.14} = 3.571\ m^2°C/Vt$$

RI=RIII=0.5000.14=3.571 m2°C/Vt

I va III qismlarning yuzasi F_I= F_{III}=0.051=0.05 m^2.

Konstruksiyaning II qismi ikki tarafdan penobeton bilan qoplangan ogir betondan iborat.

RII=0.2000.14+0.101.74+0.2000.14=1.428+0.057+1.428=2.913 m2°C/Vt

$$R_{II} = \frac{0.200}{0.14} + \frac{0.10}{1.74} + \frac{0.200}{0.14} = 1.428 + 0.057 + 1.428 = 2.913\ m^2°C/Vt$$

II qismining yuzasi F_{II}=0.30·˙1=0.30 m^2.

Bu konstruksiyaning termik issiqlik uzatish qarshiligini quyidagi formula yordamida aniqlaymiz:

$$R_{II} = \frac{F_I + F_{II} + F_{III} + \dots}{\frac{F_I}{R_I} + \frac{F_{II}}{R_{II}} + \frac{F_{III}}{R_{III}} + \dots}$$

RII=FI+FII+FIII+...FIRI+FIIRII+FIIIRIII+...

Bu yerda, R_I, R_{II}, R_{III} — alohida olingan qatlamlarning termik issiqlik uzatish qarshiligi, *m2*°C/Vtm^2°C/Vt; F_I, F_{II}, F_{III} — alohida qismlarning yuzalari, m^2.

RII=0.05+0.30+0.050.053.571+0.302.913+0.053.571=0.400.131=3.053

$$R_{II} = \frac{0.05 + 0.30 + 0.05}{\frac{0.05}{3.571} + \frac{0.30}{2.913} + \frac{0.05}{3.571}} = \frac{0.40}{0.131} = 3.053\ m^2°C/Vt$$

m2°C/Vt

Konstruksiyalarning issiqlik oqimi yonalishiga perpendikulyar bolgan tekislik bilan kesib, 1, 2 va 3 ta qatlamlarga ajratamiz (2-rasm).

1-va 3-qatlam, penobeton

$$R_1 = R_3 = \frac{0.20}{0.14} = 1.428\ m^2°C/Vt$$

R1=R3=0.200.14=1.428 m2°C/Vt

2-qatlam bir jinsli bolmagani uchun konstruksiyaning ortacha issiqlik otkazuvchanlik koeffitsiyentini quyidagi formula yordamida aniqlaymiz:

λort=λI·FI+λII·FII+λIII·FIIIFI+FII+FIII

$$\lambda_{o'rt} = \frac{\lambda_I \cdot F_I + \lambda_{II} \cdot F_{II} + \lambda_{III} \cdot F_{III}}{F_I + F_{II} + F_{III}}$$

II qatlamning termik issiqlik uzatish qarshiligi

$$R_2 = \frac{\delta_2}{\lambda_{o'rt}} = \frac{0.10}{1.34} = 0.075\ m^2°C/Vt$$

R2=δ2λort=0.101.34=0.075 m2°C/Vt

Demak, *R.=R2+R2+R2*=1.428+0.075+1.428=2.931*m2*°C/Vt

$$R_. = R_2 + R_2 + R_2 = 1.428 + 0.075 + 1.428 = 2.931 m^2°C/Vt$$

Bir jinsli bolmagan konstruksiyaning issiqlik otkazuvchanlik qarshiligi quyidagi formula yordamida aniqlanadi:

R=RII+2R3=3.053+2·2.9313=2.971 *m2°C/Vt*

$$R = \frac{R_{II} + 2R}{3} = \frac{3.053 + 2 \cdot 2.931}{3} = 2.971\ m^2°C/Vt$$

Penobetondan iborat bir jinsli bolmagan devor konstruksiyasining umumiy issiqlik uzatish qarshiligini aniqlaymiz:

Rum=Ri+R+Rt=0.115+2.971+0.043=3.129 *m2°C/Vt*

$$R_{um} = R_i + R + R_t = 0.115 + 2.971 + 0.043 = 3.129\ m^2°C/Vt$$

Nazariy issiqlik-fizik tadqiqotlar natijasidan quyidagilarni xulosa qilish mumkin:

Biz tavsiya etayotgan penobetondan iborat olinmaydigan qolip devor konstruksiyasining umumiy issiqlik himoyasi QMQ 2.01.04-97* da keltirilgan issiqlik himoyasining barcha daraja talablariga javob beradi;

Xuddi ushbu uslubda aniqlangan penoplastdan iborat olinmaydigan qolipli tashqi devor konstruksiyasining umumiy issiqlik uzatish qarshiligi

Rum=2.49 m2°C/Vt $R_{um} = 2.49\ m^2°C/Vt$ ekan. Penobetondan iborat olinmaydigan qolipli devor konstruksiyasining umumiy issiqlik uzatish qarshiligi *Rum=3.129 m2°C/Vt* $R_{um} = 3.129\ m^2°C/Vt$ bolib, bu kattaliklar QMQ 2.01.04-97* da keltirilgan issiqlik himoyasining 2-darajasini issiqlik uzatish qarshiligidan 42% va 3-darajasidan 17% kattaligi sababli binoning energiya samaradorligini oshiradi.

Penobeton va penopolistiroldan iborat olinmaydigan qolipli tashqi devor konstruksiyalarida nazariy jihatdan olib borilgan issiqlik-fizik tadqiqotlarni amaliy jihatdan asoslash uchun kafedra laboratoriyasida tajribalar otkazildi. Tajribalar professor G. Shukurov rahbarligida tayanch doktorant J.I. Kulmirzayev, mustaqil izlanuvchi M.Xasanova va boshqa ilmiy izlanuvchilar ishtirokida otkazildi. Tajribalar Oz. RST 809-97 “Tosiq konstruksiyalarining issiqlik uzatishga qarshiligini aniqlash” standart talablari asosida bajarildi. Tayyorlangan penobeton va penopolistiroldan iborat bir jinsli bolmagan devor namunalari kafedra laboratoriyasida ornatildi. Ornatilgan tashqi devor namunalarida quyidagi issiqlik-fizik korsatkichlar aniqlandi:

1. Devor qatlamlaridagi harorat;
2. Tajriba otkazilayotgan xonadagi harorat;
3. Tashqi havo harorati;
4. Devor namunasidan otayotgan issiqlik oqimi (miqdori);
5. Tashqi devor namunasini tashkil etgan qatlam materiallarining issiqlik otkazuvchanlik koeffitsiyenti.

Otkazilgan tajriba tadqiqotlaridan malum boldiki, penobetondan iborat olinmaydigan qolipli devor namunasida tajribada aniqlangan umumiy issiqlik uzatishga qarshiligi *Rum=2.204 m2°C/Vt* $R_{um} = 2.204\ m^2°C/Vt$ bolib, penopolistiroldan iborat olinmaydigan qolipli tashqi devor konmstruksiyasining umumiy issiqlik uzatish qarshiligi *Rum=2.72 m2°C/Vt* $R_{um} = 2.72\ m^2°C/Vt$ ekan.

Demak penobetondan iborat uch qatlamli devor namunasining issiqlik uzatish qarshiligi *Rum=2.204 m2°C/Vt* $R_{um} = 2.204\ m^2°C/Vt$ bolib, QMQ 2.01.04-97* da keltirilgan issiqlik himoyasining 1- va 2-daraja talablariga javob beradi. Issiqlik himoyasining 3-daraja talabiga javob berishi uchun penobetonning qalinligini oshirish lozim. Agar biz devorning ikki sirtidagi penobetonning qalinligini 15 sm olsak, u holda, ushbu devorning issiqlik uzatish qarshiligi *3.26 m2°C/Vt* $3.26\ m^2°C/Vt$ bolar ekan. Demak penobetondan iborat olinmaydigan qolipli devorning umumiy qalinligi 450 mm va umumiy issiqlik uzatish qarshiligi *3.26 m2°C/Vt* $3.26\ m^2°C/Vt$ bolib, QMQ 2.01.04-97* talablarida keltirilgan issiqlik himoyasining barcha talablariga javob berar ekan. Bunday holat yangi namunaviy loyiha asosida qurilayotgan turar-joy va jamoat binolarining energiya samaradorligini oshiradi.

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THE SYRIAN GENERAL AUTHORITY FOR CULTURAL HERITAGE AS AN APPROACH TO ENHANCE TOURISM MARKETING

Abstract: *Syrian culture today faces significant challenges, ranging from the destruction of historical sites during the war to the illicit trafficking of antiquities. This research aims to analyze the role of establishing the Syrian General Authority for Cultural Heritage in enhancing the tourism marketing of cultural heritage and to provide recommendations for decision-makers on how to manage cultural heritage sites in Syria. It seeks to leverage specialized expertise in this field to contribute to enhancing Syria's mental image and to present a comprehensive plan for revitalizing this human heritage, transforming it into a foundation for achieving sustainable development. The central idea revolves around establishing the Syrian General Authority for Cultural Heritage, endowed with administrative and financial autonomy, to unify efforts between the government, local communities, and international organizations. This aims to integrate heritage preservation with innovative marketing strategies based on digital technologies such as 3D documentation and virtual reality, enabling interactive tourist experiences that blend history with modern appeal.*

The research adopted a descriptive approach with an analytical method, studying the reality of Syrian cultural heritage and analyzing the challenges it faces. Its results confirmed the necessity of establishing the Authority, which would eliminate the current administrative fragmentation among relevant ministries. It is envisioned not merely as an administrative entity but as an integrative mechanism linking the scientific preservation of heritage with economic development through sustainable tourism. This research is not limited to proposing an institutional model but also attempts to study how to achieve a balance between protecting heritage as a human value and transforming it into a tool for development, enhancing Syria's mental image as a tourist destination. Consequently, it presents a vision that integrates historical authenticity with technological innovation, making heritage a bridge for dialogue between the past and the future, and between Syria and the world.

Keywords: *Cultural Tourism, Digital Documentation, Tourism Marketing, Virtual Reality, Mental Image, Tourist Destination* .

I. Introduction

Cultural heritage emerges as a supporter of shared identity and a living memory that reshapes communities' connections to their past and present. Syria holds a special place in this dynamic, representing a unique cultural blend embodied in numerous sites. However, this legacy has faced existential challenges where archaeological sites became war zones, artworks were subjected to theft, and the legal and institutional structures aimed at protection eroded, leading to a tragic situation highlighting a society rich in heritage struggling to save it from oblivion.

In light of this situation, this study presents a new vision for reimagining the role of Syrian heritage, not merely as a repository of memories but as an engine for enhancing Syria's mental image. The proposed solution is the establishment of the Syrian General Authority for Cultural Heritage, an innovative institution aiming to transcend current administrative divisions by unifying efforts among relevant ministries, local communities, and international partners.

This Authority is based on three interconnected pillars: The first is a scientific-technical pillar, focusing on using advanced digital documentation technologies like 3D scanning to create a virtual archive preserving details of threatened sites. The second is an economic-marketing pillar, aiming to develop digital platforms providing tourists with an integrated experience combining augmented reality and historical narratives. The third relates to the social aspect, targeting the revival of traditional crafts and involving local storytellers in shaping heritage narratives.

This vision extends beyond physical preservation to linking heritage with daily life, where archaeological sites become vibrant places hosting art festivals and creative workshops, inspired by the living heritage model promoted by UNESCO. The proposals emphasize the necessity of transforming archaeological sites into innovative tourist destinations, considering heritage diversity and the need for reconstruction.

The study also clarifies the importance of international cooperation, particularly in recovering stolen artifacts using advanced legal procedures and supporting restoration projects through global funding mechanisms.

1- Research Problem

This study is based on the main problem: How can the establishment of the Syrian General Authority for Cultural Heritage contribute to enhancing and developing means of tourism marketing for Syrian heritage to strengthen Syria's mental image as a tourist destination, and what mechanisms and visions can be implemented within this Authority to achieve this goal? The sub-questions that can be raised are:

1. What roles and responsibilities can the Syrian General Authority for Cultural Heritage undertake?
2. How can the Authority develop effective marketing strategies to attract cultural tourism to Syria?

3.What are the legal and administrative procedures and mechanisms for establishing this Authority and ensuring its independence and effectiveness**?**

4.What role can international partnerships and cooperation with global organizations like UNESCO play in supporting the efforts of the proposed Authority to enhance the tourism marketing of cultural heritage, and how can this relationship be leveraged to achieve tourism sustainability**?**

2-Importance of the Research

The importance of this scientific research lies in proposing the establishment of the Syrian General Authority for Heritage as an innovative institutional entity that redefines the role of heritage from merely a witness to the past to an active driver for the future of cultural tourism and the creative tourism economy. The scientific importance of this research is its contribution to filling the research gap related to integrating the institutional dimension (establishing a specialized authority) in protecting and marketing cultural heritage tourism. It provides a theoretical framework for understanding the integrative relationship between heritage preservation and the development of innovative marketing strategies in the digital age. It proposes an institutional model based on coordination and cooperation among various stakeholders locally and internationally, particularly in the context of enhancing tourism sustainability. As for the practical importance, the research offers practical proposals regarding the design of the organizational structure of the proposed Authority, defining its roles (managing cultural sites, digital heritage marketing, coordination with international entities), which helps decision-makers implement them on the ground. It presents applicable solutions for revitalizing cultural tourism in Syria, such as adopting interactive digital platforms or creating tourist routes linked to tangible and intangible heritage**.**

3- Research Objectives

In light of new governmental visions for culturally and economically rebuilding Syria after years of war, this research aims to achieve the following**:**

1. Provide applicable recommendations to decision-makers on how to manage and market cultural heritage sites in Syria and leverage specialized expertise in this field**.**

2.Analyze the role of establishing the Syrian General Authority for Cultural Heritage in enhancing the tourism marketing of cultural heritage and identify the necessary mechanisms and visions to activate this role**.**

3. Define the roles and responsibilities that the Syrian General Authority for Cultural Heritage can undertake to enhance tourism marketing, by specifying tasks related to heritage protection, documentation, and marketing**.**

4.Propose effective marketing strategies to attract cultural tourism to Syria through innovative marketing tools (such as digitization, promotional campaigns, and communication with the audience in target tourist markets)**.**

4- Research Methodology

This research adopted a descriptive approach with an analytical method. The reality of Syrian cultural heritage was studied, and the challenges it faces

were analyzed, such as the destruction of archaeological sites during the war and the illicit trafficking of antiquities. Successful international experiences in managing cultural heritage, such as the Italian and Saudi models, were also analyzed to benefit from the lessons learned in building the proposed Authority**.**

This represented an integrated methodological framework that helped provide a comprehensive vision of the reality of Syrian cultural heritage and develop a practical conception for establishing the Syrian General Authority for Cultural Heritage and its role in enhancing the means and methods of tourism marketing, taking into account all institutional, legislative, and marketing aspects**.**

5- Research Terms

Cultural Heritage: The shared legacy expressed by societies over time, encompassing tangible elements (e.g., historical buildings, artifacts, archaeological sites...) and intangible elements (e.g., oral traditions, performing arts, traditional industries and crafts...), which form the basis of the national identity of a society and contribute to preserving humanity's cultural diversity. Cultural heritage is a bridge between the past and the present and reflects the continuous interaction between humans and their environment [UNESCO, 2003]**.**

Tourism Marketing: The process of planning and implementing a set of strategies designed to promote and develop tourism services and products, including destinations, events, and facilities related to travel, aimed at attracting and drawing tourists and achieving their satisfaction. This type of marketing relies on understanding the needs and desires of the target market, analyzing competitive trends, and using tools such as digital marketing, brand management, and designing rich programs and offers that meet customer expectations. It also includes managing customer relationships and promoting sustainable tourism to ensure long-term growth of the sector [Kotler, Philip, Bowen, John, and Makens, James. 2020. pp. 31-46]**.**

General Authority for Cultural Heritage: A government entity concerned with protecting the national cultural heritage (tangible and intangible), managing archaeological and historical sites, and preserving cultural heritage through policies and legislation that ensure its sustainability for future generations. Its tasks include documenting heritage, monitoring sites, restoring historical monuments, and enhancing community awareness of the importance of heritage through educational and awareness programs. It works to register heritage sites on international lists (such as the UNESCO World Heritage List) and supports scientific research and development projects related to cultural tourism [General Authority for Cultural Heritage. 2021]**.**

Intangible Heritage: Intangible heritage refers to the practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artifacts and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognize as part of their cultural heritage. This intangible cultural heritage, transmitted from generation to generation, is constantly recreated by communities and groups in response to their environment, their interaction with nature and their history, and provides them with a sense of

identity and continuity, thus promoting respect for cultural diversity and human creativity [UNESCO, 2003 Convention, Art. 2.1].

Tangible Heritage: Includes tangible cultural property that reflects the historical and civilizational identity of societies, such as archaeological sites, historical buildings, artistic pieces, manuscripts, artifacts, and architectural structures. This type of heritage is distinguished by its scientific, artistic, and symbolic value, serving as a witness to human development throughout history [based on principles from UNESCO World Heritage Convention, 1972]**.**

Marketing Strategy for Cultural Heritage: A systematic plan aimed at promoting awareness of cultural heritage and making it an attractive destination for tourists and interested parties while preserving its historical value and community identity. This strategy relies on market analysis, identifying the target audience, and using innovative marketing tools such as digital, promotional, and participatory tools to highlight the cultural uniqueness of heritage sites and link them to quality tourist experiences. It also includes enhancing partnerships with local and international entities and ensuring a balance between economic investment and preserving heritage for future generations [Al-Juhani, Maha bint Abdullah, and Al-Hammadi, Khaled. 2022. pp. 45-67]**.**

6-Research Boundaries

The boundaries of the research are **:Temporal**: Reliance on data available up to the date the research was conducted **.Spatial**: The research focused on Syrian cultural heritage **.Subject**: Studying the role of the proposed Authority in the tourism marketing of Syrian cultural heritage, contributing to enhancing Syria's mental image as a tourist destination**.**

7- Previous Studies:

Study by Kobar Abdullah, 2023, titled: "Heritage Tourism and its Role in Activating Interest in the Cultural Heritage and Historical Landmarks of the Local Community": This study addressed the role of heritage tourism as a tool to enhance interest in tangible and intangible cultural heritage in Algeria. It proposed a strategy to promote this type of tourism by enhancing community awareness, developing infrastructure, and using social media. Key findings included: the necessity of creating specialized bodies to manage heritage and coordinate efforts among different sectors; the importance of linking heritage preservation with revitalizing the tourism economy; and the need for marketing policies based on local cultural identity**.**

Study by Al-Ghafri, Mahmoud, 2024, titled: "Financing Cultural Heritage Projects in Syria During the Crisis: Reality, Opportunities, and Challenges": This research discussed the challenges of financing cultural heritage projects in Syria during the crisis and proposed establishing a financial support fund for heritage through cooperation between the public and private sectors and the local community. It also addressed the role of international partnerships in supporting these projects. The importance of this study lies in providing a practical model for financing heritage projects during crises, emphasizing the role of the local community in preserving heritage, and highlighting the importance of sustainable

financing to ensure heritage protection. Key results included emphasizing the necessity of establishing a Syrian heritage fund to support small and medium projects, the importance of developing a legal and institutional environment to encourage investment in heritage, and the need to raise local community awareness about the importance of participation in heritage preservation.

Study by Smith, John. & Lee, Karl. (2018), titled: "The Role of Heritage Institutions in Promoting Cultural Tourism: A Case Study of UNESCO World Heritage Sites": This study discussed the role of international organizations like UNESCO in preserving global cultural heritage and marketing it as tourist destinations. It focused on case studies of heritage sites in Italy and Spain and examined how to enhance cooperation between local governments and international bodies to increase tourist attraction. The results of this study indicated that heritage bodies promote integration between heritage preservation and creating economic opportunities through tourism, and that coordinated marketing of heritage sites increases visitor numbers by 30% and improves the country's mental image.

Study by Rossi, Marco. (2020), titled: "Cultural Heritage Bodies and Economic Development: Lessons Learned from the Italian Model": This study analyzed the experience of the "Italian Ministry of Cultural Heritage" in managing archaeological and artistic sites and how it contributed to transforming them into innovative tourism products. It discussed mechanisms of financial and legislative support to ensure project sustainability. The findings of the study were that establishing a specialized heritage authority reduces administrative fragmentation and increases marketing efficiency, and that linking heritage with cultural festivals increases tourist interaction with local identity.

Study by Thompson, Liam. (2021), titled: "The Economic Impact of Heritage Preservation on Tourism: Evidence from the United Kingdom": This research examined the impact of English Heritage on the British tourism sector by analyzing financial data from sites like the Tower of London and Stonehenge and measuring the economic return on heritage preservation. The findings concluded that every pound invested in heritage preservation yields a four-fold tourist return, and specialized bodies facilitate attracting external investments to fund restoration projects.

Study by Dupont, Claire. & Yamamoto, Hiroshi. (2022), titled: "Cultural Heritage and the Formation of National Identity: A Comparative Study between France and Japan": This study compared the French Heritage Authority and the Japanese Agency for Cultural Affairs, analyzing how heritage is used to build the national brand to attract tourists. Key results from this study included that bodies integrating heritage with symbolic narratives (like the Samurai in Japan) succeed in creating tourist distinction, and that combining tangible (buildings) and intangible (traditions) heritage enhances the tourist experience and lengthens their stay.

Through the previous studies, we reached consensus results:

- The existence of a heritage authority enhances strategic planning and reduces role and task duplication**.**
- Successful tourism marketing depends on linking heritage to national identity and employing modern technical tools**.**
- Cooperation between the public and private sectors is necessary for financing heritage projects and ensuring their sustainability**.**

They confirm that there are no direct Syrian studies on establishing a cultural heritage authority, but Arab experiences such as in Morocco and Saudi Arabia provide successful models that can be inspired by. The results of previous studies are used in the research project to build upon, aiming to design a tourism marketing strategy based on Syrian cultural identity**.**

II. Objectives for Establishing the Syrian General Authority for Cultural Heritage

The proposed objectives were developed based on three main pillars: (Scientific Preservation - Community Utilization - Smart Marketing). (Table 1).

Table (1)
Proposed Objectives for Establishing the Syrian General Authority for Cultural Heritage

	Objectives	Proposed Implementation Mechanism	Expected Results
1	Documenting and Protecting Syrian Cultural Heritage	Creating a comprehensive digital archive for archaeological sites such as Palmyra and Aleppo, and intangible heritage like Syrian music and ancient languages, and using this archive to design interactive tourism platforms such as augmented reality applications that showcase the history of the sites through folk tales.	Digitally preserving heritage and transforming it into interactive tourism experiences
2	Rehabilitating Damaged Sites and Reconnecting Them to Cultural Identity	Restoring damaged archaeological sites such as the Krak des Chevaliers using sustainable techniques and relying on specialized scientific staff and local labor to preserve traditional methods, then transforming the restored sites into smart tourist destinations by designing cultural tourism routes that combine visiting the monuments and watching live performances of intangible heritage such as the Dabke dance [UNESCO, 2021].	Transforming sites into smart tourist destinations that connect tangible and intangible heritage
3	Enhancing Digital Marketing Through Global Platforms	Developing marketing campaigns using artificial intelligence techniques to analyze tourists' preferences and create customized content in multiple languages, highlighting Syrian cultural diversity such as mosques, churches, and old markets [Al-Azaiza, Mohamed & Al-Zaboun, Omar, 2019, pp. 245-260].	Targeted tourism attraction through global platforms while enhancing the image of cultural diversity
4	Engaging Local Communities in Heritage Preservation and Marketing	Training youth in traditional crafts and documenting oral narratives related to archaeological sites, and marketing interactive tourism experiences such as workshops where tourists participate in making traditional crafts [Al-Hammad, Mohamed, 2020, pp. 589-601].	Empowering the local community and turning heritage into a source of income through participatory tourism experiences
5	Strengthening International Partnerships for Sustainability	Collaborating with organizations such as ICOMOS and the International Alliance for the Protection of Heritage in Conflict Areas (ALIPH) to fund projects and using these partnerships to build a positive image of Syria as a safe destination by publishing international reports showing progress in heritage preservation.	Ensuring project sustainability through international funding and rebranding Syria as a safe destination
6	Supporting Scientific Research	Funding joint research projects with local and international universities to study Syrian cultural heritage and publish them in specialized scientific journals, and using research results to produce reliable promotional materials.	Developing knowledge of Syrian heritage and converting research into accredited promotional tools
7	Raising Local and Global Awareness of Syrian Heritage	Organizing awareness campaigns in collaboration with civil society organizations and social media, highlighting stories of Syrian human heritage related to the sites, and using these campaigns to promote heritage tourism and cultural identity.	Raising local and international awareness of the value of Syrian heritage and making it a tool to support heritage tourism and strengthen cultural identity

Source: *The Authors. Based on [UNESCO, 2021; Al-Azayza, Muhammad, and Al-Zaboun, Omar, 2019; Al-Hammadi, Muhammad, 2020].*

III. Internal Statute or Bylaws*:*

The Syrian General Authority for Cultural Heritage shall be established as an independent entity aiming to protect tangible heritage (archaeological sites, historical buildings) and intangible heritage (traditions, arts, languages) and enhance its role in sustainable development. The internal statute shall be

developed by leveraging successful international experiences and adopting flexible management, allowing the statute to be updated every three years based on periodic evaluations and international developments. It will also rely on scientific expertise in legal and administrative affairs, based on the following strategic objectives:

-Preserve cultural heritage.

-Digitally document heritage and create a permanent national archive.

-Activate the role of heritage in the economy through cultural tourism.

-Enhance national cultural identity.

-Recover smuggled artifacts through international cooperation.

When building the internal statute, it must also rely on:

- International standards such as ICOMOS principles and UNESCO conventions.
- Arab and global models such as Saudi Arabia, Morocco, Italy, and France.
- The local community and the specificity of Syria's diverse heritage and reconstruction needs.
- The integration of the four dimensions of heritage: tangible, intangible, natural, and memory.

Accordingly, an initial foundation can be proposed to move towards a comprehensive internal statute that includes, in its articles and clauses, the following:

Preamble and definitions related to the work of the proposed Authority, such as: Management – Ministries – Heritage...

1. Legal Framework, including: National legislation and laws, and International conventions.
2. Administrative Structure: Composition – Tasks – Powers.
3. Human Resources: Employment – Training – Volunteering.
4. Funding and Financial Management.
5. Cultural Tourism and Marketing Strategy.
6. Management of Archaeological Sites.
7. Evaluation and Accountability: Key Performance Indicators (KPIs) – Periodic Reports – Grievance Mechanism.

IV. Administrative or Organizational Structure:

The structure is based on a hybrid model combining centralization (in strategic planning) and decentralization (in field implementation), focusing on: integration between departments, flexibility, and transparency in managing resources and information. Consequently, it links heritage protection, documentation, and tourism marketing, involving specialized personnel in cultural heritage management capable of keeping pace with challenges and transforming this heritage into a source of national income through the employment of innovative marketing strategies.

I – Top Management (Strategic):

1-Chairman of the Board: The Prime Minister.

2- Board of Directors: Comprising 15 members with the following tasks and powers:

- Setting the general policy and strategic vision for the Authority in line with the Sustainable Development Goals (SDGs) and the UNESCO heritage agenda.
- Approving strategic plans.
- National and international coordination.
- Approving financial budgets.
- Selecting the Head of the Authority and their deputies based on competence and experience in heritage and management.
- Monitoring performance.

II – Executive Management (Tasks and Responsibility):

1-Head of the Authority:

- Proposing the vision and national strategy for protecting and marketing Syrian cultural heritage in coordination with relevant ministries and international organizations.
- Overseeing the implementation of the Authority's operational plan.
- Official representation at scientific and cultural forums and signing agreements with various entities locally and internationally.
- Crisis management in the event of natural and humanitarian disasters.
- Approving annual budgets and projects.
- Appointing directors and site managers within the operational management based on competence and professional specialization.
- Issuing executive decisions to activate policies and achieve the Authority's objectives.
- Ensuring transparency in the management of cultural, financial, and human resources.
- Adhering to ethical charters in dealing with heritage.

2- Deputy Head of the Authority for Administrative Affairs:

- Supervising human resources management, including recruitment, performance evaluation, and developing training plans to enhance employee efficiency.
- Developing employment and promotion policies in accordance with laws and regulations, and ensuring compliance with labor rules and equality.
- Developing organizational structures and job descriptions to ensure operational efficiency.
- Preparing the annual budget in coordination with technical directorates and monitoring expenditure to ensure optimal resource utilization.
- Overseeing financial reports and internal audit, ensuring transparency in handling national and international grants.

- Following up on external funding and preparing accountability reports for donors.
- Participating in developing long-term strategic plans for heritage preservation, considering priority setting and objectives.
- Developing administrative policies and reviewing them periodically to keep pace with best practices.
- Ensuring compliance with Syrian laws and relevant international conventions for heritage protection.
- Managing audit processes, monitoring compliance with professional ethics standards, and combating corruption.
- Supervising procurement and supply processes for equipment and materials needed for heritage conservation projects.
- Managing logistics for heritage events (conferences, workshops, exhibitions...) and maintaining the Authority's facilities and properties.
- Promoting integration between administrative and technical directorates to ensure effective project implementation.
- Managing partnerships with NGOs and the local community to enhance participation in heritage preservation.
- Developing emergency plans to protect heritage sites from natural disasters and humanitarian crises, training work teams on rapid response mechanisms, and establishing an early warning system for risks.
- Supervising the documentation of administrative procedures and decisions for archiving (paper and digital) and preparing periodic reports on the Authority's performance.
- Supporting the adoption of modern technologies to improve management and promoting sustainable practices in the Authority's operations.
- Encouraging scientific research in the field of site management and heritage administration, supporting the publication of academic research on the Authority's experiences, and organizing workshops for capacity building in project management and strategic leadership.

3- Deputy Head of the Authority for Technical Affairs:

- Supervising archaeological and field research by coordinating with scientific archaeological missions, directing research teams in documenting archaeological sites, analyzing data, and reviewing scientific results to ensure compliance with ethical and professional standards.
- Coordinating with specialists to design periodic maintenance programs for endangered heritage sites, applying principles of minimal intervention to preserve historical authenticity [Jokilehto, Jukka. 1999. p. 215].
- Managing the digital documentation of cultural heritage using modern technologies to create a digital archive of Syrian heritage.
- Coordinating with Arab and international organizations and entities, preparing detailed technical reports for UNESCO and ICCROM to support the inscription of Syrian sites on the World Heritage List.

- Participating in Arab and international seminars, meetings, and workshops to exchange experiences on heritage management.
- Reviewing legislative policies, laws, and regulations related to cultural heritage, and proposing amendments to protect cultural property.
- Working on developing and implementing training programs for technical personnel according to scientific and technical specialization.
- Ensuring the publication of research project results conducted by the Authority in specialized peer-reviewed journals.
- Ensuring compliance with heritage ethics standards, applying the principles of the ICOMOS International Charter for Cultural Heritage 2017 in all projects, especially concerning respect for the rights of local communities [ICOMOS. 2017. p7].
- Assessing the scientific impact of projects undertaken by the Authority and their contribution to achieving the Sustainable Development Goals.

III – Operational Management*:*

1. Directorate of Executive Support and Communication.
2. Directorate of Cultural Sites Management.
3. Directorate of Documentation and Digital Archiving.
4. Directorate of Scientific Research and International Cooperation.
5. Directorate of Information Technology and Innovation.
6. Directorate of Legal Affairs.
7. Directorate of Administrative Development.
8. Directorate of Marketing and Media.
9. Directorate of Shared Services.
10. Directorate of Finance.

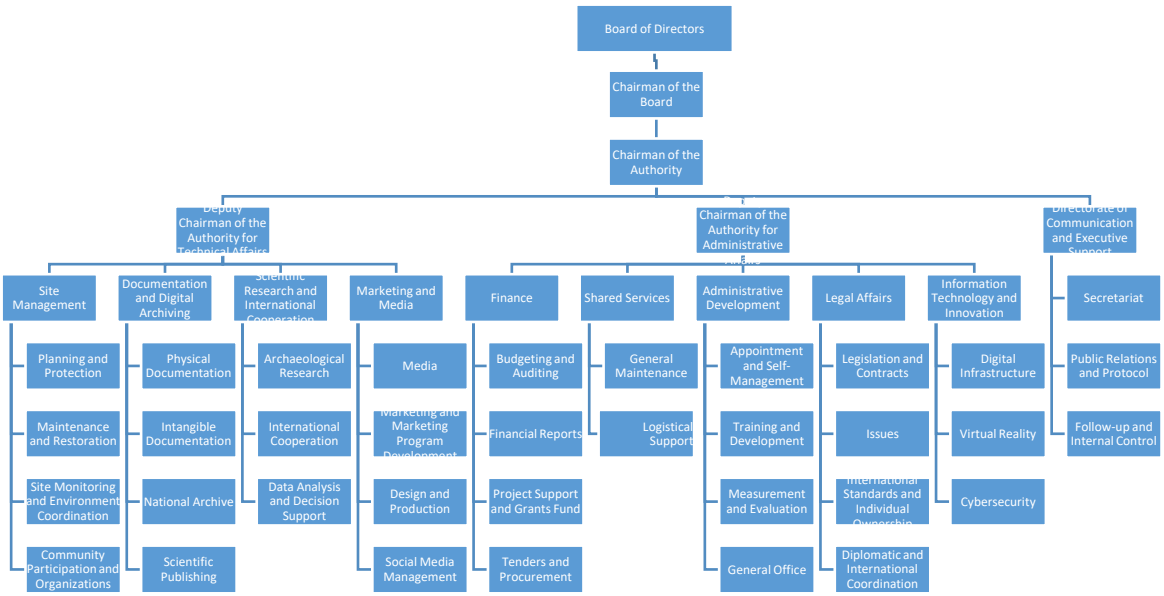


Figure (1) - Proposed Organizational Structure for the Proposed Authority - Source: The Authors.

From a theoretical perspective, the proposed model contributes to the development of research studies on heritage management by integrating concepts of good governance (such as transparency and accountability) with technical and artistic innovation and creativity (such as digital documentation and virtual reality), based on the Sustainable Development Goals (SDGs) and the UNESCO 2030 Agenda.

Practically, a viable institutional mechanism has been proposed that relies on the integration of technical and administrative departments, while enhancing partnerships between the public and private sectors, local community stakeholders, and international organizations. This contributes to reducing the risks of neglect and politicization that threaten heritage under various circumstances.

However, the success of this model depends entirely on providing a suitable environment enabling it to perform its tasks and role. This includes: legislative reform that criminalizes attacks on both tangible and intangible heritage; training national personnel capable of employing modern technologies; and securing sustainable funding through innovative partnerships with the private sector and international organizations. Its implementation also requires enhancing community awareness of the importance of heritage as a national identity, which the Community Participation Department seeks to achieve through well-designed and practical awareness campaigns.

The effectiveness of the proposed model remains subject to future studies that evaluate the achievement of balance between archaeological conservation priorities and economic development pressures, alongside the necessity of monitoring the impact of geopolitical factors on the sustainability of the project proposing the establishment of the Authority.

V. Legal and Administrative Roles of the Proposed Authority*:*

A. Legal Role*:*

The Authority presents a comprehensive legal model that combines legislative reform and international commitment, focusing on cultural justice as part of social justice. However, achieving success depends on providing a supportive political environment and sustainable funding, with a focus on how national and international regulations and laws are applied, and their role in promoting transparency and accountability. (Table 2)

Table (2)
Axes of the Proposed Authority's Legal Role, its Mechanisms, and Legal Document.

	Axis	Procedures and Mechanisms	Legal Basis
1	Updating current laws	- Amend Syrian Law No. 222 of 1963 to include the protection of intangible heritage (such as traditional games and ancient languages). - Require construction projects to conduct prior archaeological surveys.	Syrian Law No. 222 of 1963 (amended).
2	Protecting intellectual property rights of heritage	- Establish regulations to organize the use of heritage symbols as trademarks with the approval of the authority.	UNESCO Principles (2003) for the Protection of Intangible Heritage.
3	Penalties and special courts systems	- Propose the establishment of a specialized heritage court in cooperation with the Ministry of Justice. - Form a specialized unit to cooperate with Interpol to combat smuggling.	The Hague Convention (1954) for the Protection of Cultural Property (Toman, J.1996.p203).
4	Implementation of UNESCO treaties	- Adopt the UNESCO Conventions (1972 and 2003) as the basis for policies. - Adopt the principles of the Faro Convention (2005) linking heritage to human rights [Blake, J. 2009, p. 45-73 + p. 134].	- World Heritage Convention (1972). - Convention for the Safeguarding of the Intangible Cultural Heritage (2003). - Faro Convention (2005).
5	Recovery of smuggled cultural artifacts	- Implement a legal mechanism in cooperation with Interpol and WIPO to track missing artifacts [Prott, L. V. & O'Keefe, P. J. 1984, p. 55].	UNIDROIT Convention (1995).
6	Legal framework for community participation	- Establish partnerships with local communities to document oral heritage. - Support community initiatives related to sustainable development.	Principles of the Faro Convention (2005).
7	Performance and transparency indicators	- Monitor compliance of cultural sites with international standards. - Issue periodic reports open to the public.	- ICOMOS Charter for the Ethics of Heritage (2017). - UNESCO Principles of Good Governance (2015).

Source: *The Authors. Based on [Francioni, F. 2008. p45]*

B. Administrative Role:

The management of Syrian cultural heritage requires a comprehensive administrative model encompassing scientific preservation, community interaction, and smart marketing. Therefore, the administrative role of the Syrian General Authority for Cultural Heritage is based on three main aspects:

1. **Management of Cultural and Archaeological Sites (Protection, Restoration, and Operation):** A comprehensive process aimed at preserving historical and human identity, relying on three fundamental pillars: protection, restoration, and operation.

2. **Protection of Intangible Heritage (Documentation, Dissemination, and Community Participation):** Intangible heritage (such as folk arts, languages, and customs) is considered as important as tangible heritage, but its protection methods differ.

3. **Cultural Marketing and Tourism Promotion (Local and International):** Cultural marketing transcends mere promotion to focus on building narratives that reflect the depth of cultural identity.

Considering the pillars of the core aspects in exercising the administrative function of the proposed Authority, some administrative challenges and proposed solutions emerge, including:

1. **Lack of Qualified Personnel:** Proposed solution: Joint training programs with international universities (e.g., University of Damascus and Sapienza University of Rome).

2. **Limited Funding:** Proposed solution: Attracting international grants through joint projects with organizations like UNESCO and ALIPH.

3. **Difficulty in Promotion:** Proposed solution: Focusing on digital marketing and cooperation with friendly countries (e.g., France, Germany, Qatar, and Saudi Arabia).

Thus, the proposed Authority can become a successful model for integrated heritage management if it relies on:

1. Decentralization in the field implementation of projects.
2. Technological innovation in documentation and marketing.
3. Strategic partnerships with both local and international communities.

C. Cooperation with Syrian Diplomatic Missions:

Syrian embassies abroad possess significant capabilities to support the preservation of Syrian cultural heritage, whether through recovering smuggled artifacts or promoting cultural heritage. The proposed Authority can coordinate with these embassies to implement a comprehensive plan covering legal aspects (artifact recovery) and economic aspects (tourism marketing).

This cooperation is based on three fundamentals:

1. **Legal Tracing of Smuggled Artifacts:** Embassies and diplomatic missions rely on two main methods:

a. Cooperation with international organizations like Interpol and the World Customs Organization (WCO) to identify stolen artifacts using international databases, such as the UNESCO Database of National Cultural Heritage Laws.

b. Activating bilateral agreements with countries hosting these artifacts to legally pursue smugglers, leveraging the UNESCO Convention signed in 1970 which obligates member states to return stolen cultural property [UNESCO 1970. p7].

2. **Appropriate Marketing of Syrian Heritage:** Marketing transcends traditional promotion to aim at creating an attractive cultural narrative reflecting the diversity of Syrian heritage, such as the archaeological sites in Palmyra and traditional music. Embassies and diplomatic missions can: Organize virtual exhibitions in cooperation with platforms like Google Arts & Culture to display artifacts digitally; Innovate specialized tourist trips in cooperation with global

travel agencies, focusing on the concept of sustainable tourism that respects the environment and culture; and Support Syrian artisans by marketing their products in global markets, such as Art Basel fairs (Brown, A., & Smith, T. 2017. p156).

3. **Establishing International Cultural Partnerships:** These partnerships seek to transform Syrian heritage into a means for civilizational dialogue through:

a. Signing memoranda of understanding with global museums like the Louvre or the Metropolitan to hold joint exhibitions.

b. Cooperating with international universities to conduct joint archaeological research, enhancing Syria's academic standing.

c. Joining international networks like the International Alliance for the Protection of Heritage in Conflict Areas (ALIPH) to support funding and provide technical advice.

Thus, the Authority, embassies, and diplomatic missions can achieve notable results by:

1. Transitioning from traditional diplomacy to cultural diplomacy.
2. Consolidating efforts within a single strategy based on digital data and effective partnerships.
3. Transforming heritage from a victim of war into a platform for development.

VI. The Role of the Syrian General Authority for Cultural Heritage in Sustainable Tourism Marketing:

Syria faces a particular challenge in rebuilding its tourism industry after years of war, where archaeological sites (such as Palmyra, Old Aleppo, and Krak des Chevaliers) are global symbols that need to be preserved and utilized appropriately. (Table 3)

Table (3)
Key Proposed Strategies the Proposed Authority Could Rely On.

	Main Objective	Proposed Procedures and Projects	Responsible entities for implementation	Supporting Entities
1	Reviving domestic tourism.	- Organizing awareness campaigns for the population about the value of heritage. - Encouraging scientific and study trips to historical sites.	- Ministry of Education and Ministry of Information. - Universities and non-governmental organizations.	- Civil society organizations. - Ministry of Culture.
2	Connecting tourist routes and community projects.	- Designing tourist routes that include rural villages (such as handicrafts). - Allocating tourism revenues to finance local projects.	- Local councils. - Associations working in rural development.	- United Nations Development Programme (UNDP). - European Union.
3	Technology and reducing visual pollution.	- Developing multilingual electronic applications for tourist information. - Digital maps of protected areas.	- Local and international technology companies. - Digital tourism platforms.	- UNESCO. - Private sector.
4	Smart restoration.	- Using traditional building techniques (mud bricks). - Training artisans in restoration.	- Faculties of engineering and architecture. - Traditional craft centers.	- Grants from UNESCO. - World Bank.
5	Transforming damaged sites into educational opportunities.	- Establishing "open museums" in destroyed areas. - Documenting the history of the war and the importance of peace.	- International peace organizations (such as UNICEF). - Educational institutions.	- Global museums (British Museum). - World Heritage Support Fund.
6	Integrating intangible heritage.	- Organizing festivals for folk singing (Mawal) and traditional foods.	- Folk arts associations. - Local restaurants and hotels.	- Ministry of Tourism. - Private sector.
7	Sustainable infrastructure.	A. Renewable Energy: Encouraging the use of solar energy in tourist facilities near archaeological sites. B. Sustainable Transportation: Rehabilitation of railway lines (Aleppo-Damascus) and the use of electric trains. C. Water Management: Rainwater harvesting systems at archaeological sites and greywater treatment.	Ministry of Transport and Ministry of Energy (in cooperation with international experts).	a. United Nations Development Programme (UNDP). b. Asian Infrastructure Investment Bank. c. Food and Agriculture Organization (FAO).

Source: *The Authors. Based on UNESCO sites, World Tourism Organization*.

VII. The Role of the Syrian General Authority for Cultural Heritage in Developing Tourism Marketing Methods

Syria is one of the world's oldest civilizations, possessing a rich cultural heritage that includes tangible landmarks like Palmyra and Krak des Chevaliers, as well as intangible heritage like the Samah dance, Muwashshahat, and Aleppine Qudud, reflecting a diverse and distinguished history and society. However, long years of political crises and armed conflicts have led to a decline in tourism, which was a primary source of national income. Therefore, the proposal to establish the Syrian General Authority for Cultural Heritage came as an active institutional alternative to revive cultural tourism through the application of new marketing strategies, enhancing cooperation with local and international partners, and investing in modern technologies.

Thus, effective strategies must be built that balance cultural sustainability and economic feasibility to ensure the revival of heritage as a developmental resource, based on the following:

a. Increasing Heritage Awareness through International Classifications: Including Syrian sites on UNESCO's World Heritage Lists is an important step to enhance their global standing. Research indicates that places listed on these lists see an annual increase in visitor numbers of up to 30%, according to a 2021 UNESCO report. The Authority can strive to register new sites and work on developing integrated cultural tourist routes that enhance the connection between archaeological landmarks and the tourist experience by providing a continuous historical narrative.

b. Empowering Local Communities as Partners in Marketing: Cultural marketing is not limited to promoting tourist attractions alone; it involves engaging local communities in the tourism industry. Successful cultural tourism relies on the living experiences offered by local residents, such as handicraft workshops or artistic performances. For example, the Authority could support projects to revive the art of Al-Hakawati (storytelling), transforming these activities into sustainable tourist attractions.

c. Improving Infrastructure: World Bank 2019 data indicates that 65% of cultural tourists prefer to stay in places that offer heritage experiences. Therefore, developing hotels within historical buildings (like the old Khans of Damascus) or restaurants serving traditional dishes (like Mujaddara and Aleppine Kebab) enhances the appeal of tourism. Additionally, success requires training tour guides in modern methods of historical narration, such as adopting interactive storytelling that links archaeological facts to folk tales [World Bank, 2019, pp. 22-25].

Modern technology has become the cornerstone of managing cultural destinations, starting with the documentation of archaeological sites via 3D scanning and virtual reality technologies, to their smart marketing using big data analysis and artificial intelligence. These tools contribute to preserving heritage with high accuracy while simultaneously creating attractive interactive experiences for tourists that reflect civilizational depth and encourage investment. This transformation is considered an integrative model linking identity

preservation with driving economic development through innovative channels via the following:

a. Digital Documentation: Technologies like 3D imaging and LiDAR are vital tools for documenting sites threatened with disappearance. Therefore, the digital archive is not only used for preservation purposes but can also be converted into virtual platforms enabling remote tourism, which suits a segment of tourists unable to travel due to security or financial constraints [Guttentag, D.A. 2010. p 637-651].

b. Augmented Reality (AR): AR applications help visitors see archaeological sites as they were hundreds of years ago. In a successful experience, the Louvre Museum used the "Louvre AR" app to display artworks with interactive explanations, leading to a 25% increase in visits. The Authority could adopt this model in Syria by developing an app showing virtual reconstructions of the Roman Theatre in Bosra or the Temple of Bel in Palmyra, thus enhancing the tourist experience and attracting the younger generation interested in technology [Guttentag, D.A. 2010. p 637-651].

c. Social Media Platforms: Meta's 2023 statistics indicate that 70% of tourists plan their trips via platforms like Instagram and TikTok. Therefore, the Authority can launch marketing campaigns targeting:

-Short video clips (Reels) highlighting cultural diversity, such as folk dance festivals, singing, and playing music.

-Collaboration with heritage-focused influencers, like travel bloggers who visit archaeological sites and share their experiences in multiple languages.

-Interactive maps on Google Earth showing tourist routes with information about each site.

Thus, the need emerges to rebuild the Syrian tourism brand according to an integrated strategic vision.

This vision is based on three fundamental pillars:

1. Rich Civilizational Heritage: Including world-classified archaeological sites.
2. Living Cultural Diversity: Embodies coexistence among various segments and spectra of society.
3. Digital Transformation: As a tool for documenting and marketing heritage in innovative ways.

Reviving the tourism brand requires:

-Developing an international communication strategy to correct the stereotypical image.

-Investing in modern technologies to present the tourism product.

-Enhancing partnerships between the public and private sectors.

-Focusing on sustainable tourism that preserves heritage for future generations [Al-Hariri, Nader, and Quteish, Lina 2022. pp.33-52].

Thus, the tourism brand becomes a strategic tool for economic development and cultural diplomacy, potentially contributing to rebuilding the national

economy and enhancing Syria's position on the global tourism map, while preserving the authenticity and human values of heritage, as follows:

a. Developing a Visual Identity: Successful tourism brands rely on visual symbols that reflect cultural identity. The Authority could design a logo combining elements of Islamic architecture and Byzantine mosaics, using colors inspired by the Syrian environment. A consistent visual identity can increase its memorability by up to 40% among tourists [Baker, B. 2016. p. 89].

b. Media Campaigns: Tourism promotion requires active participation in international events, like the ITB Berlin exhibition, to showcase investment opportunities in Syrian tourism. Agreements could also be signed with documentary channels (like National Geographic) to produce films addressing restoration efforts at archaeological sites and their importance in human history, focusing on the human aspects of those working in heritage preservation.

c. Targeting Specialized Tourism: Instead of competing in mass tourism, Syria could focus on specialized categories and segments, such as:

-Cultural Adventure Tourism: Organizing exploratory trips to unknown sites in the Badia (steppe).

-Conference Tourism: Hosting international conferences on heritage in cities.

-Religious Tourism: Developing routes for Christian pilgrimage.

Research Findings:

1. Necessity of Establishing an Independent Authority: The study confirmed that the current administrative fragmentation among ministries (Culture, Tourism, Antiquities) weakens heritage protection, necessitating the establishment of an independent authority with financial and administrative autonomy within a hybrid organizational structure.
2. Possession and Availability of Effective Marketing Tools: Virtual and augmented reality increase youth tourist attraction by 40%, while digital platforms (especially Instagram and TikTok) influence 70% of travel decisions.
3. Necessity of Creating a Digital Archive for Threatened Sites (Palmyra, Old Aleppo), and relying on Interactive Applications (AR applications that historically reconstruct sites).
4. Emphasis on the Importance of Involving Artisans and Storytellers in Shaping Tourist Experiences, which increases: sustainability of intangible heritage (like folk singing arts and Dabke) and attracts tourists seeking authentic experiences.
5. Implementing Educational Campaigns in Schools to Raise Awareness about the Importance of Heritage.

Research Proposals:

1. Issue a law to establish the Syrian General Authority for Cultural Heritage, granting it administrative and financial independence, and integrating some tasks of the (Culture and Tourism) ministries under its management.
2. Establish a sustainable financial fund with government funding and international partnerships.

3. Create a complete digital archive of Syrian heritage using 3D scanning and augmented reality technologies to document endangered sites. Develop an interactive tourist app in multiple languages offering virtual tours.

4. Move towards a digital marketing strategy focusing on youth through social media platforms with short content showcasing cultural diversity (like Aleppine Muwashshahat, folk dance arts) and collaborate with global tourism influencers to improve Syria's image.

5. Empower local communities by training youth in heritage crafts and restoration techniques. Additionally, involve local storytellers in developing tourist narratives.

6. Enhance cooperation with key international organizations:

a. UNESCO: To register new sites on the World Heritage List.

b. International Alliance for the Protection of Heritage (ALIPH): To fund restoration projects.

c. World Tourism Organization (UNWTO): To design joint tourist routes.

7. Recover stolen antiquities by activating cooperation with Syrian embassies to track lost pieces. Organize mobile exhibitions in Europe to display recovered artifacts.

8. Establish a specialized training center in partnership with international universities (e.g., University of Damascus and Sapienza University of Rome).

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MECHANICAL PROPERTIES OF FIBER- REINFORCED CEMENT-BASED COMPOSITES: EXPERIMENTAL STUDY ON COMPRESSIVE STRENGTH

Abstract: *This study investigates the effect of fiber reinforcement on the compressive strength of cement-based composites. Glass fibers were added at 0%, 1%, 2%, and 3% by weight of cement. Laboratory experiments were conducted to evaluate compressive strength after 28 days of curing. The results revealed that the addition of 1% fiber significantly increased compressive strength by 31% compared to the control specimen. However, higher fiber contents (2–3%) resulted in slightly lower strength values, although they remained higher than the control. The findings highlight the potential of fiber-reinforced composites in construction applications where enhanced strength and crack resistance are required.*

Keywords: *Composite materials, fiber reinforcement, compressive strength, cement- based composites, construction materials.*

Introduction

Composite materials are increasingly applied in construction due to their enhanced strength, durability, and resistance to environmental effects. Among these, fiber- reinforced cement-based composites have shown significant improvements in crack resistance and mechanical performance [1–3].

Previous research has demonstrated that the type and dosage of fibers strongly affect the mechanical properties of composites [4–6]. However, the optimal fiber content for achieving maximum compressive strength is still under investigation. This study provides an experimental evaluation of glass fiber reinforcement in cement-based composites.

Materials and Methods.

MATERIALS.

- Cement: Ordinary Portland Cement (CEM I 42.5).
- Aggregates: Natural sand (0–5 mm).
- Fibers: Glass fibers (length 12 mm).
- Water-to-cement ratio: 0.45.

SAMPLE PREPARATION.

Specimens were cast in 100×100×100 mm molds with fiber dosages of 0%, 1%, 2%, and 3% (by weight of cement). Samples were cured in water at 20 ± 2 °C for 28 days.

Testing.

Compressive strength was measured according to ASTM C109 using a universal testing machine.

Results.

Compressive Strength.

The variation of compressive strength with fiber content is presented in Figure 1.

Fiber content (%)	Compressive strength (MPa)	Change compared to control (%)
0	37.0	-
1	48.5	+31%
2	41.5	+12%
3	43.0	+16%

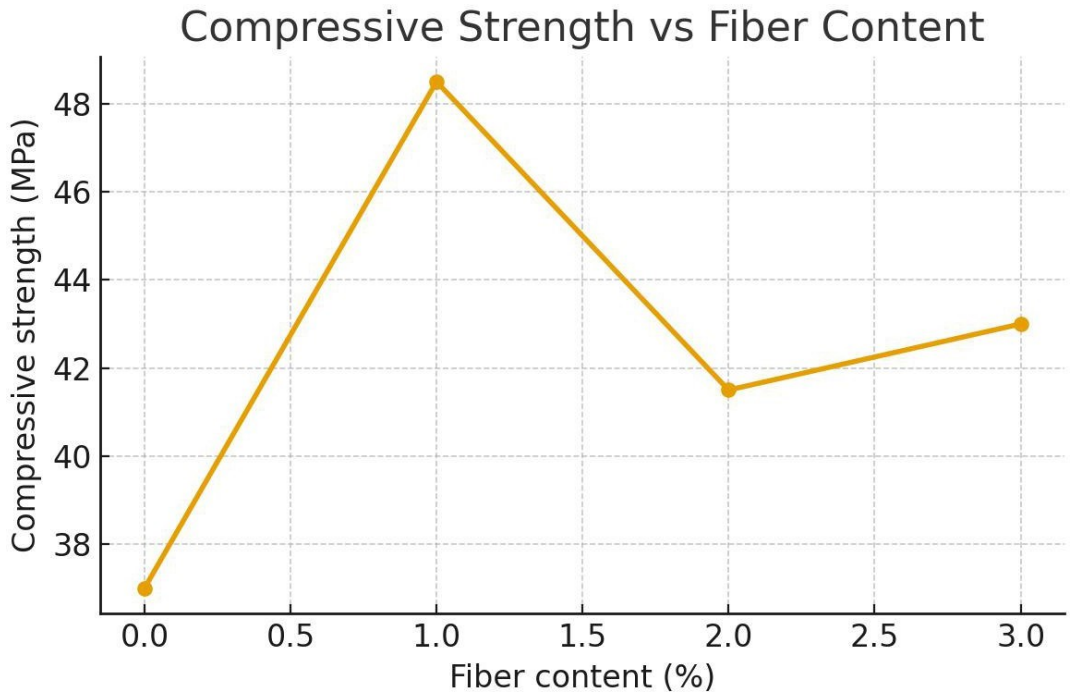


Figure 1. Effect of fiber content on compressive strength of cement-based composites.

Discussion.

The experimental results demonstrate that fiber reinforcement significantly improves compressive strength at low dosages. The optimal performance was observed at 1% fiber content, where compressive strength increased by 31% compared to the control sample.

At higher fiber dosages (2–3%), strength values decreased slightly due to reduced workability and fiber agglomeration, but remained higher than the control. Similar findings were reported in studies by Li (2003) and Afroughsabet

& Ozbakkaloglu (2015), confirming that moderate fiber contents yield the best performance.

Conclusion.

- The addition of glass fibers improved compressive strength of cement composites.
- Optimal dosage was 1%, giving the highest increase (+31%).
- Higher dosages (2–3%) caused minor strength reductions but still outperformed the control mix.
- Fiber-reinforced cement composites are suitable for structural applications requiring enhanced mechanical properties.

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MODERN APPROACHES TO THE DIAGNOSIS AND TREATMENT OF CARDIOVASCULAR DISEASES

Abstract: *Cardiovascular diseases (CVDs) remain one of the leading causes of morbidity and mortality worldwide, posing a significant public health challenge. Recent advances in medical science and technology have transformed traditional diagnostic and therapeutic strategies, leading to more accurate, timely, and personalized approaches. Modern diagnostic methods, such as echocardiography, cardiac MRI, CT angiography, and biomarker analysis, enable early detection and detailed assessment of cardiovascular conditions. Additionally, the integration of artificial intelligence and big data analytics enhances risk prediction and clinical decision-making. On the therapeutic side, minimally invasive interventions, novel pharmacological agents, and regenerative medicine offer improved outcomes and reduced complications. This paper reviews current trends and innovations in the diagnosis and treatment of cardiovascular diseases, emphasizing the importance of multidisciplinary collaboration and digital technologies in improving patient care and prognosis.*

Keywords: *cardiovascular diseases, diagnostics, treatment, artificial intelligence, biomarkers, precision medicine, digital health*

Introduction

Cardiovascular diseases (CVDs) represent a major global health concern, accounting for nearly one-third of all deaths worldwide. Despite significant advances in preventive medicine, diagnostics, and therapy, the incidence of CVDs continues to rise due to aging populations, unhealthy lifestyles, and metabolic disorders such as diabetes and obesity. The complexity and multifactorial nature of cardiovascular conditions demand innovative diagnostic and treatment strategies that go beyond traditional clinical approaches.

In recent years, the integration of advanced imaging modalities, molecular diagnostics, and digital health technologies has revolutionized the field of cardiology. Techniques such as echocardiography, cardiac MRI, and CT

angiography allow for early and accurate visualization of structural and functional abnormalities. Meanwhile, the use of biomarkers and genomic profiling has enhanced the precision of disease detection and risk stratification.

On the treatment front, modern cardiology increasingly relies on minimally invasive procedures, targeted pharmacotherapy, and personalized medicine. The application of artificial intelligence (AI) and machine learning (ML) in data analysis further supports clinicians in diagnosis, treatment planning, and outcome prediction.

This article aims to provide an overview of modern approaches to the diagnosis and treatment of cardiovascular diseases, highlighting recent technological innovations, clinical practices, and research trends that contribute to improving patient outcomes and reducing mortality rates.

Discussion

The rapid evolution of medical technology has fundamentally transformed how cardiovascular diseases are diagnosed and treated. Traditional methods, while still valuable, are increasingly complemented or replaced by more advanced, precise, and patient-centered approaches. Early and accurate diagnosis is crucial for preventing complications and improving survival rates among patients with cardiovascular conditions.

Modern diagnostic tools, including cardiac MRI, CT angiography, and echocardiography, provide detailed structural and functional information about the heart and vascular system. These imaging modalities, when combined with molecular and genetic biomarkers, enable clinicians to identify disease processes at earlier stages and to personalize treatment strategies based on individual risk profiles. Moreover, artificial intelligence (AI) and machine learning (ML) algorithms are being increasingly implemented to assist in interpreting large volumes of diagnostic data. AI-driven models can detect subtle patterns that might be missed by human observation, enhancing diagnostic accuracy and predictive capacity.

In the therapeutic domain, advances in interventional cardiology and pharmacology have significantly improved patient outcomes. Minimally invasive procedures, such as coronary angioplasty and transcatheter valve replacement, reduce recovery times and procedural risks compared to traditional open-heart surgeries. Additionally, the development of novel drugs—such as antiplatelet agents, lipid-lowering therapies, and anticoagulants—plays a vital role in controlling disease progression and preventing recurrent events.

Furthermore, digital health tools, including telemedicine platforms, wearable monitoring devices, and mobile health applications, have opened new opportunities for continuous patient monitoring and remote care. These innovations promote better patient adherence, early detection of complications, and timely clinical interventions.

However, despite these advances, challenges remain. The high cost of modern technologies, limited access in low-resource settings, and the need for specialized training among healthcare professionals may hinder widespread

adoption. Moreover, ethical and data privacy issues surrounding AI and digital health applications require careful regulation.

Overall, the integration of cutting-edge technologies, interdisciplinary collaboration, and data-driven decision-making represents the future of cardiovascular medicine. Continued research and innovation are essential to ensure that these modern approaches become accessible, effective, and equitable across diverse healthcare systems.

Conclusion

Modern approaches to the diagnosis and treatment of cardiovascular diseases have significantly advanced the field of cardiology, leading to earlier detection, more accurate assessment, and more effective management of heart-related conditions. The integration of advanced imaging techniques, biomarker analysis, and artificial intelligence has enhanced the precision and efficiency of diagnostic processes, allowing for personalized risk assessment and targeted interventions.

In therapy, the shift toward minimally invasive procedures, innovative pharmacological treatments, and digital health technologies has improved patient outcomes, reduced mortality rates, and enhanced quality of life. Moreover, telemedicine and wearable monitoring systems have enabled continuous patient observation and remote care, which are especially valuable for chronic cardiovascular conditions.

Nevertheless, the widespread adoption of these innovations faces certain challenges, including economic barriers, unequal access to healthcare technologies, and the need for professional training and ethical oversight. Addressing these issues through policy development, investment in medical infrastructure, and international cooperation is essential for maximizing the benefits of technological progress.

In conclusion, the future of cardiovascular medicine lies in combining scientific innovation, digital transformation, and patient-centered care. By integrating these elements, healthcare systems can significantly improve the prevention, diagnosis, and treatment of cardiovascular diseases, ultimately reducing their global burden.

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FARG ‘ONA VILOYATIDA EKOLOGIK VA ZIYORAT TURIZMINI RIVOJLANTIRISH ISTIQBOLLARI

Annotatsiya: *Ushbu maqolada Farg‘ona viloyatining ekologik va ziyorat turizmi obyeklari hamda ularning turistik imkoniyatlari tahlil qilingan. Ekologik va ziyorat turizmini rivojlantirish uchun ulkan salohiyat hamda boy tabiiy resurslari, betakror tog‘li hududlari, shifobaxsh buloqlari ekoturizmni shakllantirish uchun asos bo’lsa tarixiy-madaniy meros va muqaddas qadamjolar ziyorat turizmining kelajagini belgilaydi. Turistik infratuzilmani yaxshilash, yangi yo‘nalishlarni ishlab chiqish orqali xududning iqtisodiy imkoniyatlarini yanada orttirish mumkin.*

Kalit so’zlar*: ekoturizm, ziyorat turizmi, iqlim sharoiti, turistik marshrut, rekreatsiya, karst, rekreatsion imkoniyat*

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PROSPECTS FOR DEVELOPING ECOLOGICAL AND PILGRIMAGE TOURISM IN FERGANA REGION

Annotation: *This article analyzes the ecological and pilgrimage tourism objects of Fergana region and their tourist potential. The huge potential for the development of ecological and pilgrimage tourism and its rich natural resources, unique mountainous areas, healing springs are the basis for the formation of ecotourism, while the historical and cultural heritage and sacred sites determine the future of pilgrimage tourism. The economic potential of the region can be further increased by improving the tourist infrastructure and developing new directions.*

Keywords*: ecotourism, pilgrimage tourism, climatic conditions, tourist route, recreation, karst, recreational opportunities*

Kirish.

Tabiatda uchraydigan tabiiy resurslar joyning landshaft – iqlim sharoiti, mineral suvi, o‘simlik dunyosi va boshqa ko‘rsatkichlari hududning rekreatsion imkoniyatlarini belgilab beradi. Inson doimo tabiiy muhit – quyosh radiatsiyasi, erning magnetizmi, meteorologik elementlari ta’sirida bo‘ladi. Iqlim sharoiti rekreatsiyani rivojlantirishda katta ahamiyatga ega. Farg‘ona viloyati tabiati, xususan iqlimi nafaqat O‘zbekistonda, balki O‘rta Osiyoda ham alohida ahamiyatga ega. Xududningning tog‘li joylari, daryo vodiylarining ionlarga boy bo‘lgan havosining rekreatsion imkoniyatlari bir muncha yuqoridir. Shohimardon, So‘x kabi tog‘ daryolarining havzalaridagi havo ionlarga juda boy hisoblanadi.

Manfiy ionlar inson sog‘lig‘iga shifobaxsh ta’sir ko‘rsatadi, ayniqsa yurak-tomir, asab sistemasiga ijobiy ta’sir etib, tananing funksional holatini yaxshilaydi. Tog‘ rekreatsiyasi vodiydagi sanatoriy-kurort sohasini rivojlantiruvchi omillardan hisoblanadi. Janubda Oloy tog‘ tizmalari bilan atrofi o‘ralgan bu xududda 50 dan ortiq mineral suv konlari va shifobaxsh balchiqlar aniqlangan. Hudud aholisi o‘zlari yashab turgan joylardagi shifobaxsh suv, qumlar, balchiqlar bilan davolanishi mumkin bo‘lgan joylarni yaxshi biladilar.

Mahalliy aholi bunday buloqlarni shifobaxshligi uchun muqaddaslashtirilgan va avliyolar nomi bilan atashadi. Mazkur mineral manbalar viloyatning ko‘p xududlarida uchrab turadi. Kimyoviy tarkibi, minerallashishi hamda rekreatsion ahamiyati bo‘yicha bu suvlar chet eldagi mashhur mineral suvlardan aslo qolishmaydi. Quyida Farg‘ona viloyatida mavjud ekologik va ziyorat turizmi obyektlari hamda ularning turistik imkoniyatlari keltirib o’tilgan:

Chimyon sanatoriysi – tog‘ etaklarida Markaziy Farg‘onaning janubiy kismida, dengiz satxidan 450 m balandlikda Shohimardonsoy daryosining adir oralig‘i irmoqlari bo‘yida joylashgan bu maskan mineral suv manbaiga ega hisoblanadi. Dam olish maskani Farg‘onadan 32 km masofada joylashgan. Asosiy davolash maskani mineral suvlar va shifobaxsh balchiklar bo‘lib, bu maskanda 1 – 2 kishilik yaxshi jixozlangan xonalar mavjud.

Qiziltepa sanatoriysi – Farg‘ona viloyatining markaziy qismida, Farg‘ona shaxridan uncha uzoq bo‘lmagan hududda joylashgan. Sayyohlar dam olish jarayonida Qo‘qon va Marg‘ilondagi tarixiy obidalar va xunarmandchilik maxsulotlarini tomosha qilishga hamda Shohimardon, So‘x kabi go‘zal tabiat maskanlariga ekskursiyalar uyushtirishga muyassar bo‘ladilar.

Kampirqoq noyob topilmasi - Beshariq tumanida G‘uzon tog‘ining janubi-g‘arbiy davomi bo‘lgan Kampirqoq tog‘ining janubiy yonbag‘rida joylashgan. Unda yura davrining 160-180 mln yoshli qatlamlari orasida toshga aylangan ko‘plab o‘simlik qoldiqlari, dinozavr umurtqalari va ikki xil, ya’ni ham oyquloq, ham o‘pka bilan nafas oluvchi qiltanoqli baliqlar uchraydi. Bunday noyob topilmalardan ilmiy, o‘quv-ma’rifiy va turistik maqsadlarda foydalanish mumkin.

Oqtuproq g‘ori - So‘x daryosi vodiysining o‘ng sohilida G‘aznov antiklinalining tektonik yoriqlar bilan murakkablashgan shimoliy yonbag‘rida gipsli qatlamlarda karst hodisasidan hosil bo‘lgan. Uning uzunligi 150 m, kengligi 10-40 m ga teng. G‘ordan ilmiy, o‘quv-ma’rifiy, turistik maqsadlarda foydalanish mumkin.

Devayron g‘ori - So‘x tumani Devayron qishlog‘idan 4 km shimoli-g‘arbida, paleozoy (quyi devon) ohaktoshlaridan tuzilgan gumbazsimon qoyada joylashgan. Uning umumiy uzunligi 103 m, og‘zining kengligi 1,5 m, o‘rtacha kengligi 3,6 m. G‘orning ayrim joylari 6 metrgacha kengayadi. Umumiy maydoni 370 m2, hajmi 1488 m3. G‘orning og‘zidan 10 m pastda qoya etagida buloq hosil bo‘lgan. Devayron g‘ori Farg‘ona viloyati hududida joylashgan eng yirik karst g‘oridir. Undan ilmiy, o‘quv-ma’rifiy rekreatsiya va turizm maqsadlarida foydalanish mumkin.

“Markaziy Farg‘ona” tabiat yodgorligining umumiy maydoni 142,5 gektar bo‘lib, 122 gektarni o‘rmonlar bilan qoplangan do‘ng-marza qumlar, 14 gektarini qamish, oqbosh, yulg‘unlar o‘sadigan qumlar orasidagi pastqamliklar, 6,5 gektarni sho‘rxok erlar egallaydi. Hududda “Qizil kitob”ga kiritilgan Farg‘ona chipor kaltakesagi, Shtraux qurbaqaboshi, echkiemar, to‘stovuq, to‘ng‘iz, o‘qilon va ko‘rmailonlar muhofazaga olingan. Bu erdagi boy o‘simlik va hayvonot olamidan ilmiy, o‘quv-ma’rifiy, estetik va turizm maqsadlarida unumli foydalanish mumkin.

So‘x darasi - O‘zbekiston va Qirg‘iziston Respublikalari o‘rtasidagi davlat chegarasidan shimolga tomon Sarikanda va Qizilqiyoq qishloqlarigacha cho‘zilgan So‘xning chuqur va tor vodiysida joylashadi. Vodiyda Qorato‘qay va Tayan qishloqlari orasida daryo terrasalarining soni va nisbiy balandligi o‘zgaradi. Daryo vodiysi ayrim joylarda 3-4 m ga torayadi. Bu xususiyatlar yangi tektonik harakatlarning faolligi bilan izohlanadi. Daryo suvi hozirgi vaqtda to‘rtlamchi davr yotqiziqlarini ham yuvmoqda

Obshirsoy g‘orlari - So‘xning shimoliy-sharqida, paleozoy ohaktoshlari va slanetslaridan tuzilgan Haydarkon tog‘ining janubiy yonbag‘ri etaklarida joylashgan. U 5 dan ortiq g‘orlar guruhidan tashkil topgan. G‘orlar asosan karst hodisasi va qisman antropogen omil ta’siridan hosil bo‘lgan. Ularning eni 8-26 m, balandligi 10-12 m ga boradi. G‘orlardan mezolit, ya’ni o‘rta tosh asri davriga oid arxeologik ashyolar: tosh, qadama pichoqlar, parmalar, bigizlar, qirg‘ichlar va boshqalar topilgan. Ular qadimgi odamlarning yashash joylari bo‘lgan.

Chashma bulog‘i - So‘x tumanida joylashgan bo‘lib, tuzilishi doirasimon shaklli, diametri 20 metr, ko‘ndalangi kesimi 7-8 metrdir. Buloq hovuzining maydoni 50 m^2dan ortiq, chuqurligi 2-4 metrga boradi. Buloq suvi juda tiniq va havorang bo‘lib, juda mazaligi bilan ajralib turadi. U Obshirsoyning chap irmog‘i bo‘lgan Ko’lizardaksoyning vodiysida hosil bo‘lgan.

Shohimardon hududi - respublikamiz aholisining, shuningdek chet ellik turistlarning sevimli dam olish maskanlaridan biri. Lekin hozirgi kunda tartibsiz dam olishlar, turli qurilishlar va xo‘jalik faoliyati ta’sirida Shohimardon tabiati o‘zining noyob tabiiy xususiyatlarini yo‘qotib bormoqda. Uning tabiatidan sog‘lomlashtirish, rekreatsiya, turizm va boshqa maqsadlarda foydalanish uchun qulay imkoniyatlar mavjud

“Satkak buloqlari” - (10 ga) Farg‘ona tumanida Satkak adirining shimoliy-sharqiy chekkasidagi qadimgi daryo o‘zanida joylashgan bo‘lib, 5 ta hovuzli qaynar buloqlar guruhi mavjud. Buloq suvlarini rangi to‘q tusli, tiniq va ta’mi mazali. Ular er osti suvlarini Qopchug‘ay va Satkak adirlari tomonidan to‘silishidan hosil bo‘lgan.

“Arsif buloqlari” - so‘x konglomeratlaridan tashkil topgan Arsif antiklinal adirining shimoliy tik yonbag‘rida joylashgan. Siljiqlar bilan murakkablashgan. Eng ko‘p buloqlar siljiqqa yaqin joylarda kuzatiladi. Adir yuzasida shimilgan suvlar adirning shimoliy yonbag‘ri etagidagi yoriqlar bo‘yicha yuqoriga ko‘tarilib, ko‘plab buloqlarni hosil qilgan.

Sho’rsuv adirlari. O‘zbekiston va Beshariq tumanlari janubiy qismidagi past tog‘larni, Achchiqsuv (Sho‘rsuv) daryosi va Sho‘rsuv suv omborining

muhofaza zonalarini o‘z ichiga oladi. Bu hududda *Qiziltov (Qizilbel), Gultatov, Ko‘ktov va* Damyog‘di g‘ori kabi oronimik ob’ektlar uchraydi. Sho‘rsuv adirlari va uning janubidagi past tog‘lar viloyat hududida antropogen ta’sir natijasida nisbatan kuchsiz o‘zgargan landshaftlar hisoblanadi. Bu erda iqlimning quruqligi (80-100 mm), daryo tarmoqlarining kuchsiz rivojlanganligi, nurash mahsulotlarining yirik skeletli va toshloqli bo‘lishi qiziqarli va noyob rel’ef shakllarining hosil bo‘lishiga olib kelgan.

Farg‘onani aziz, muqaddas, avliyolar va buyuk insonlar abadiy qo‘nim topgan joylardan biri sifatida e’zozlashadi. Xalqimiz ulug‘ din ulamolari, buyuk kishilar, avliyolar qabristonlarni ziyorat etish, o‘tganlar ruhini shod etish maqsadida Farg‘ona shahri va uning tumanlaridagi ziyoratgohlarga tashrif buyurishadi va katta ma’naviy va estetik kuch olishadi. Hozirgi kunda vodiy aholisi asosan mustaqil ravishda(tur paketlardan foydalanmagan holda) ziyorat qilish maqsadida ziyoratgohlarga tashrif buyurishmoqda. Sayohatchilar soni va ularniing atrof muhitga ta’sirini o‘rganish muhim ahamiyatga ega. Vodiyda diniy turizmni yanada rivojlantirish uchun muqaddas ziyoratgohlarni atroflicha o‘rganish va tavsiyalar ishlab chiqish talab etiladi.

Ahmad al-Farg‘oniy majmuasi (Farg‘ona viloyati) - Majmua mustaqillik davrida - 1998 yilda bunyod etilgan. Abul Abbos ibn Muhammad ibn Kasir Ahmad al-Farg‘oniy 797 yili Farg‘ona vodiysining Qubo (Quva) qishlog‘ida tug‘ilgan. Xalifa Horun ar-Rashidning sharqiy erlaridagi muovini, o‘g‘li Ma’munning Marvdagi olimlari doirasiga kirgan. Ahmad al-Farg‘oniy nihoyatda mashhur olim bo‘lib, asarlarining tarjimasi bir necha asrlar davomida hatto Evropa universitetlarida ham asosiy darslik sifatida qo‘llanilgan. Manbalarda Ahmad al-Farg‘oniy va uning 861 yilgi ixtirolari haqida ko‘p gapiriladi. U ixtiro qilgan "Miqyos an-Nil " (Nil daryosi suvini o‘lchash) hozirgi kunda ham Misrning Qohira shahrida saqlanib qolgan. Vafoti taxminan 865-866 yillar, deb qabul qilingan.

Burxoniddin Marg‘inoniy (ramziy) maqbarasi (Farg‘ona viloyati) - O‘zbekiston Respublikasi Prezidenti Islom Karimov sa’y-harakatlari bilan allomaning ramziy maqbarasi 2000 yilda Rishton shahrida bunyod qilindi. Buyuk faqih Abul Hasan Ali ibn Abu Bakr ibn Abduljalil al-Farg‘oniy ar-Rishtoniy al-Marg‘inoniy 1123 yilning 23 sentyabrida tug‘ilgan. U Qur’on, hadis va fiqh ilmini benihoya chuqur va mukammal egallagani va bu sohada beqiyos durdonalar yaratgani tufayli "Burhon ad-din val-milla" (Din va ummatning hujjati) degan nom olgan. 1178 yili yozgan "Al-Hidoya" asari fiqh bo‘yicha eng aniq, izchil, mukammal asar sifatida butun Islom olamida hanafiy mazhabining fiqh masalalaridagi asosiy qo‘llanmasiga aylangan.

Xulosa

Farg‘ona viloyatida ekologik va ziyorat turizmini rivojlantirish uchun mustahkam asos mavjud bo‘lib, bu viloyat iqtisodiyotining yangi drayveri bo‘lishi mumkin. Viloyatning tabiiy landshaftlari, tog‘ oldi hududlari, shifobaxsh suvlari va flora-faunasi ekoturizm uchun ulkan salohiyat yaratadi. Shu bilan birga, tarixiy

Samarqand, Buxoro shaharlari bilan deyarli tengdosh bo‘lgan Quva, Marg‘ilon kabi qadimiy maskanlardagi muqaddas qadamjolar, diniy-ma’naviy obidalar ziyorat turizmining kelajagini belgilaydi. Ushbu salohiyatni to‘liq ishga solish uchun bir nechta choralar ko‘rish zarur. Birinchidan, zamonaviy turistik infratuzilmani, jumladan, turar joylarni va transport logistikasini yaxshilash lozim. Ikkinchidan, yangi, o‘ziga xos ekologik va ziyorat marshrutlarini ishlab chiqish va ularni xalqaro bozorlarda faol targ‘ib qilish muhim. Natijada, bu harakatlar orqali yangi ish o‘rinlari yaratiladi, hududlarning ijtimoiy-iqtisodiy holati yaxshilanadi va Farg‘ona viloyatining O‘zbekiston turizm xaritasidagi o‘rni mustahkamlanadi.

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TOURISM DEVELOPMENT MECHANISMS: ANALYSIS OF KEY FACTORS AND PROMISING APPROACHES

Annotation: *This article analyzes the mechanisms of tourism development and the key factors influencing its growth. It examines the natural-geographical, historical-cultural resources that determine tourist potential, as well as the macroeconomic factors activating tourism—the role of infrastructure, political stability, service quality, and technological innovations. The paper substantiates the need to implement promising approaches aimed at ensuring sustainable growth of the tourism sector, specifically digitalization, adherence to ecological standards, and effective marketing strategies.*

Key words: *Tourism, Development Factors, Infrastructure, Sustainable Tourism, Pilgrimage Tourism, Ecotourism, Technological Innovations*

Introduction.

Today, tourism has become a powerful socio-economic and political factor that greatly influences the structure of states and the policies of a number of countries and regions. Tourism is one of the most profitable types of business in the world, comparable in terms of investment efficiency to the oil and gas industry and the automobile industry. In the tourism system, the interests of the economy and culture, security and international relations, ecology and employment, hotel business and transport organizations are inextricably linked. The development of tourism is of great importance both for the state as a whole and for the individual in particular. As a complex socio-economic system, tourism is influenced by a large number of factors, the role of which can vary both in terms of the strength of influence and its duration at each specific time. Therefore, it is necessary to take them into account in order to organize effective tourism activities.

Literature analysis and methods

Factors influencing tourism are divided into two groups [1]:

- external (exogenous);
- internal (endogenous).

External factors influence tourism through changes in society and have different significance for different elements of the tourism system. The most important external factors include:

- natural, geographical;
- cultural and historical;
- economic;
- socio-cultural;
- demographic;
- political and legal;
- scientific and technical;

- ecological.

Natural geographical (seas, mountains, forests, flora and fauna, favorable climate, etc.) and **cultural and historical** (architectural monuments, history and culture) factors play an important role in choosing a particular region to visit as the basis of tourism resources.

The wealth of natural and cultural and historical resources, their accessibility and ease of use have a significant impact on the scale, pace and direction of tourism development. Such resources give them an advantage over rich countries. Magnificent natural objects (for example, Lake Baikal in Russia, Mount Jamolungma in Nepal, Niagara Falls and the Grand Canyon in the USA, the beaches and climate of the countries bordering the Mediterranean Sea), historical and cultural monuments (for example, the pyramids of the pharaohs in Egypt, the Acropolis in Greece, the Colosseum in Italy, the Taj Mahal in India, etc.), works of art collected in museums of certain countries (for example, the Louvre in France, the Hermitage in Russia, etc.), on the one hand, are considered universal wealth, and on the other hand, they are considered a factor that encourages foreign tourists to visit a particular country. Moreover, the natural and climatic resources of a country and its attractions become a common good only through tourism [3].

The influence of **economic factors** on tourism is observed in the existence of an inextricable link between tourism and economic development trends. There is a direct relationship between the economic development of a country, the size of its national income, and the material well-being of its citizens.

The development of tourism is largely determined by the influence of socio-**cultural factors.** They affect both the level of consumption of an individual and the composition of the consumption of society as a whole.

Culture is a unique way of organizing and developing a society, which is expressed in the products of creativity, spiritual values, the sum of people's relationships with nature, with each other and with themselves. Culture influences the consumer by determining the boundaries of his personal behavior and the influence of various social institutions (family, media, education system). The cultural environment has a great influence on such basic values as the attitude to risk, personal freedom, and the pursuit of success in society. In this regard, the French scientist A. Mol called culture even a “mechanism for the formation of needs”. The processes taking place in the field of culture are the deepest cause of human desires. His behavior is largely acquired, that is, brought up by culture [2].

Thus, cultural factors have a great influence not only on consumer behavior, but also on the development of tourism in general.

Among the social factors of tourism development, first of all, it is possible to highlight the increase in the duration of free time, which, in combination with an increase in the standard of living of the population, provides an influx of new tourists. The extension of the annual vacation period is associated with the modern scientific and technological revolution, in such conditions the importance of mental labor increases, the tension of production and livelihoods increases. All

this leads to physical and mental fatigue of people. Tourism in many ways helps to restore working capacity [5].

Thus, under the influence of socio-cultural factors, specialized tourism according to interests acquires particular importance. Tourism enterprises should direct their products to specific target groups of tourists. The increasing complexity of tourist needs is leading to further differentiation of tourism.

The development of tourism is also greatly influenced by **demographic factors** related to population size, its distribution in individual countries and regions, gender and age structure (separating the working-age population, students, and pensioners), marital status, and family composition.

Tourism is carried out in certain territories. Therefore, local authorities participate in its regulation. From this point of view, local authorities are understood as local organizations that create appropriate conditions for the tourism business aimed at engaging in economic activities intended for tax revenue to the local budget [6].

A host country is a country that has tourist facilities and provides employment for its population by providing tourism services. In this regard, it is appropriate to define it.

Results and discussion

Tourist facilities are understood as objects of historical, spiritual and educational importance within the country, such as historical monuments, tombs of great personalities, museums, etc.

If we proceed from these definitions, for tourist activities to occur, the presence of tourists, tourist facilities, tourist goods, methods of their sale, local authorities and the population serving tourists, and the process of economic, social and legal relations between them must be ensured. In this regard, tourism is an independent field that encompasses a complex set of socio-economic and legal relations. Based on these theoretical interpretations, tourism can be defined.

Understanding the motives of people preparing for travel is an important factor for travel organizers, including tour operators. For example, the needs of business people traveling for business purposes for services and hotels are fundamentally different from the needs of people traveling for recreation and entertainment.

Natural and climatic motives of tourism are of great importance for tourists. Natural and climatic features play a significant role in the formation of certain forms of tourism (in particular, sea, sports and mountain tourism). For residents of large cities who want to relax, have fun and change the environment in tourism, natural and climatic motives take on the form of psychological and biological requirements, therefore their importance increases significantly.

The group of economic factors includes socio-economic conditions of tourist trips. These include the income of buyers of various products, prices for tours, goods and services in places where tourists are received, the level of development of tourist infrastructure, as well as the level of development of service sectors, transport system, trade sectors, as well as the presence of shops

selling goods at low prices for foreign tourists. Economic factors play a primary role in the formation of an assortment of inexpensive goods and affect the increase in the number of middle-income tourists.

Psychological factors include the motives that motivate tourists to travel in accordance with their psychological requirements. They include people's religious beliefs, their specific needs and inclinations, their attitude to advertising, etc.

The analysis shows that, with the exception of the presence of economic and sentimental motives, only a small number of tourists return to their previous places. With increasing income, a person turns his attention to psychological motives when choosing a new tourist destination. If we consider the motives that motivate tourists to travel, then there can be quite a lot of goals. However, it is important to understand that in all trips (only under this condition can it be called a tourist trip) there is one main goal. This goal is a priority for the tourist, and it is his achievement (or failure to achieve) that is the basis for making decisions about the effectiveness of the entire tourist trip. It is the presence of one main, priority goal that characterizes tourism as a specific type of activity in relation to travel.

In addition to the travel motives listed below, there are other specific motives. Understanding the motivations of tourists to travel to a specific tourist destination, which are self-directed, is crucial for understanding the motivations for the successful development of tourism products and services. Understanding the motivations that drive travel can help develop effective tourism policies and contribute to the growth of the tourism economy.

Conclusion

The successful development of tourism requires a complex synergy of natural, socio-economic, political, and technological factors. As analyzed in the article, while natural and cultural wealth (resources) form the foundation of tourism potential, macro factors such as the quality of infrastructure, security, and political stability play a decisive role in boosting tourist arrivals.

Future promising approaches should focus on the digitalization of tourism, sustainability (ecological standards), and the application of innovations in marketing. These approaches enhance the competitiveness of the tourism product, ensure adaptability to global changes, and lay the groundwork for the long-term, sustainable growth of the sector by generating economic benefits for local communities

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EPIDEMIOLOGY AND DEVELOPMENT OF TUBERCULOSIS

Annotation: *Modern science views tuberculosis as a multifactorial disease in which environmental factors closely interact with the human genome and the pathogen Drug-resistant tuberculosis complicates the treatment of patients with resistant strains of tuberculosis and threatens the global process to achieve the goals set by WHO in the Strategy to End Tuberculosis in the World*

Key words: *Mycobacterium tuberculosis, drug resistance, genetic mutations, treatment efficacy.*

Relevance

Modern science views tuberculosis as a multifactorial disease in which environmental factors closely interact with the human genome and the pathogen Drug-resistant tuberculosis complicates the treatment of patients with resistant strains of tuberculosis and threatens the global process to achieve the goals set by WHO in the Strategy to End Tuberculosis in the WorldEffective TB control is particularly difficult in patients with MDR TB, which is characterized by resistance to isoniazid and rifampicin, the two most powerful anti-TB drugs used in standard first-line treatment. World Health Organization experts report that by the end of 2014, 153 countries reported circulating drug-resistant TB strains in the region, 80 of which have continuous surveillance systems in place.

It has been shown that resistance factors that significantly aggravate the transmission of tuberculosis resistant to first-line and second-line drugs and show the importance of conducting broader genetic and molecular studies in this area [22].

Determination of genetic polymorphism of monoresistant mycobacterium tuberculosis to isoniazid and epidemiological assessment of drug-resistant forms of tuberculosis, development of a management strategy aimed at reducing MDR-TB type of tuberculosis in Uzbekistan.[16]

Material and research methods.

Modern science views tuberculosis as a multifactorial disease in which environmental factors closely interact with the human genome and the pathogen Drug-resistant tuberculosis complicates the treatment of patients with resistant strains of tuberculosis and threatens the global process to achieve the goals set by WHO in the Strategy to End Tuberculosis in the World

However, the growing resistance to drugs remains a problem, the following main groups of causes of the growth of drug-resistant tuberculosis are

distinguished: bacteriological, pharmacological, clinical and socio-administrative. [2, 16, 24,]

Studies have established that resistance to various anti-tuberculosis drugs (ATPs) has arisen due to inappropriate use, incorrect prescription, poor quality of drugs, and non-compliance with treatment regimens by patients [2].

In modern phthisiology, non-compliance with the necessary requirements in medical practice is an important reason for insufficiently effective therapy along with natural resistance. An important problem is the acquired resistance of Mycobacterium tuberculosis to antibiotics. Resistance to one of the drugs turns into resistance to several at the same time, and the emergence in medical practice of completely drug-resistant forms of pathogens can make this pathology incurable.

To date, globally there has been an increase in cases of drug resistance (DR) of the causative agent of tuberculosis, in particular, multidrug resistance (MDR) and extensive drug resistance (XDR) of the causative agent of tuberculosis. It has been found that DR negatively affects the results of treatment and increases the economic costs of TB treatment, especially when there is resistance to isoniazid and rifampicin.

WHO distinguishes the following types of drugs: [2016]

- primary drug resistance is a DR in a patient with tuberculosis who has not previously received anti-TB drugs or was treated with them for no more than 1 month. The study of primary DR using genetic methods makes it possible to predict the epidemiological situation in the region, as it reflects the degree of infection spread among the population;

- acquired (secondary) drug resistance is a DR formed during the treatment of anti-TB drugs or detected in repeated cases of tuberculosis and confirmed by genotyping.

Recurrent cases, including recurrences of tuberculosis, may also be the result of re-infection [2].There are the following types of MDR Mycobacterium tuberculosis monoresistance - DR Mycobacterium tuberculosis only to one first-line anti-TB drug;polyresistance - DR to two or more anti-TB drugs, excluding resistance to both isoniazid and rifampicin;

MDR is a special category among multidrug-resistant strains, where there is resistance to both isoniazid and rifampicin, regardless of resistance to other drugs;

XDR is a form of MDR with resistance to at least rifampicin and isoniazid, as well as any of the fluoroquinolones and one of the second-line injectables kanamycin, amikacin, capreomycin. [3]Such strains can be resistant to 9 drugs. The emergence of variants resistant to antibacterial drugs is a natural phenomenon, an expression of the adaptation of species to the environment [21].The development of LU in mycobacteria is regarded as a manifestation of one of the forms of bacterial cell variability under the influence of chemotherapy drugs. Rifampicin resistance identified by phenotypic or genotypic methods, with or without resistance to other anti-TB drugs. The situation is complicated by an increase in the number of Mycobacterium tuberculosis MDR strains, as well as

species with an increased ability to transmissibility, such as strains of the Beijing Mycobacterium tuberculosis family [18].

While multidrug-resistant strains and MDR can be treated with second-line antibiotics, XDR, which is resistant to second-line antibiotics, leaves no treatment options for the clinician. The effectiveness of the treatment of patients with MDR/XDR Mycobacterium tuberculosis is only 54% MDR and 28% with high DR, with a positive therapeutic outcome compared to drug-sensitive 83% of cases [18].

There are currently 600,000 TB patients in the world who are shedding Mycobacterium tuberculosis with MDR, while only 125,000 cases have been registered. The low effectiveness of treatment (up to 52%) in these patients is due to the late detection of LU, the late start of the use of rational chemotherapy, which leads to the development of widespread destructive changes in the lungs, prolongation of the cessation of bacterial excretion, and chronicity of the process. [7.8]

Yablonsky P.K. [2016] indicates that a sharp increase in the structure of DR occurs due to the growth of MDR and XDR, which amounted to 81.9% compared to previous years (28.5% in 1984-1988). With extrapulmonary tuberculosis, the growth of DRs of Mycobacterium tuberculosis continued at a faster pace. The author points out that a rapid aggravation of the process was observed due to the increase in MDR/XDR strains - from 10.5% to 69.5%. [21].

The researchers note that in tuberculous spondylitis, the most severe and common form of osteoarticular tuberculosis, out of 78 Mycobacterium tuberculosis isolates with an MDR/XDR resistance profile, 70 (89.7%) belonged to the Beijing genotype. The growth rates of XDR in pulmonary tuberculosis exceeded those in extrapulmonary tuberculosis - from 26.8% to 39.5%. The authors believe that the situation with DR of Mycobacterium tuberculosis in all localizations of the disease can be characterized as tense with unpredictable consequences [6.7.8]

Currently, true genetic and acquired resistance is distinguished [16]:

true genetic resistance, being a species trait of the pathogen, is associated with the absence of a target for the action of an antibiotic or, poor permeability of the cell wall, in some cases manifests itself in the form of efflux. Thus, Mycobacterium tuberculosis has true genetic resistance to many antimicrobial drugs belonging to the families of penicillins, β-lactams, macrolides, carbapenems, cephalosporins, tetracyclines;

the acquired resistance of Mycobacterium tuberculosis is formed due to the development of point mutations in chromosomes and the formation of new genes that control the synthesis of new enzyme proteins that destroy specific PTPs.

Acquired LU is divided into primary and secondary. Primary DR is defined in patients who become infected with drug-resistant strains of Mycobacterium tuberculosis, despite the fact that these patients have not previously taken anti-TB drugs. Secondary LU develops during the treatment of a patient with tuberculosis,

the development of this phenomenon takes 3-6 months from the start of therapy [11,14,17].

The danger to patients is represented by multidrug-resistant strains simultaneously resistant to isoniazid and rifampicin. Diseases caused by such isolates of Mycobacterium tuberculosis are known to be progressive and difficult to treat. There are results of analysis of MDR clinical isolates of Mycobacterium tuberculosis with multiple gene mutations, some of which relate to isoniazid. This drug has become the most widely used drug in the treatment of tuberculosis caused by drug-susceptible strains of mycobacteria, along with rifampicin and pyrazinamide. In addition, prophylactic isoniazid monotherapy has been used in the treatment of occult tuberculosis [15,18].

It has been established that inhibition of the synthesis of mycolic acids, a component of the cell wall of Mycobacterium tuberculosis, by isoniazid leads to deprivation of acid resistance. The presence of mycolic acids in Mycobacterium tuberculosis makes it resistant to many types of treatment, and their synthesis is absolutely necessary for the survival of this pathogen.

A number of studies have shown that isoniazid works against active mycobacteria in the presence of oxygen. The drug is not active under anaerobic conditions against bacteria that are in a latent state. Along with this, the temperature regime is of no small importance, so at 37 ° C the activity increases and decreases at 4 ° C, which shows the connection of isoniazid with the enzymatic activity in the bacterial cell. Further manifestation of antibacterial activity, which depends on the activation of the catalase-peroxidase enzyme, KatG, inside the bacterial cell [20].

Like other anti-TB drugs, resistance to isoniazid appeared in Mycobacterium tuberculosis soon after its introduction and has reached high levels over the past 20 years. Several intracellular targets of this drug are known - a complex of enzymes involved in the synthesis of mycolic acids. Mutations in the genes encoding these proteins (inhA, acpM, and kasA) can cause resistance to isoniazid.

According to Burmistrova I.A. [2018], resistance to isoniazid with preserved sensitivity to rifampicin occurs in 12.1% of bacterial excretors. Polychemoresistance with fixed resistance to isoniazid significantly complicates the prognosis of the disease. [5,6]

According to a number of authors, resistance to isoniazid not only increases the risk of developing MDR, but is also the most important factor in an unfavorable long-term outcome of treatment [9].

Along with this, the resistance of mycobacteria to isoniazid occurs due to hyperproduction of targets for the action of active forms of the drug. For example, proteins involved in the transport of mycolic acid precursors and its biosynthesis: acylated carrier protein (acpM gene), synthetase (kasA gene) and reductase (inhA gene) of the carrier protein. Most of the mutations are found in the promoter regions of these genes. The degree of resistance associated with overproduction of

targets is usually lower than with mutations in the catalase-peroxidase genes. The overall prevalence of isoniazid resistance exceeds 13% [23,24]

The lack of accelerated diagnosis of tuberculosis with resistance to isoniazid with preserved sensitivity to rifampicin may be the reason for the low effectiveness of therapy and lead to amplification of DR, including the formation of MDR.

Detection of LU by cultural methods on dense nutrient media takes at least 10-12 weeks. The currently used molecular genetic methods for the rapid detection of MDR pathogens meet the task, but are not generally available, require special laboratory equipment, additional staff training. The molecular genetic cartridge method allows simultaneous detection of Mycobacterium tuberculosis DNA in diagnostic material and mutations in the rpoB gene associated with the development of DR to rifampicin, often associated with resistance to isoniazid. Studies have shown high sensitivity (96-100%), specificity (100%), biosafety of the method [7.8]

Petrova L.V. [2019] studied the effect of using the molecular genetic method PCR-RT in the algorithm of microbiological diagnostics of 344 patients with MDR tuberculosis on the effectiveness of chemotherapy. It has been shown that the use of RT-PCR to determine mutations in samples of diagnostic material associated with LU to rifampicin, isoniazid and fluoroquinolones, and early prescription of the appropriate chemotherapy regimen based on this study, followed by correction of the treatment regimen based on the results of phenotypic methods of testing LU, allows, on average, to 3.6 to 2.5 months To reduce the time of cessation of bacterial excretion, determined by the method of sowing. [13,16]

The study studied the frequency, spectrum and nature of the primary DR of Mycobacterium tuberculosis isolated from patients with infiltrative pulmonary tuberculosis over a 9-year period. An increase in the frequency of DR of Mycobacterium tuberculosis by 1.4 times was revealed, as well as an increase in resistance to a larger number of anti-TB drugs. A 3-fold increase in the proportion of MDR pathogens was established. [11,12]

The authors studied DR, the spectrum of mutations that cause resistance to rifampicin and isoniazid, viability, cytotoxicity, and performed genotyping of 111 clinical isolates of Mycobacterium tuberculosis. Spoligotyping revealed 28 spoligotypes; the largest number of strains belonged to the Beijing and LAM genetic families. Typing of 59 strains of the SIT1 spoligotype (Beijing) made it possible to differentiate 19 variants of IS6110-RFLP profiles: 13 were individual, 6 were represented by clusters. Clusters A0 and B0 included the largest number of strains of Mycobacterium tuberculosis 21 (35.6%) and 17 (28.8%), respectively.

A comparative evaluation of the effectiveness of tuberculosis chemotherapy in 185 patients with pulmonary tuberculosis, determined using the GeneXpert MTB/RIF cartridge test system and determined by inoculation on liquid media, was carried out. The appointment of chemotherapy based on the results of the GeneXpert MTB/RIF test, followed by correction based on the results of seeding

for Bactec MGIT 960, significantly improves treatment outcomes in patients with tuberculosis with MDR pathogen, both in terms of the rate of cessation of bacterial excretion and the rate of closure of destruction, compared with the group, where the correction of treatment was carried out only by the result of inoculation on liquid media.

Regional studies in the Republic of Uzbekistan showed that the prevalence of MDR tuberculosis among newly diagnosed patients was 23%, and among relapses 62%. The results of the DOTS strategy have shown the failure of first-line therapy among some patients. A high level of tuberculosis with MDR was detected in the RRC. 13% of never treated TB patients were infected with MDR strain

According to Sayfutdinov Z.A., in 2010-2021. was conducted sensitivity tests for isoniazid in 10 815 cultures of Mycobacterium tuberculosis, and the results of the study showed that resistance to this drug was 58%. However, studies in some years have shown that this figure was 73% (2011), 61% (2012) and 66% (2016, 2018).

Given the importance of mutations in the InhA gene in the development of MDR TB strains, a broader study of this mutation simultaneously showed that Mycobacterium tuberculosis induces cross-resistance to the drug proteonamide/ethionamide, which is a 2-line anti-TB drug. Although the mutation in the InhA gene detected by molecular genetic analysis (17%) was lower than resistance to ethionamide/prothionamide detected by phenotypic DST (31%), early diagnosis (within 2-3 days) and timely application of appropriate therapy patients reduces the interval for issuing results to 45 days.

To date, attempts are being made to improve preventive and therapeutic measures for tuberculosis infection. The coincidence of the DR spectrum of MBT cases from contact of children and adults with the source of infection was confirmed [1,2].

Attempts are being made to develop a model of a patient with drug-resistant pulmonary tuberculosis. Further study of drug resistance creates promising opportunities for limiting resistance in TB infection.

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WAYS TO IMPROVE THE COMFORT AND PERFECTION OF THE MOVEMENT OF THE POPULATION ON THE EXAMPLE OF A METROPOLITAN STATION

Abstract: *The article to some issues of the formation of the space of public transport stops in a large city with the aim of creating new, more advanced innovative solutions for the ways of moving the population in a single functional system of purposeful behavior, using the example of metro stations is devoted.*

Key words: *metro station, information, architecture, design, innovative space, passenger, pedestrian, transport.*

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METROPOLITEN BEKATI MISOLIDA AHOLI HARAKATLANIShINING QULAYLIGINI OShIRISh VA MUKAMMALLAShTIRISh YO‘LLARI

Annotatsiya: *Maqola metropoliten bekati misolida, katta shahridagi jamoat transporti to‘xtash joylarining shakllantirishda aholi harakatlanish yo‘llarini qulayligini oshirish va mukammallashtirish maqsadli roli. Yagona funktsional tizimida birlashtirilgan yangi, yanada mukammal innovatsion ayrim yechimlarini yaratishdir.*

Kalit so'zlar: *metro bekati, ma'lumot, arxitektura, dizayn, innovatsion makon, yo'lovchi, piyoda, transport.*

KIRISH

Bugungi urbanizatsiyalashgan davrda katta shaharlarda aholining tez sur’atlarda ko‘payishi, avtomobillar sonining ortishi, transport tirbandliklari, shovqin va ekologik muammolar jamoat transporti tizimlariga bo‘lgan ehtiyojni keskin oshirmoqda. Ayniqsa, metropoliten – ya’ni yerosti temiryo‘l tizimi – zamonaviy katta shaharlarda jamoat transportining o‘zagi va nafaqat qulay, xavfsiz va ekologik toza transport vositasi, balki arxitektura va madaniyatning ajralmas qismiga aylangan.

Aktualligi. Metro shunchaki harakatlanish vositasi emas, balki shahar estetikasini belgilovchi, texnologiya bilan madaniyatni uyg‘unlashtiruvchi zamonaviy inshootdir.

Metropoliten (fransuzcha *métropolitain* so‘zidan olingan) — yirik shaharlar ostidan o‘tuvchi, yo‘lovchilarni tez va xavfsiz tashishga mo‘ljallangan temiryo‘l

tizimi bo‘lib, ilk bor 1863-yilda Londonda qurilgan. Bugungi kunda ushbu tizim dunyoning 180 dan ortiq yirik shaharida faol ishlamoqda va ularning texnologik taraqqiyoti, urbanistik madaniyati hamda ijtimoiy-iqtisodiy salohiyatini aks ettiruvchi muhim belgilardan biri hisoblanadi.

Asosiy qism.

O‘zbekiston shaharsozlik siyosatida metropoliten transport tizimining rivojlantirilishi ustuvor yo‘nalishlardan biri sifatida qaralmoqda. Prezidentimiz Shavkat Mirziyoev bu borada quyidagicha ta’kidlaydi: *“Metropolitenga kiritilayotgan har bir sarmoya – bu xalqimizning xavfsizligi, qulayligi va shahrimiz kelajagiga yo‘naltirilgan eng muhim investitsiyadir.”* Aynan shu yondashuv asosida metropoliten nafaqat transport infratuzilmasi sifatida, balki ijtimoiy-madaniy makon sifatida ham qaralayapti. Prezident yana shunday deydi: “Agar shaharni obod qilishni istasak, eng avvalo, odamlar yuradigan joyni, jamoat transportini, piyodalar yo‘laklarini, metro bekatlarini zamonaviylashtirishimiz kerak.”

Metro bekatlari bugungi kunda inson ruhiyatiga ta’sir etuvchi estetik makonga aylanib bormoqda. Bu yerda dizayn, rang, yoritish, naqsh va materiallar insonning ichki dunyosiga bevosita ta’sir ko‘rsatadi. Toshkent metropoliteni ham ana shu tamoyil asosida shakllantirildi. Jumladan, har bir bekat – bu nafaqat transport nuqtasi, balki xalqimizning tarixi, madaniyati, estetik didi va san’atga bo‘lgan munosabatini ifoda etuvchi me’moriy obidadir.

Metro loyihalari me’yoriy jihat reglamenti asosida amalga oshirilmoqda [1]. Ushbu hujjatda zilzilabardoshlik, evakuatsiya yo‘llari, energiya ta’minoti, sun’iy yoritish, ventilyatsiya, nogironlar uchun moslashuv, axborot tizimlari kabi talablar qat’iy belgilangan. Bu orqali metro inshootlari har tomonlama xavfsiz, ekologik va estetik jihatdan barqaror muhitga aylantirilmoqda.

Maqsad izlanish orqali metropoliten inshootlarining shahar hayotidagi texnik, estetik va sotsiopsixologik o‘rni yanada teran ochib berish.

Metroda har bir inson o‘z holati bilan yashaydi - kimdir shoshqaloq, kimdir osoyishta, lekin ularning barchasini bir yo‘l, bir yo‘nalish bog‘laydi. Bu yerda turli yosh, kasb va dunyoqarashga ega insonlar - talaba, xizmatchi, ota-onalar, keksalar, yoshlar - bir makonda jam bo‘ladi. Bu go‘yo jamiyatning qisqa lekin chuqur kesimidir.

Metro madaniyati ham shakllangan: kimdir boshqasiga joy beradi, kimdir eshik oldida yo‘l ochadi. Bu ko‘ngil iltifoti va hurmat orqali shakllangan yashirin mehnat - metroda madaniyat hayot tarzi bo‘lib ulgurgan. Bugungi metropoliten esa yanada inklyuzivlashib bormoqda.

Toshkent metrosida imkoniyati cheklangan fuqarolar uchun maxsus liftlar, rampalar, qo‘l suyagichlar, eshitish va ko‘rish bo‘yicha ogohlantiruvchi belgilar, Braille yozuvlar o‘rnatilgan. Bu metroni nafaqat zamonaviy, balki har bir inson uchun qulay va hurmatli makonga aylantiradi. Bu yondashuv metropolitenni oddiy transport vositasi emas, balki jamiyatdagi barcha qatlamlar uchun teng imkoniyat yaratuvchi ijtimoiy makon sifatida namoyon qiladi. Nogironligi bo‘lgan shaxslar ham metropoliten orqali o‘z yo‘nalishida mustaqil va erkin harakatlanish

imkoniyatiga ega bo‘lib, ularning ijtimoiy integratsiyasiga xizmat qiladi. Ovozli ogohlantirishlar, yoritilgan belgilar va zamonaviy texnologiyalar metrodagi harakatni osonlashtiradi.

Shunday qilib, metropoliten – bu nafaqat yo‘l, balki zamonaviy shaharning ijtimoiy adolat va insoniylik tamoyillarini ifodalovchi inshootdir. Davlat dasturlari va rasmiy qarorlar asosida metropoliten tizimining rivojlanishi O‘zbekiston Respublikasi hukumati tomonidan so‘nggi yillarda jamoat transporti, xususan metropoliten tizimini zamon talablari asosida modernizatsiya qilish, ekologik toza va barqaror transport vositalarini keng joriy etish masalasiga alohida e’tibor qaratilmoqda. Bu boradagi huquqiy va strategik asoslar bir qator muhim davlat qarorlari va rivojlantirish dasturlari orqali mustahkamlangan bo‘lib, ular quyidagi yo‘nalishlarni qamrab oladi:

“Toshkent shahrini transport bilan ta’minlash 2025” dasturi [1, 2]. Ushbu Prezident qarori poytaxtda jamoat transporti sohasiga fundamental o‘zgartirishlar kiritishni, transport harakati oqimini barqarorlashtirish va yo‘lovchilar qulayligini oshirishni maqsad qiladi:

2022-2025-yillarda 16 ta yirik chorrahalarda transport-o‘tkazish (transfer) tugunlari tashkil etilishi rejalashtirilgan. Bu joylarda metro, avtobus va boshqa transport tarmoqlari integratsiyalashib, yo‘lovchilarga "oxirgi kilometr" prinsipida uzluksiz harakat imkoniyati yaratadi. Dastur doirasida metro va avtobus tarmoqlarini hamda boshqa jamoat transportini integratsiyalash yuzaga qo‘yilgan bo‘lib, bu yo‘lovchi oqimini hamda qulaylikni ishlab chiqilgan yagona tizim orqali ta'minlashni ko‘zlaydi [2, 3].

“Smart metro” - intellektual texnologiyalar joriy qilinmoqda Metropoliten tizimiga “aqlli” texnologiyalar kirib kelishi bilan: yo‘lovchi oqimini hisoblash sensori**,** har bir bekatdagi yuklama va navbatlarni avtomatik qayd etadi; real vaqtda yangilanadigan axborot panellari – yo‘lovchilarga poezdlar vaqti, kechikishlar, marshrut o‘zgarishlari haqida uzluksiz ma’lumot beradi; mobil ilovalar orqali poezd kelish vaqti, yo‘nalishdagi harakat holati, eng yaqin bekatga yo‘l ko‘rsatish imkoniyati taqdim etiladi; yagona elektron chiptalash tizimi (“QR-kodli” yoki plastik karta) orqali foydalanuvchilarga qulay to‘lov va kirish-chiqish jarayoni yo‘lga qo‘yilmoqda[1, 4, 8]. Ekologik toza transportni qo‘llab-quvvatlash doirasida elektromobillar va elektrobuslar tarmog‘i kengaytiriladi. Bu orqali atmosferaga chiqariladigan chiqindilar minimallashtiriladi [5, 6].

Dastur natijalari va dolzarbligi “Toshkent shahrini transport bilan ta’minlash 2025” [2, 6]. dasturi nafaqat poytaxtdagi transport muammolarini bartaraf etishga, balki uzoq muddatli urbanistik rivojlanish strategiyasiga xizmat qiluvchi muhim hujjatdir. Quyidagi yo‘nalishlarda dastur amaliy natijalar berishi kutilmoqda:

Transport tizimidagi tirbandliklarning kamayishi Shahardagi yirik chorrahalarda zamonaviy transport-o‘tkazish tugunlari tashkil etilishi natijasida avtomobillar oqimi aniq yo‘naltiriladi, jamoat transporti esa ustuvor harakat

imkoniyatiga ega bo‘ladi. Bu esa ko‘p yillardan buyon yechimini kutayotgan tirbandlik muammosini bosqichma-bosqich kamaytirishga olib keladi.

Metro va avtobus tizimining uzviy bog‘lanishi har bir metro bekati atrofida avtobuslar, elektrobuslar va boshqa transport vositalari uchun maxsus platformalar, avtoturargohlar, “oxirgi kilometr” tamoyiliga asoslangan yo‘nalishlar tashkil etiladi. Bu esa yo‘lovchilarga istalgan manzilga bemalol yetib borish imkonini beradi va transportdan foydalanish madaniyatini shakllantiradi. [1, 7].

Raqamli texnologiyalar orqali xizmat sifat Dasturda ko‘zda tutilgan “Smart City” yondashuvi asosida joriy etiladigan yagona chiptalash tizimi, mobil ilovalar, real vaqt rejimidagi harakat jadvali kabi innovatsiyalar yo‘lovchilarning vaqtini tejaydi, ishonchli va qulay xizmatdan foydalanish imkonini beradi [1, 8]. Bunday raqamli integratsiya yo‘lovchilarga transportdan foydalanishda mustaqil qaror qabul qilish imkoniyatini beradi.

Inklyuzivlik va universal dizayn Metropolitenning har bir bekati imkoniyati cheklangan shaxslar uchun ham to‘liq moslashtirilmoqda. Bu orqali metro ijtimoiy tenglik tamoyiliga sodiq qolmoqda: Liftlar, rampalar va tutqichlar - nogiron aravachalari va keksalar uchun qulaylik yaratadi**;** Maxsus belgilar va yo‘laklar - ko‘zi ojizlar uchun harakatni soddalashtiradi; Eshik va platforma orasidagi xavfsizlik bo‘shliqlari - harakatlanishda xavf tug‘dirmaydigan holatda loyihalanadi.

Xulosalar.

Toshkent metropolitenining zamonaviy infratuzilmaga aylanishida asosiy poydevor vazifasini bajaradi. Bu orqali: yo‘lovchilarga xizmat ko‘rsatish sifati oshadi; favqulodda holatlar tezkor boshqariladi; energiya va vaqt tejaladi; metropoliten - jahon andozalariga mos ravishda intellektual tizimga aylantiriladi ijtimoiy jihatdan ilg‘or transport tizimi sifatida shakllanishiga xizmat qiladi.

Foydalanilgan adabiyotlar .

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EMOTSIONAL INTELLEKTNING TALABALAR AKADEMIK MUVAFFAQIYATIGA TA'SIRI

Annotatsiya: *Ushbu maqolada universitet talabalari orasida ijobiy psixologik xususiyatlar orqali hissiy intellektning psixologik farovonlik va akademik yutuqlar bilan bog'liqligi nazariy jihatdan o'rganilgan va amaliy jihatdan tadqiqot o'tkazililib ,statistik tahlil qilingan.*

Kalit so'zlar: *Hissiy intellekt(EI), akademik muvaffaqiyat, psixologik farovonlik,akademik motivatsiya,o'z-o'zini anglash, empatiya, stress, hissiy qoniqish.*

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INFLUENCE OF EMOTIONAL INTELLIGENCE ON ACADEMIC SUCCESS OF STUDENTS

Annotation: *In this article, the connection of emotional intelligence with psychological well-being and academic achievements through positive psychological characteristics among university students was theoretically studied, and research was conducted practically and statistically analyzed.*

Key words: *Emotional intelligence (EI), academic success, psychological wellbeing, academic motivation, self-awareness, empathy, stress, emotional satisfaction.*

KIRISH

Hissiy intellekt bir muncha vaqtdan beri ta'lim doirasida mashhur atama bo'lib kelmoqda. IQ (Intelligence Quotient) bilan bir qatorda, EQ (Emotional intelligence) har bir o'qituvchining barkamol, yetuk shaxslar bo'lib yetishishida yuqori o'rinni egallaydi. EQ hissiyotlarni sog'lom va samarali tarzda aniqlash, ulardan foydalanish, tushunish va boshqarish qobiliyati sifatida tavsiflanadi. Bu qobiliyat o'quvchilarga o'zlariga va boshqalarga hamdard bo'lishga, qiyin vaziyatlarda chalkashmasdan engishga yordam beradi. Bu munosabatlarga, akademik ko'rsatkichlarga va hatto talabalarning bosimga qanday munosabatda bo'lishiga ta'sir qiladi. Bu o'sishning o'ziga xos xususiyati bo'lib, bizning barcha e'tiborimiz akademik mukammallikka qaratilgan dunyoda tobora qiyinlashib

bormoqda. Bugungi kunda ko'proq tadqiqotlar his-tuyg'ularning o'rganishga qanday ta'sir qilishi haqida gapiradi.

O'tgan asrda biz shug'ullanadigan turli kontekstlarda (masalan, maktab, ish, sport va boshqalar) muvaffaqiyatning asosiy omillari sifatida sof kognitiv va akademik jihatlarga urg'u berish ,hissiy intellekt muhim deb hisoblangan ko'proq ijtimoiyemotsional yondashuvlar bilan almashtirildi. Hissiy intellekt o'z his-tuyg'ularini kuzatish, ular o'rtasida farqlash va bu ma'lumotlardan fikrlash va harakatlarini boshqarish uchun foydalanish qobiliyatini anglatadi[1]

Hissiy intellekt va akademik muvaffaqiyat o'rtasida yuqori korrelyatsiya mavjud, chunki his-tuyg'ular insonga sezilarli ta'sir ko'rsatadi.[3]Psixologiya, evolyutsion rivojlanish va ijobiy psixologiya maktabini o'rganish va o'qitish tamoyillariga asoslanib, hissiy intellekt va ruhiy jarayonlar, diqqatni jamlash va stressli vaziyatlarda o'zini o'zi boshqarish o'rtasida sezilarli bog'liqlik mavjuddir [4].Emotsional intellektning talabalar akademik muvaffaqiyatiga ta'siri ko'plab tadqiqotlar bilan tasdiqlangan. EI talabalarning o'z his-tuyg'ularini anglash va boshqarish, shuningdek, ijtimoiy ko'nikmalarga ega bo'lish qobiliyatini rivojlantirish orqali akademik natijalarni yaxshilaydi.

A. T. Pishchik tomonidan o'tkazilgan tadqiqot, emotsional intellektning akademik muvaffaqiyatga ta'sirini o'rganib, EI darajasi yuqori bo'lgan talabalar, o'z bilimlarini samarali tarzda qo'llay olishlari va stressli vaziyatlarda yaxshiroq natijalar ko'rsatishini ko'rsatdi. O'zaro aloqalar va hissiy boshqaruv qobiliyatlari, o'z navbatida, talabalar uchun murakkab vaziyatlarni hal qilishda muhimdir.

Loi va Pryse tomonidan olib borilgan alohida empirik tadqiqot universitet talabalarida hissiy intellekt, talabalarning farovonligi, o'z-o'ziga ehtiyotkorlik bilan g'amxo'rlik qilish va akademik charchash o'rtasidagi bog'liqlikni o'rganib chiqdi. Tadqiqot shuni ko'rsatdiki, hissiy intellekt farovonlik va aqliy o'zini o'zi saqlashga ijobiy ta'sir ko'rsatadi, shu bilan birga akademik charchashning bir qancha jihatlari bilan salbiy bog'liqdir. Shunisi e'tiborga loyiqki, tadqiqot shuni ko'rsatdiki, o'z-o'ziga ehtiyotkorlik bilan g'amxo'rlik hissiy intellekt va akademik charchashning o'ziga xos tarkibiy qismlari, ya'ni charchoq va samaradorlik o'rtasida vositachi bo'lib xizmat qiladi. Ushbu topilmalar shuni ko'rsatadiki, o'quvchilarda hissiy intellektni rivojlantirish va ongga asoslangan stressni kamaytirish ularning umumiy farovonligini oshirishi va akademik charchashning salbiy oqibatlaridan himoya qilishi mumkin.[5] Erondagi tibbiyot talabalarida olib borilgan tadqiqot shuni ko'rsatdiki, yuqori hissiy intellektga ega bo'lgan talabalar yaxshi akademik ko'rsatkichlarga ega va quidagi bir necha usullar hissiy intellektning talabalarga foyda keltiradigan jihatlarini yoritib bergan.

O'z-o'zini anglashni oshirish

Talabalar orasidagi eng katta muammo ularning o'rganayotgan narsalariga qiziqmasligida emas, balki bu qiziqishni saqlab qolishdadir. Hissiy zukko talabaning o'zini o'zi anglash darajasi oshadi, bu esa uni o'z o'rganishini faol ravishda o'z zimmasiga olishga majbur qiladi.O'z-o'zini anglash - bu ijobiy yoki salbiy his-tuyg'ular bilan aloqada bo'lish qobiliyati. Shuningdek, salbiy hissiyotlarni sozlash va ijobiy tomonga e'tibor berish qobiliyatini oshiradi.

Empatiya

Doimiy va ijobiy munosabatlarni rivojlantirishning kaliti empatiyadir. Har bir inson biladiki, bolalar o'z so'zlari va harakatlarida shafqatsiz bo'lishlari mumkin. O'zining hissiy tomoni bilan uyg'un bo'lgan bola, empatik harakat qiladi. Bu bolani yomon harakatlarga kamroq moyil qiladi ,bu nafaqat ijobiy munosabatlarni o'rnatishga yordam beradi, balki ularning o'rganish jarayoniga ham ijobiy ta’sirini ko’rsatadi.. Empatiya o'quvchilarga o'zlarining his-tuyg'ularini va boshqalarning his-tuyg'ularini oldindan bilishga imkon beradi. Bu qobiliyat odatda, odamlar va dunyo haqidagi tushunchamizni kuchaytiradi, bu esa doimo o'rganadigan va o'sib borayotgan talaba uchun juda muhimdir.

O'z-o'zini tartibga solish

O'z ta'limini va akademik o'sishini o'z zimmasiga oladigan talabani to'xtatib bo'lmaydi. Talaba o'z-o'zini tartibga solishga faol o'rgatilsa, bu nafaqat akademik jihatdan yordam beradi, balki hayotda oldinga siljish uchun sog'lom odatlarning poydevori hisoblanadi. Talabalar bilan muntazam suhbatlashish va ularga moderatsiyani yaxshiroq tushunish usullarini o'rgatish, ularga o'z-o'zini boshqarishni rivojlantirishga yordam berishning kalitidir.

Muammolarni yechish ko'nikmalarini oshirish

Hissiy intellekt talabalarga vaziyatlarni yaxshiroq tahlil qilishga yordam beradi. Bu nafaqat talabalarga boshqalar bilan yaxshiroq munosabatda bo'lishga, balki ularga ta’lim olish jarayonidagi qiyinchiliklarni hal qilishga yordam beradi. Talaba vaziyatni qanchalik yaxshi o'z zimmasiga olishga qodir bo'lsa, u vaziyatni shunchalik nazorat qiladi. Hissiy intellekt ularga vaziyatdan hayratda qolish va metafora aravasini butunlay ko'tarish o'rniga, vaziyatni yaxshiroq tushunishga imkon beradi. Stressni boshqarish

O'z his-tuyg'ularini to'g'ri boshqara oladigan talaba - bu stressning akademik hayotini boshqarishiga yo'l qo'ymaydigan talabadir. Hissiy intellekt talabalar uchun kuchli buferni yaratadi, bu ularga talaba ongida stressni keltirib chiqaradigan omillarni yaxshiroq boshqarishga yordam beradi. Bu talabalar uchun keyinchalik kasbiy hayotlarini boshlaganlarida ham katta foyda keltiradi.

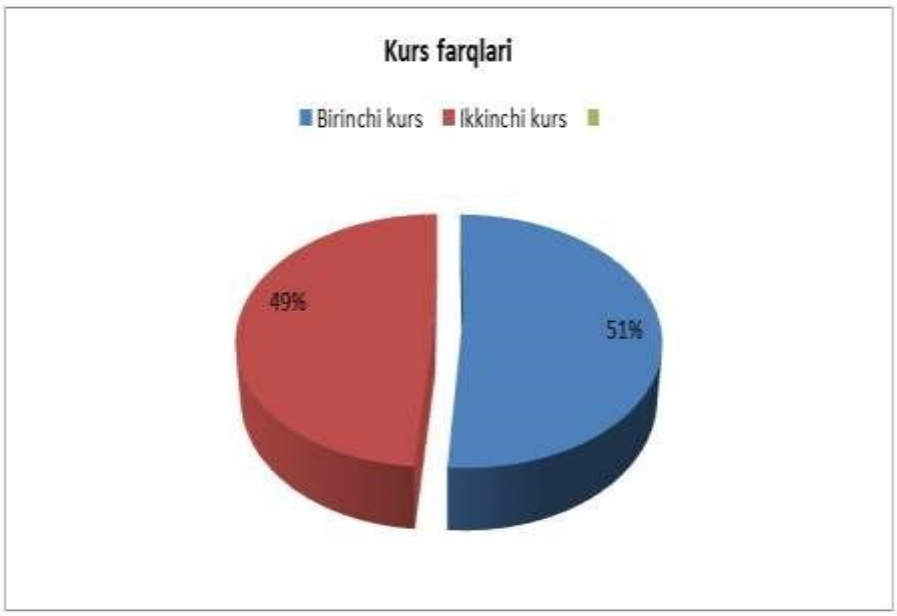
Qoniqish darajalari

Xafagarchiliklar, xuddi kasbiy tuzilmalarning bir qismi bo'lgani kabi, akademik hayotning bir qismidir. Kuchli hissiy asosga ega bo'lish talabalarga o'z muammolarini muvaffaqiyatli hal qilishga yordam beradi. Bu talabalarga erishish mumkin bo'lgan maqsadlarni qo'yishga, qarorlar qabul qilishga va muammolarini muvaffaqiyatli hal qilishga o'rgatadi. Bu nafaqat odamni baxtli qiladi, balki hayotda qilayotgan ishlaridan ko'proq qoniqish hosil qiladi.

Hissiy intellekt akademik motivatsiyaga ta'sir qilishda hal qiluvchi ahamiyatga ega .Yuqori darajadagi hissiy intellektga ega bo'lgan odamlar o'zlarining histuyg'ularini tushunish va nazorat qilish, shuningdek, boshqalarning his-tuyg'ularini tan olish va ularga munosabat bildirish qobiliyatiga ega. Bu qobiliyat odamlarga optimistik nuqtai nazarni saqlab qolish, stressni samarali boshqarish va o'zgaruvchan sharoit va to'siqlarga moslashish imkonini beradi. Misol uchun, hissiy intellekt talabaga norozilik hissiyotlarini aniqlashda va qiyin

vaziyatlarga yoki akademik to'siqlarga duch kelganda motivatsiyani saqlab qolish uchun samarali usullarni qo'llashda yordam berishi mumkin .[2] Bundan tashqari, hissiy intellektga ega bo'lgan talabalar o'zlarining muloqotlarida empatiya va mahoratni oshiradilar, shuning uchun ham tengdoshlari, ham o'qituvchilar bilan yaxshilangan munosabatlarni rivojlantiradilar. Binobarin, bu yuqori ijtimoiy qo'llab- quvvatlash va akademik hamjamiyat ichida faol ishtirok etish orqali kuchaytirilgan motivatsiyaga olib keladi.[6]

Talabalarda emotsional intellekt shakllanishining psixologik axamiyatini, akademik muvaffaqiyati,psixologik farovonligiga ta’sirini o’rganish maqsadida kichik tadqiqot o’tqazdik. Tadqiqotda N.Xollning “Emotsional intellektni baholash testi” dan foydalanildi. Tadqiqotda 82 nafar o’g’il qizlar ishtirok etishdi.



1-diagramma
N.Xoll metodikasi bo’yicha kurs farqlari ko’rsatkichlari. (student-t mezoni bo’yicha)

1-jadval

Ko'rsatkichlar	kurs	N	O'rtacha qiymat	Standart og'ish	t	p
Emotsional bilimdonlik	birinchi kurs	42	9,7000	3,93668	3,861	,000***
	to'rtinchi kurs	40	6,1000	4,38997		
O'z emotsiyalarini boshqarish	birinchi kurs	42	8,7000	4,15223	4,369	,000***
	to'rtinchi kurs	40	4,8000	3,82435		
O'z-o'zini rag'batlash	birinchi kurs	42	10,4000	4,33708	4,043	,000***
	to'rtinchi kurs	40	6,9000	3,34204		
Empatiya	birinchi kurs	42	8,9500	5,85706	,043	,966
	to'rtinchi kurs	40	8,9000	4,43645		
O'zga inson kechinmalarini sezish	birinchi kurs	42	7,0500	4,60184	1,797	,076
	to'rtinchi kurs	40	5,1000	5,09298		

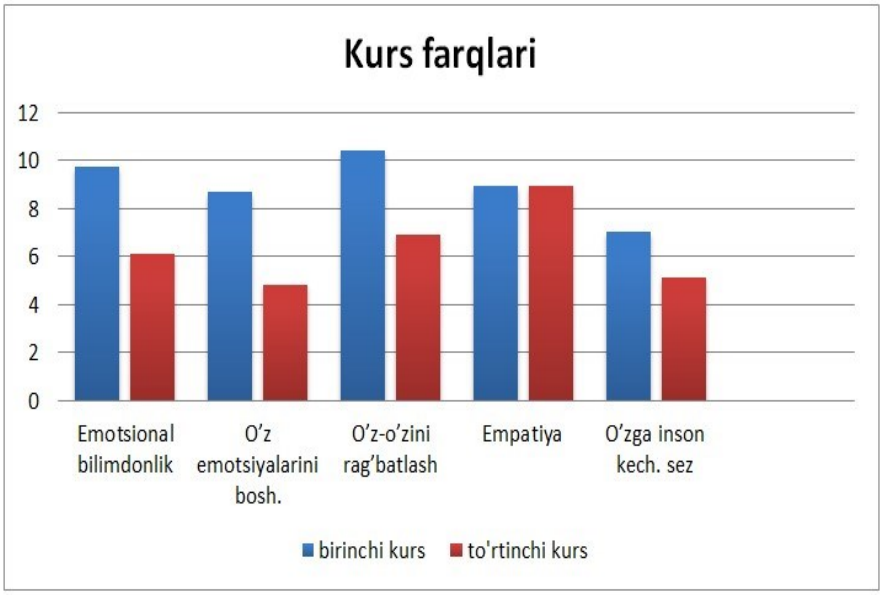
N.Xoll metodikasi bo'yicha kurs farqlari ko'rsatkichlarida Emotsional bilimdonlik shkalasida t=3,861;p>0.05ni tashkil etdi.To'rtinchi kurs talabalariga nisbatan birinchi kurs talabalarida Emotsional bilimdonlik yuqoriroq nomoyon bo'lishini kuzatishimiz mumkin.

N.Xoll metodikasi bo'yicha kurs farqlari ko'rsatkichlarida O'z emotsiyalarini boshqarish shkalasida t=4,369;p>0.05ni tashkil etdi.To'rtinchi kurs talabalariga nisbatan birinchi kurs talabalarida o'z emotsiyalarini boshqarish yuqoriroq nomoyon bo'lishini kuzatishimiz mumkin.

N.Xoll metodikasi bo'yicha kurs farqlari ko'rsatkichlarida o'z-o'zini rag'batlash shkalasida t=4,369;p>0.05ni tashkil etdi.To'rtinchi kurs talabalariga nisbatan birinchi kurs talabalarida o'z-o'zini rag'batlash yuqoriroq nomoyon bo'lishini kuzatishimiz mumkin.

N.Xoll metodikasi bo'yicha kurs farqlari ko'rsatkichlarida Empatiya shkalasida t=,043;p<0.05ni tashkil etdi. Birinchi va to'rtinchi kurs talabalarida Empatiya bir xil nomoyon bo'lishini kuzatishimiz mumkin.

N.Xoll metodikasi bo'yicha kurs farqlari ko'rsatkichlarida o'zga inson kechinmalarini sezish shkalasida t=1,797;p<0.05ni tashkil etdi. Birinchi va to'rtinchi kurs talabalarida o'zga inson kechinmalarini sezish bir xil nomoyon bo'lishini kuzatishimiz mumkin.



2-diagramma

Tadqiqotimizda N.Xoll metodikasi bo'yicha kurs farqlari ko'rsatkichlarida emotsional bilimdonlik, o'z emotsiyalarini boshqarish, o'z-o'zini rag'batlash birinchi kurs talabalarida to'rtinchi kurs talabalariga nisbatan yuroqoriroq namoyon bo'lishi ma'lum bo'ldi. Bunga birinchi bosqichga qabul qilingan talabalarning bilimga chanqoqligi, tirishqoqligi, vazifalarni bajarishda butun vujudi bilan fan ichiga kirishishi sabab bo'lishi mumkin. Bundan tashqari, birinchi bosqich talabalarining sesiya bilan bog'liq xavotrlari ham , ularni o'z zimmasidagi topshiriqlarga nisbatan mas'ulyatliroq qilishi mumkin.Bunday his tuyg'ular ularga akademik dars jarayonlarida, o'z-o'zini boshqarish, stresslarni samarali boshqarish, o'z muammolarini muvaffaqiyatli hal qilishga samarali yordam berishi mumkin.

Xulosa.

Hissiy intellekt va akademik yutuqlar to'g'ridan-to'g'ri o'zaro bog'liq emas, lekin ularning o'zaro munosabati ketma-ket ravishda hissiy farovonlik, shuningdek, oxir-oqibat akademik muvaffaqiyat bilan bog'liq bo'lgan motivatsion va kognitiv omillar bilan bog'liq. Baholangan vositachi omillar orasida ta'lim jarayonida hissiy va kognitiv jarayonlar o'rtasidagi o'zaro bog'liqlikni ko'rsatadigan ketma-ket va kamroq darajada o'ziga xos ta'sir mavjud. Xulosa qilish kerakki, o'quv yutuqlarida hissiy intellektning afzalliklari hissiy tartibga solishning yaxshilanishi natijasida hissiy farovonlikni oshirishdan tashqari, motivatsion va kognitiv jarayonlarda yaxshi ishlashga olib kelishi mumkin. Hissiy intellektning yuqori darajasi motivatsiyaning oshishiga yordam beradi, bu esa keyinchalik psixologik farovonlik va akademik muvaffaqiyatlarga olib keladi.

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ENHANCING ECONOMIC STABILITY THROUGH THE PRUDENT USE OF STATE FINANCIAL ASSETS

Abstract: *Ensuring the stability of national economies has become a strategic priority in an era of fiscal uncertainty, inflationary pressures, and global financial volatility. This article reviews the theoretical and empirical literature on the effective use of state financial resources to achieve economic stability, with a special focus on Uzbekistan's fiscal and institutional reforms under the "Uzbekistan - 2030" strategy. The study synthesizes classical and contemporary economic perspectives - from Schumpeter's innovation-driven growth theory to modern fiscal-monetary coordination frameworks-and examines global and national experiences in optimizing budgetary management, taxation, and public spending efficiency. The review highlights the central role of fiscal discipline, tax policy reform, and digital transformation in strengthening macroeconomic resilience.*

It also discusses emerging trends in green fiscal policy and sustainable finance. Evidence suggests that countries that institutionalize transparent fiscal management and adopt adaptive policy mechanisms achieve more stable growth, higher employment, and lower inequality. The article concludes that Uzbekistan's efforts to align fiscal policy with international standards, promote digitalization, and integrate environmental sustainability principles represent a significant step toward long-term macroeconomic stability.

Keywords: *fiscal policy, economic stability, state financial resources, tax efficiency, Uzbekistan, public finance, sustainable development, green budgeting*

1. Introduction

The stability of a national economy fundamentally depends on how effectively a state mobilizes, allocates, and utilizes its financial resources. In the modern global economy-marked by volatility, trade disruptions, and geopolitical shifts -the ability of governments to ensure fiscal discipline and efficient financial management has become a defining factor of sustainable development. The efficient use of public financial resources is not merely a technical or administrative matter; it is a strategic economic and social priority that determines long-term macroeconomic equilibrium, employment creation, and poverty reduction [1-3].

Globally, the Organization for Economic Cooperation and Development (OECD) reports that countries with stronger fiscal institutions and transparent

budgeting practices maintain lower unemployment rates and more resilient growth patterns. As of 2023, the average unemployment rate among OECD members stood at 4.9%, with even lower rates in countries like Germany (3.4%) and the United States (4.1%) [4]. These outcomes are strongly correlated with efficient management of fiscal resources, robust social spending, and targeted incentives for businesses and households.

For developing economies, including Uzbekistan, ensuring the effective use of state financial resources has become a pillar of national economic policy. Since independence, Uzbekistan has undertaken a comprehensive reform program to strengthen fiscal stability, enhance public financial management, and stimulate entrepreneurship through targeted tax and customs incentives. The “Uzbekistan - 2030” Strategy explicitly aims to double national GDP by 2030 and achieve upper-middle-income status, with an emphasis on fiscal prudence, efficient resource allocation, and accountability in public spending [5-7].

The state’s financial resources-comprising budgetary funds, extra-budgetary accounts, development funds, and concessional financing-serve as both a stabilizing mechanism and a driver of structural transformation. When used efficiently, these resources foster sustainable growth, create employment opportunities, and enhance social welfare. Conversely, inefficient or poorly targeted financial management leads to fiscal imbalances, inflationary pressures, and declining public trust in state institutions [8,9].

Over the past decade, fiscal and monetary reforms in Uzbekistan have aimed at aligning national financial practices with international standards, introducing performance-based budgeting, digitizing tax administration, and promoting “green” and inclusive growth principles. The legal foundations for these reforms are reflected in a series of presidential decrees and parliamentary laws adopted between 2023 and 2025, which emphasize fiscal transparency, the return of excess tax payments to high-performing enterprises, and differentiated tax obligations tied to job creation [10-12].

Despite significant progress, there remains a research gap in understanding the comprehensive, systemic mechanisms through which state financial resources contribute to macroeconomic stability and sustainable growth. Much of the existing research focuses on either fiscal performance or monetary control, without integrating the two into a unified model of economic stability [13,14]. Therefore, an analytical synthesis of theoretical and empirical studies on this issue is essential for identifying the most effective fiscal policy approaches in both developed and emerging economies.

The aim of this article is to review and critically analyze the existing national and international literature on the effective use of state financial resources in ensuring economic stability, identify theoretical and methodological approaches, and synthesize findings relevant to the context of Uzbekistan’s ongoing fiscal reforms.

2. Theoretical Perspectives on Financial Resource Utilization

Theoretical approaches to the efficient use of state financial resources derive from classical and contemporary economic schools. Schumpeter [1-5] viewed innovation-driven entrepreneurship as the primary engine of development, emphasizing the role of state support in financing technological change and innovation. In this view, the prudent use of public funds catalyzes "creative destruction" by lowering financing constraints for risky, productivity-enhancing projects, crowding in private investment, and accelerating structural transformation. Complementing this, Tiebout [1,6] and Boyne [1,7] proposed that fiscal decentralization and performance-based budgeting can improve the efficiency of public spending by aligning financial allocation with regional and social needs; competition among jurisdictions and clear output indicators are expected to raise service quality while disciplining costs. Building on these insights, contemporary public finance also stresses the state's allocative, distributive, and stabilizing roles: efficient resource use requires transparent priority setting across sectors, equity-sensitive transfers that mitigate spatial disparities, and countercyclical buffers that smooth shocks without undermining long-run solvency. In practice, this translates into medium-term expenditure frameworks, program budgeting, and rigorous monitoring and evaluation systems that link resources to measurable results.

Uzbek scholars such as Alimardonov, Bazarov, and Malikov have argued that the efficiency of fiscal policy in Uzbekistan depends on strengthening regional financial independence and reforming tax administration to reduce burdens on small and medium-sized enterprises (SMEs). Their perspective underscores that decentralization should be matched with clear expenditure mandates, predictable intergovernmental transfers, and local revenue autonomy to avoid unfunded liabilities. Efficient fiscal policy should ensure the productive use of budget funds through project appraisal and cost-benefit analysis, targeted incentives for high-performing firms that demonstrably raise value added and formal employment, and consistent control over public debt via credible fiscal rules and transparent reporting. In the Uzbek context, these principles imply deepening digital tax administration and risk-based audits to curb evasion, expanding performance-based grants to regions to align spending with development outcomes, and integrating innovation-support instruments-such as concessional finance, guarantees, and public-private partnerships-within a unified, results-oriented public financial management framework. Together, these theoretical strands converge on a central proposition: when fiscal institutions are designed to reward efficiency, ensure accountability, and protect macro-stability, state financial resources become a powerful lever for sustained, inclusive growth.

3. Fiscal and Monetary Coordination in Economic Stability

Fiscal and monetary policies are closely interlinked in maintaining macroeconomic balance. According to the Olivera-Tanzi effect [11-14], inflation reduces the real value of tax revenues and widens fiscal deficits, highlighting the

need for synchronized fiscal and monetary management. Patinkin further noted that inflation under progressive taxation can paradoxically reduce deficits by increasing nominal tax collections. These insights underscore
a broader coordination problem: if monetary authorities tighten policy to curb inflation while fiscal policy remains expansionary, interest costs and debt -service burdens can rise, undermining credibility; conversely, if fiscal consolidation is too abrupt during downturns, it can dampen aggregate demand and complicate monetary transmission. Effective coordination therefore requires clear policy assignments-price stability as the primary mandate of the central bank and sustainable growth and debt dynamics as core fiscal responsibilities -alongside mechanisms to internalize spillovers between the two.

International institutions such as the IMF and World Bank emphasize that fiscal rules, debt limits, and monetary independence form the core of macroeconomic resilience. Within this architecture, medium-term fiscal frameworks anchor expectations about the path of deficits and debt, automatic stabilizers smooth cyclical fluctuations without ad hoc discretion, and credible, independent monetary policy guides inflation expectations and supports exchange-rate and financial-market stability. Coordination also operates through the expectations and balance-sheet channels: credible fiscal plans reduce risk premia and lengthen the maturity of public debt, improving the effectiveness of interest-rate policy; prudent monetary policy, in turn, limits exchange-rate pass -through and stabilizes financing conditions, lowering the probability of fiscal dominance.

Uzbekistan's experience supports this view, where monetary policy-through prudent interest rate adjustments and exchange rate stabilization-has complemented fiscal reforms aimed at budget consolidation and economic diversification. In practice, this has involved sequencing reforms so that budgetary consolidation, improved tax administration, and spending reprioritization reduce pressure on monetary policy, while a consistent disinflation strategy and exchange-rate flexibility enhance the predictability of fiscal planning. Strengthening cash and debt management, widening the domestic investor base, and improving the transparency of quasi-fiscal operations further minimize rollover and currency risks, reinforcing the transmission of policy signals. Together, these elements illustrate how a rules-based fiscal framework and an independent, data-driven monetary stance can jointly deliver lower inflation volatility, more stable growth, and safer debt dynamics in an open, reforming economy such as Uzbekistan's [14,15].

4. Tax Policy, Business Incentives, and Economic Growth

Effective taxation remains one of the central mechanisms for mobilizing and redistributing state financial resources. Empirical studies by Halim and Rahman [11] show that corporate tax rates significantly affect private sector investment and the achievement of Sustainable Development Goals (SDGs). Similarly, Tran and Wende [14] demonstrated that excessive tax burdens can suppress innovation, while optimized tax structures enhance competitiveness and welfare.

In Uzbekistan, tax reforms since 2020 have sought to simplify tax reporting, lower rates for SMEs, and increase transparency through electronic platforms. Local economists such as Sobirov and Abdurakhmanov [8,10] emphasize that taxation should be seen not only as a fiscal instrument but as a developmental tool that promotes inclusive growth and social equity.

5. Green Fiscal Policy and Sustainable Finance

With increasing global concern over climate change, green fiscal policy has become an essential dimension of sustainable financial management. Fendrich and Barretto [4] argue that environmental taxes and subsidies can align market behavior with ecological goals. Empirical studies confirm that eco-taxes help internalize environmental costs and promote resource-efficient technologies [5]. Building on this logic, modern green fiscal frameworks typically combine several instruments: carbon pricing or emissions-based excises to reflect the social cost of carbon; “feebate” schemes that tax high-emitting products while rebating revenues to cleaner alternatives; targeted, sunset-dated subsidies to accelerate diffusion of low-carbon technologies; and the systematic reform of fossil-fuel subsidies to reduce price distortions and free fiscal space for green investment. Well-designed packages also address distributional concerns -through lifeline tariffs, lump-sum transfers, or earned-income tax credits-so that the transition remains socially inclusive and politically sustainable. On the expenditure side, governments increasingly use climate-aware public investment management, green procurement standards, and performance-based transfers to subnational entities to scale resilient infrastructure, promote energy efficiency, and strengthen adaptation in climate-vulnerable regions.

Uzbekistan’s Cabinet Resolution No. 257 (2024) introduced a “budget tagging” system to track climate-related expenditures-an important step toward integrating green principles into public finance. In practical terms, tagging can be linked to the budget classification and program-budgeting structures so that climate-relevant projects are identifiable ex ante, monitored during execution, and evaluated ex post against clear indicators (e.g., emissions avoided, energy saved, hectares reforested). When embedded in the medium-term fiscal framework, tagging supports strategic prioritization, helps quantify financing needs, and facilitates access to concessional climate finance and green bonds by improving transparency and credibility. Similar to OECD members, Uzbekistan is gradually embedding environmental accountability into fiscal frameworks to ensure long-term ecological and economic stability. The next steps typically include: integrating climate risk screening into public investment appraisal; developing methodological guidance for measuring mitigation and adaptation benefits; establishing robust monitoring, reporting, and verification systems; and coordinating with monetary and financial authorities on sustainable-finance standards so that private capital-via public-private partnerships, credit guarantees, and blended finance-can complement limited budget resources. Together, these measures align incentives across taxpayers, firms, and subnational governments,

turning green fiscal policy into a core driver of resilience, competitiveness, and inclusive growth [4,7,8].

6. Legal and Institutional Frameworks in Uzbekistan

A robust legal framework underpins effective financial governance. Recent Uzbek legislation-such as Laws No. 923, 1000, and 1014-has institutionalized mechanisms for returning excess tax payments, offering differentiated tax relief for job creation, and synchronizing fiscal laws with annual budget cycles [10-12]. Presidential decrees (PF-16, PF-37, PF-158) and development programs financed by the Reconstruction and Development Fund further strengthen the linkage between state resource use and employment growth [9].

These reforms mirror global best practices in public finance management, emphasizing transparency, efficiency, and accountability-key principles also highlighted by international scholars like Geshwind and Rezel [10].

7. Digitalization and Transparency in Fiscal Management

Digital technologies are transforming tax administration and public financial management. Bassi et al. [11] highlight that electronic tax systems reduce evasion, improve compliance, and increase trust between taxpayers and the state. Chowdhury [12] similarly observed that digitalization enhances fiscal transparency and supports behavioral compliance, particularly in developing economies. In practice, modern revenue administrations deploy integrated e-filing and e-payment platforms, e-invoicing with real-time reporting, and risk-based audit selection powered by data analytics. These tools shrink compliance costs for firms and households, standardize procedures to limit discretion, and increase the perceived fairness of the system by improving horizontal equity and the consistency of enforcement [11,12]. On the expenditure side, digital public financial management (PFM) suites-covering commitment control, cash and debt management, procurement, and accounting-enable real-time spending visibility and strengthen internal controls, while open-budget portals and machine-readable dashboards broaden external scrutiny and civic engagement.

A robust digital architecture typically rests on several enabling components: unique taxpayer and beneficiary identifiers; interoperable databases linking tax, customs, social security, and business registries; application programming interfaces (APIs) for third-party data (e.g., banks, payment processors, e-commerce platforms); and secure digital identity for taxpayers and officials. Advanced analytics and machine learning help flag anomalies (invoice mismatches, carousel fraud, under-reporting) and prioritize audits, while automated VAT refund workflows accelerate legitimate refunds and improve liquidity for compliant firms. Equally important are governance and safeguards-clear data-governance rules, privacy protection, and cyber-security protocols-to sustain trust and ensure that efficiency gains do not come at the expense of rights or due process [11,12]. For developing economies, targeted support measures-simplified mobile interfaces for SMEs, assisted compliance centers, and phased implementation-can mitigate digital divides and capacity constraints, preserving inclusivity as systems modernize.

Uzbekistan's recent rollout of e-tax services and data-driven audit mechanisms exemplifies this trend, aligning with the global shift toward open and accountable governance. Consolidating taxpayer accounts, expanding electronic invoicing and point-of-sale data capture, and integrating tax platforms with treasury, customs, and social funds can deepen compliance gains by reducing information asymmetries and enabling pre-filled returns. Embedding analytics in audit case selection and establishing service-level standards for digital refunds strengthen credibility, while publishing aggregate compliance and spending metrics through transparency portals helps anchor public trust. Over time, linking digital PFM with performance-based budgeting-so that programs report outputs and outcomes alongside expenditures-can convert transparency into measurable improvements in allocative efficiency, crowd in private investment, and reinforce the broader fiscal reform agenda [8-14].

8. Conclusion

The reviewed literature confirms that the efficient use of state financial resources is central to achieving macroeconomic stability and sustainable development. Theoretical and empirical evidence suggests that fiscal discipline, effective taxation, monetary coordination, and legal transparency are mutually reinforcing components of a stable economy.

For Uzbekistan, continued implementation of results-oriented fiscal reforms, digital governance, and environmentally conscious budgeting will be decisive in meeting the targets of the "Uzbekistan - 2030" strategy. Bridging the existing research gaps through integrated fiscal-monetary modeling and comparative policy evaluation will further enhance the understanding of how public financial efficiency contributes to national resilience and prosperity.

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YOSHLAR ONGIDA MAFKURAVIY IMMUNITETNI SHAKLLANTIRISHNING AHAMIYATI

Annotatsiya: *Maqolada yoshlar ma'naviyatini yuksaltirish, bugungi kunda yoshlar ongidagi ma'naviy bo'shliqni to'ldirish, tafakkurida sog'lom dunyoqarash asoslarini shakllantirish hamda yoshlarni Vatanga muhabbat va hurmat ruhida tarbiyalash muhimligi ta'kidlangan.*

Kalit so'zlar: *Yoshlar va ma'naviyat, milliy ma'naviyat, mafkura, milliy g'oya, mafkuraning turlari, mafkuraning shakllari, milliy mafkura, milliy istiqlol mafkurasi, milliy istiqlol mafkurasining asosiy g'oyalari.*

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THE IMPORTANCE OF DEVELOPING IDEOLOGICAL IMMUNITY IN THE MINDS OF YOUNG PEOPLE

Annotation. *The article emphasizes the importance of raising the spirituality of youth, filling the spiritual gap in the minds of young people today, forming the foundations of a healthy worldview in their thinking, and educating young people in the spirit of love and respect for the Motherland.*

Keywords: *Youth and spirituality, national spirituality, ideology, national idea, types of ideology, forms of ideology, national ideology, ideology of national independence, main ideas of the ideology of national independence.*

Ma'lumki, haqiqiy bunyodkor, ijobiy e'tiqod inson ongli faoliyatining g'oyaviy asosini tashkil qiladi. Mafkuraviy immuniteti shakllangan, ongli yoshlarimiz davlatimizning ichki va tashqi siyosatining to'g'riligiga ishonadilar, kelajagi buyuk yurtning barpo etilishi yo'lida o'zlarining butun kuch, aql, tajribalarini bu sohaga safarbar qiladilar. Har bir talaba mafkuraviy immuniteti shakllanib, qaro r topib, kuchli e'tiqodga ega bo'lgandagina u o'z faoliyatida muvaffaqiyat qozonishi mumkin. Har bir talaba e'tiqodining xarakteri konkret, real shaxsning yashash sharoitiga, uni o'rab olgan ijtimoiy muhitga, u olgan tarbiyaning xarakteriga, uning dunyoqarashining xususiyatiga, jamoatchilik fikrining ta'siriga, ma'lumotiga, bilim darajasiga, konkret shaxsning hayotiy tajribalari va boshqa omillarga qarab belgilanadi.

Mustaqillikdan so‘ng globallashuv jarayoni kundalik hayotimizga juda tez sur’atlar bilan kirib kela boshladi. Buning asosiy sababi xususida gapirganimizda shuni alohida tan olish kerakki - bugungi kunda har qanday davlatning taraqqiyoti, rivojlanishi nafaqat yaqin qo‘shnilar, balki dunyo miqyosida boshqa mintaqa, hududlar bilan shu darajada chambarchas bog‘lanib borayaptiki, bunda biror bir davlatning bu jarayondan chetga chiqib turishi hech bir ijobiy natijalarga olib kelmasligini, hayotning o‘zi ko‘rsatib turganligini tushunish va anglab olish qiyin emas.

O‘zbekiston Respublikasining birinchi prezidenti Islom Karimov ta’biri bilan aytganda, “globallashuv - bu avvalo hayot sur’atlarining beqiyos darajada tezlashuvi demakdir” [1]. Globallashuv jarayonlari yoshlarimiz e’tiqodiga va ma’naviyatiga ham o‘z ta’sirini o‘tkazmay qo‘ymaydi. Dunyoda mafkuraviy hamda informatsion xurujlar, turli g‘oyaviy, ma’naviy tahdidlar avj olayotgan bugungi kunda yoshlarimiz e’tiqodiniva ma’naviyatini yuksaltirish, tafakkurida sog‘lom dunyoqarash asoslarini shakllantirish muhim ahamiyat kasb etmoqda. Buni amalga oshirishning eng samarali usuli mafkuraviy tarbiyani to‘g‘ri tashkil etishdir. Mafkuraviy tarbiya-inson, ijtimoiy guruh, millat, jamiyat dunyoqarashini shakllantirishga, ularni muayyan maqsadlarni ifoda etadigan g‘oyaviy bilimlar bilan quroll antirishga yo‘naltirilgan jarayon”dir [2].

Bu borada mafkuraviy immunitetni shakllantirishda milliy va umuminsoniy qadriyatlar ham muhim ahamiyat kasb etadi. Bir so‘z bilan aytganda, milliy qadriyatlar mafkuraviy immunitetning imkoniyatlarini belgilab beradi va “g‘oyaviy infeksiyalar” yo‘lida qalqon vazifasini o‘taydi. Mafkuraviy immunitet tizimini shakllantirishda yot g‘oyalar kirib kelishining oldini olish, ularni yo‘qotishga qaratilgan chora-tadbirlar majmuini o‘z ichiga oladigan mafkuraviy profilaktikan ing o‘rni katta. Mafkuraviy profilaktika g‘oyaviy-tarbiyaviy, ijtimoiy-siyosiy, iqtisodiy, ma’naviy ishlar mazmunini, bir so‘z bilan aytganda, to‘g‘ri tashkil etilgan butun tarbiya tizimini qamrab oladi. Shu boisdan ham vatanga bo‘lgan muhabbatni kishi go‘dakligidan talpinib, onaga bo‘lgan muhabbatga qiyoslaydi. Mustaqil yurtimiz aholisining ko‘pchillik qismini yoshlar tashkil qiladi. Bugungi kunda “mamlakatimizda 30 yoshgacha bo‘lganlar aholining 67 foizini tashkil etadi [3].

Shu yoshlarni tarbiyalash nafaqat oilaning balki keng jamoatchilikning, ta’lim-tarbiya bilan shug‘ullanadigan barcha ta’lim muassasalarning ham yuksak burchi hisoblanadi. Bugungi kunda yoshlarni, iymonli-e’tiqodli, mafkuraviy immuniteti shakllangan inson qilib tarbiyalash-jamiyatimizning bosh vazifasi hisoblanadi. Bugungi globallashuv jarayonlari tezlashgan bir paytda iymon-e’tiqodni, mafkuraviy immunitetni to‘kin-sochin bo‘lgan bozorlardan ham, tanish-bilishlardan ham qarzga olib bo‘lmaydi. E’tiqod tarbiyalanadi, mafkuraviy immunitet esa shakllantiriladi. Jamiyatda, inson hayotida e’tiqodning roli juda kattadir. Xalqimiz orasida “e’tiqodsiz kishi-o‘zansiz daryodir”[4] degan maqol keng tarqalgan. Chunki har bir inson o‘zining ijtimoiy va shaxsiy hayotida, o‘z faoliyatida ma’lum qarashlarga, e’tiqodlarga amal qiladi va qilmog‘i lozim.

E’tiqodsiz inson biron ishni bajarishda mustaqillik va ijodkorlikka ega bo‘la olmaydi. E’tiqod – bizning fikrimizcha, kishilar o‘z faoliyatlarida chin yurakdan amal qiladigan, qo‘llab quvvatlaydigan ma’lum g‘oyalar, qarashlar bo‘lib, ular inson ongida u mehnat qilayotgan, yashayotgan sharoitning, vaqtning ta’sirida shakllanadigan ma’lum muhim tarkibiy qismidir.

Mana shu omillarning ijobiy yo salbiy, bunyodkor yo vayronkorligiga qarab birovlarning e’tiqodi mustahkam, beqaror yoki omonat bo‘lishi mumkin. Olib borilayotgan tarbiyaviy ish tajribalari shundan dalolat beradiki, ularning so‘nggisini mustahkam, ijobiy e’tiqodga aylantirish osonroqdir. Ma’lumki, e’tiqod xilma-xil shakllarga ega bo‘ladi. Ular jumlasiga “siyosiy, huquqiy, axloqiy, estetik, falsafiy, diniy, ilmiy, ekologik, iqtisodiy, demografik, demokratik, g‘oyaviy-mafkuraviy e’tiqodlar” [5] kiradi. E’tiqodi mustahkam bo‘lmagan insonlar tez -tez o‘z e’tiqodini o‘zgartirib turishi mumkin.

Guruch kurmaksiz bo‘lmaganidek, bugungi globallashgan zamonda bizning yoshlarimiz orasida ham e’tiqodi, iymoni mustahkam bo‘lmagan ba’zi bir yoshlar uchrab turadi. Oqibat natijada mana shunday iymoni sust, e’tiqodi mustahkam bo‘lmagan yoshlarga mamlakatimiz tinchligi, osoyishtaligiga tahdid solayotgan begona, yot, zararli g‘oyalar, harakatlar ta’sir etmoqda. Bunday yoshlarning ma’naviy olamida bo‘shliq vujudga kelmasligi uchun ularning qalbi va ongida sog‘lom hayot tarzi, umummilliy qadriyatlarga hurmat-ehtirom tuyg‘ularini bolaligidanoq boshlab shakllantirmoq lozim. Shuni unutmaslik kerakki, bugungi kunda inson ma’naviyatiga, tarixiy xotirasiga va o‘zligini anglash masalasiga qarshi yo‘naltirilgan, bir qarashda arzimas bo‘lib tuyuladigan kichkina xabar ham ax borot olamidagi globallashuv shiddatidan kuch olib, ko‘zga ko‘rinmaydigan, lekin zararini hech narsa bilan qoplab bo‘lmaydigan ziyon –zaxmat yetkazishi mumkin.

Xulosa qilib shuni aytishimiz mumkinki, yoshlarni ona-Vatanga muhabbat, boy tariximizga hurmat ruhida tarbiyalash uchun ta’bir joiz bo‘lsa, avvalo ularning qalbi, ongida mafkuraviy immunitetni kuchaytirish kerak. Toki, yoshlar milliy o‘zlikni anglashi, shu bilan birga, dunyoni chuqur anglaydigan, zamon bilan barobar qadam tashlaydigan insonlar bo‘lib yetishsin. Buning uchun avvalo, barcha ijtimoiy va gumanitar fanlar orqali milliy g‘oyani yoshlar qalbi va ongiga singdirishimiz zarur.

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DIABETIC NEPHROPATHY: PATHOPHYSIOLOGICAL MECHANISMS AND MODERN APPROACHES TO MANAGEMENT

Abstract. *Diabetic nephropathy (DN) is one of the most serious chronic complications of diabetes mellitus and a leading cause of end-stage renal disease (ESRD) worldwide. The progression of DN is driven by metabolic, hemodynamic, and inflammatory mechanisms that affect glomerular and tubular structures. The purpose of this review is to summarize the modern understanding of DN pathophysiology, highlight diagnostic challenges, and discuss therapeutic approaches, including findings from recent regional studies emphasizing the interrelationship between diabetic nephropathy and anemia.*

Keywords: *diabetic nephropathy, diabetes mellitus, renal damage, anemia, oxidative stress, erythropoietin, chronic kidney disease*

Introduction.

Diabetic nephropathy (DN) remains one of the most common microvascular complications of diabetes mellitus and a significant cause of morbidity and mortality among patients with type 1 and type 2 diabetes. Epidemiological studies show that approximately 30–40% of patients with diabetes develop some degree of kidney involvement during the disease course [1]. The condition represents a continuum from microalbuminuria to overt proteinuria, progressive renal insufficiency, and eventually ESRD requiring dialysis or transplantation. Recent research highlights the importance of early detection and comprehensive management of DN, which includes not only strict glycemic control but also correction of associated anemia and cardiovascular risk factors [2–4].

Epidemiology and risk factors.

The global prevalence of DN varies according to population, genetics, and lifestyle factors. DN accounts for nearly 40% of all new cases of ESRD in developed countries [1]. The major risk factors include chronic hyperglycemia, hypertension, dyslipidemia, obesity, and genetic predisposition. It has been shown that the duration of diabetes and poor glycemic control are directly correlated with the development of nephropathy. Smoking, high salt intake, and insulin resistance further contribute to disease progression. In recent years, attention has been drawn to the role of anemia as a comorbid factor in DN. Studies conducted in Central Asia revealed a high frequency of anemia in diabetic patients with early signs of nephropathy, indicating that erythropoietin deficiency may begin even before overt renal failure [3,4].

Pathogenesis.

The pathophysiology of diabetic nephropathy is multifactorial. Chronic hyperglycemia triggers a cascade of metabolic disturbances that lead to glomerular and tubular damage. The main mechanisms include:

Hyperglycemia-induced oxidative stress, resulting in excessive production of reactive oxygen species (ROS) that damage endothelial and mesangial cells.

Formation of advanced glycation end-products (AGEs), which alter extracellular matrix proteins, increase basement membrane thickness, and promote inflammation [5]. Activation of the renin–angiotensin–aldosterone system (RAAS), causing glomerular hypertension and fibrosis. Inflammatory cytokine release, such as interleukin-6 and tumor necrosis factor-α, which exacerbate tissue injury. In addition to these mechanisms, nephropathy is frequently accompanied by anemia, primarily due to decreased erythropoietin production by damaged kidneys [3,4]. The resulting tissue hypoxia further accelerates fibrosis and nephron loss.

Clinical manifestations and diagnosis.

Diabetic nephropathy progresses through several stages: hyperfiltration, microalbuminuria, overt proteinuria, and decline of glomerular filtration rate (GFR). Early stages are asymptomatic, which makes routine screening essential. The diagnosis of DN is primarily based on the detection of persistent albuminuria (≥30 mg/day) and reduced eGFR (<60 mL/min/1.73 mI). However, these indicators may not reflect early renal involvement. Therefore, novel biomarkers such as cystatin C, β2-microglobulin, and neutrophil gelatinase-associated lipocalin (NGAL) have been proposed to improve diagnostic accuracy [6].

Regional studies suggest that evaluating hemoglobin and erythropoietin levels alongside kidney function parameters provides valuable information for early diagnosis [2–4].

Management and therapeutic approaches.

The management of diabetic nephropathy requires a comprehensive strategy addressing hyperglycemia, hypertension, dyslipidemia, and anemia.

1. Glycemic control.

Tight control of blood glucose remains the cornerstone of DN prevention. Both insulin therapy and oral hypoglycemic agents (such as metformin and DPP-4 inhibitors) reduce microvascular complications when target HbA1c levels (<7%) are maintained.

2. Blood pressure management.

RAAS blockade with ACE inhibitors or angiotensin receptor blockers (ARBs) reduces intraglomerular pressure and proteinuria, slowing disease progression [7]. The recommended blood pressure goal is <130/80 mmHg for most diabetic patients.

3. Lipid regulation.

Statin therapy helps decrease oxidative stress and inflammation, offering additional renal protection.

4. Correction of anemia.

Erythropoiesis-stimulating agents (ESAs) and iron supplementation are essential components of therapy for diabetic patients with anemia. Several studies emphasize that early correction of anemia prevents further decline in renal function and improves quality of life [3,8].

5. New pharmacological agents.

Recent clinical trials demonstrate that sodium-glucose cotransporter 2 (SGLT2) inhibitors and glucagon-like peptide-1 receptor agonists (GLP-1 RAs) exert renoprotective effects beyond glycemic control [7]. They reduce intraglomerular pressure, inflammation, and fibrosis, thereby delaying ESRD.

Discussion.

The interplay between diabetic nephropathy and anemia represents an important yet underrecognized aspect of diabetes management. Regional studies have contributed significantly to understanding this association, suggesting that monitoring hematological indices alongside renal parameters should become standard practice in diabetic care [2–4,8]. Anemia correction not only improves oxygen delivery but also reduces the activation of hypoxia-inducible factors and oxidative stress within renal tissue. Consequently, patients with timely correction of anemia demonstrate slower progression to ESRD compared to those without such intervention [9].

Conclusion.

Diabetic nephropathy remains a major clinical and public health problem. Despite substantial progress in understanding its mechanisms, early detection and integrated management remain challenges. Evidence indicates that combining conventional nephroprotective strategies with anemia correction and novel pharmacotherapies can significantly improve renal outcomes.

Future research should focus on identifying genetic and molecular markers of susceptibility, optimizing individualized treatment plans, and expanding preventive programs for at-risk diabetic populations.

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QURILISH KORXONALARIDA RISKLARNI BOSHQARISH JARAYONINI BAHOLASH VA OPTIMALLASHTIRISHNING USLUBIY YONDASHUVLARI

Annotatsiya: *Qurilish korxonalarida risklarni boshqarish noqulay vaziyatlarning yuzaga kelishini bashorat qilish va ulardan keyin salbiy oqibatlarning oldini olish choralarini korishdan iborat. Yoqotishlar va zararlar har xil shakl va miqyosda, turli vaqtlarda, eng xilma-xil sharoitlarda, tadbirkorlik faoliyatining mumkin bolgan salbiy oqibatlarini bilmaslik yoki etiborsizlik bolgan deyarli hamma joyda namoyon bolishi mumkin. Ushbu faktni bilish tadbirkorlik risklarini oqilona va tizimli tahlil qilishga, ularni boshqarish usullarini ishlab chiqish uchun risklarni mustaqil tasniflash va baholash uchun zarur uslubiy yondashuvlarni yaratishga yordam beradi [1].*

Kalit sozlar: *qurilish, risk, boshqarish, baholash, korxona, audit, sugurta.*

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RISK MANAGEMENT IN CONSTRUCTION ENTERPRISES: METHODOLOGICAL APPROACHES TO ASSESSMENT AND OPTIMIZATION

Abstract: *Risk management in construction companies consists of forecasting the occurrence of unfavorable situations and taking measures to prevent negative consequences after their occurrence. Losses and damages can occur in various forms and scales, at different times, in a variety of conditions, practically everywhere where there is ignorance or inattention to the possible negative consequences of entrepreneurial activity. Knowing this fact helps to rationally and systematically analyze business risks, to form the necessary methodological approaches for independent classification and assessment of risks in order to develop methods for managing them [1].*

Keywords: *construction, risk, management, assessment, enterprise, audit, insurance.*

KIRISH.

Risklarni boshqarishga zamonaviy yondashuvning asosiy maqsadi riskni minimal darajaga tushirish emas, balki uning miqdoriy va sifat parametrlarini optimallashtirish, shuningdek, uning hajmini aniqlash kontekstida rejalashtirish vositalaridan foydalanish imkoniyatidir. Shu munosabat bilan aytishimiz mumkinki, risklarni boshqarishni optimallashtirishning samarali mexanizmini ishlab chiqish zarurati zamonaviy sharoitlarda dolzarb va ahamiyatli bolib bormoqda.

ASOSIY QISM.

Bizning fikrimizcha, qurilish korxonalarida risklarni boshqarish tizimida boshqaruv jarayoni samaradorligini oshirish uchun riskni erta aniqlashdan tortib, uzoq muddatda uni kamaytirish boyicha chora-tadbirlarni amalga oshirishgacha bolgan izchil tashkiliy harakatlar algoritmidan foydalanish kerak. Korxonadagi risklarni boshqarish sxemasining klassik versiyasi quyidagicha ifodalanishi mumkin:

1. Risklarni bir qator omillarga (tarmoqning oziga xosligi, joylashuvi, huquqiy shakli va boshqalar) qarab aniqlash va tasniflash;
2. Korxonaning hayotiylik sikli bosqichiga bogliq bolgan risklarning kattaligi va dinamikasining xususiyatlari;
3. Alohida tashkiliy-iqtisodiy chora-tadbirlar va texnologik operatsiyalarga qarab tuzilmani va cheklovchi risk korsatkichlarini baholash;
4. Korxonadagi risk darajasini pasaytirish zaruratini hisobga olgan holda risklarni boshqarish tizimidagi faoliyatni nazorat qilish va monitoring qilish;
5. Mavjud risklarni boshqarish tizimining samaradorligi va natijadorligini malum bir vaqt birligida baholash.

Risklarni boshqarish jarayoni, zamonaviy risklarni boshqarish yondashuvlari nuqtai nazaridan, korxonadagi risk miqdorini optimallashtirish boyicha ketma-ket harakatlarni amalga oshirishning oziga xos xususiyatlari bilan bogliq bolgan bir qator bosqichlarga bolinishi mumkin. Bosqichlarni tanlash asosan empirik shartli harakat ekanligini tan olish kerak, chunki amalda kopincha alohida bosqichlarni sinxronlashtirish va ularni bajarishning vaqtinchalik chegaralarini belgilash mavjud.

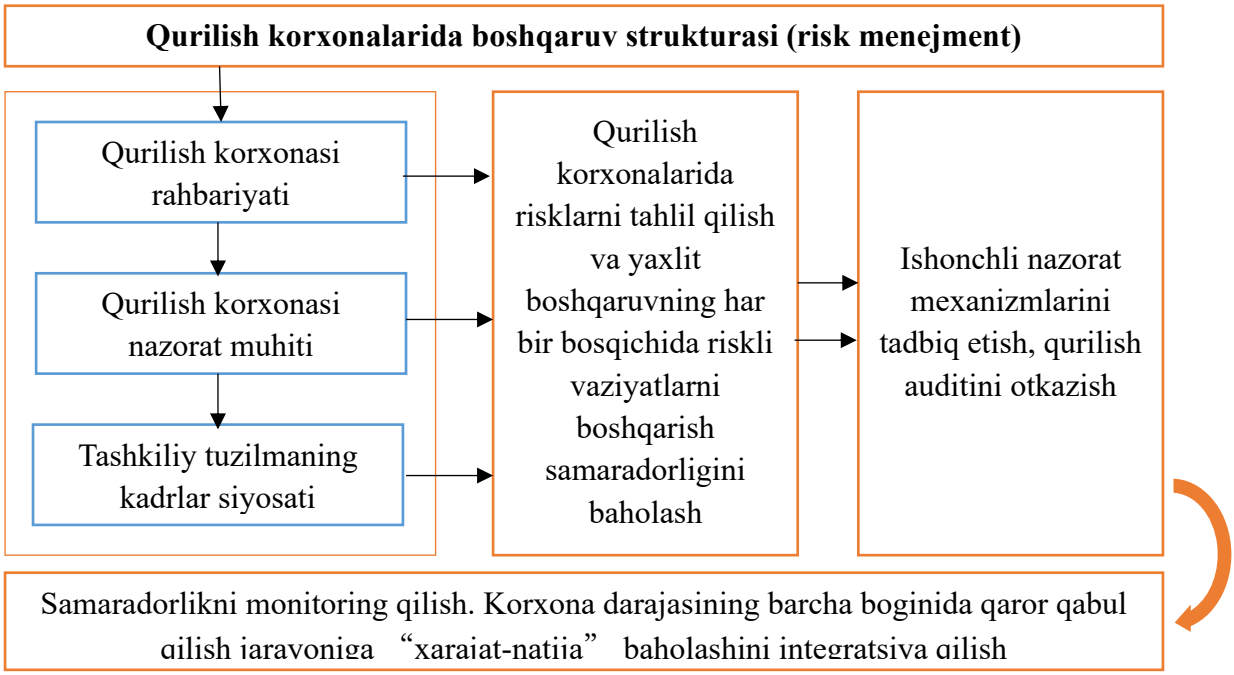
Qurilish korxonalarida risklarni boshqarish tizimini shakllantirish sharoitida korxonada risklarni boshqarishning quyidagi asosiy bosqichlarini ajratish mumkin.

1. Maqsadni belgilash va organilayotgan obyektning tashkiliy tuzilmasida risklarni boshqarish ornini aniqlash.
2. Korxonadagi risklarni aniqlash va iqtisodiy-statistik tahlil qilish
3. Muqobil usullarni tahlil qilish va paydo bolgan strategiya doirasida risklarni boshqarish usullarini yakuniy tanlash asosida korxonada riskka tasir qilish usullarining samaradorligini taqqoslash.
4. Tanlangan strategiya kontekstida risklarni boshqarishning tanlangan usulini amalga oshirish.
5. Risklarni boshqarish strategiyasini amalga oshirish uchun ichki nazoratni tashkil etish. Qurilish korxonalarida risklarni boshqarish boyicha nazorat, garchi

alohida bosqich sifatida ajratilgan bolsa ham, ayni paytda murakkab tashkiliy kategoriya bolib, boshqaruv jarayonining barcha bosqichlariga mos keladi.

Ichki audit nafaqat nazoratni, balki uslubiy funktsiyalarni ham amalga oshirish bilan bog'liq, chunki ichki auditor xojalik yurituvchi subyektning buxgalteriya hisobi muhitining sifatini muntazam ravishda kuzatib boradi va jiddiy xatolarni aniqlaydi, buxgalteriya hisobini, moliyaviy hisobot ko'rsatkichlari takomillashtirish bo'yicha tavsiyalar beradi.

6. Ozgarishlar va oqibatlarning monitoringi, korxonaning risklarni boshqarish tizimini yanada takomillashtirish.



1-rasm. Qurilish korxonalarida risklarni boshqarish jarayonlarining ichki nazorati tizimi[8]

Ozgarishlar va oqibatlarni monitoring qilish bosqichi vakolatli boshqaruv qarorlarini qabul qilish zarurligini hisobga olgan holda tizimga qayta aloqani taminlaydi. Organilayotgan boshqaruv jarayonining dinamik tabiatining oziga xos xususiyatlarini hisobga olgan holda mulkchilikning har qanday shaklidagi korxonada risklarni boshqarishning moslashuvchanligini samarali taminlashga qaratilgan.

Yuqoridagi barcha bosqichlar muallif tomonidan tizimlashtirilgan va korxonadagi risklarni boshqarish jarayoni algoritmining tizimli-mantiqiy diagrammasi shaklida taqdim etilgan (2-rasm).

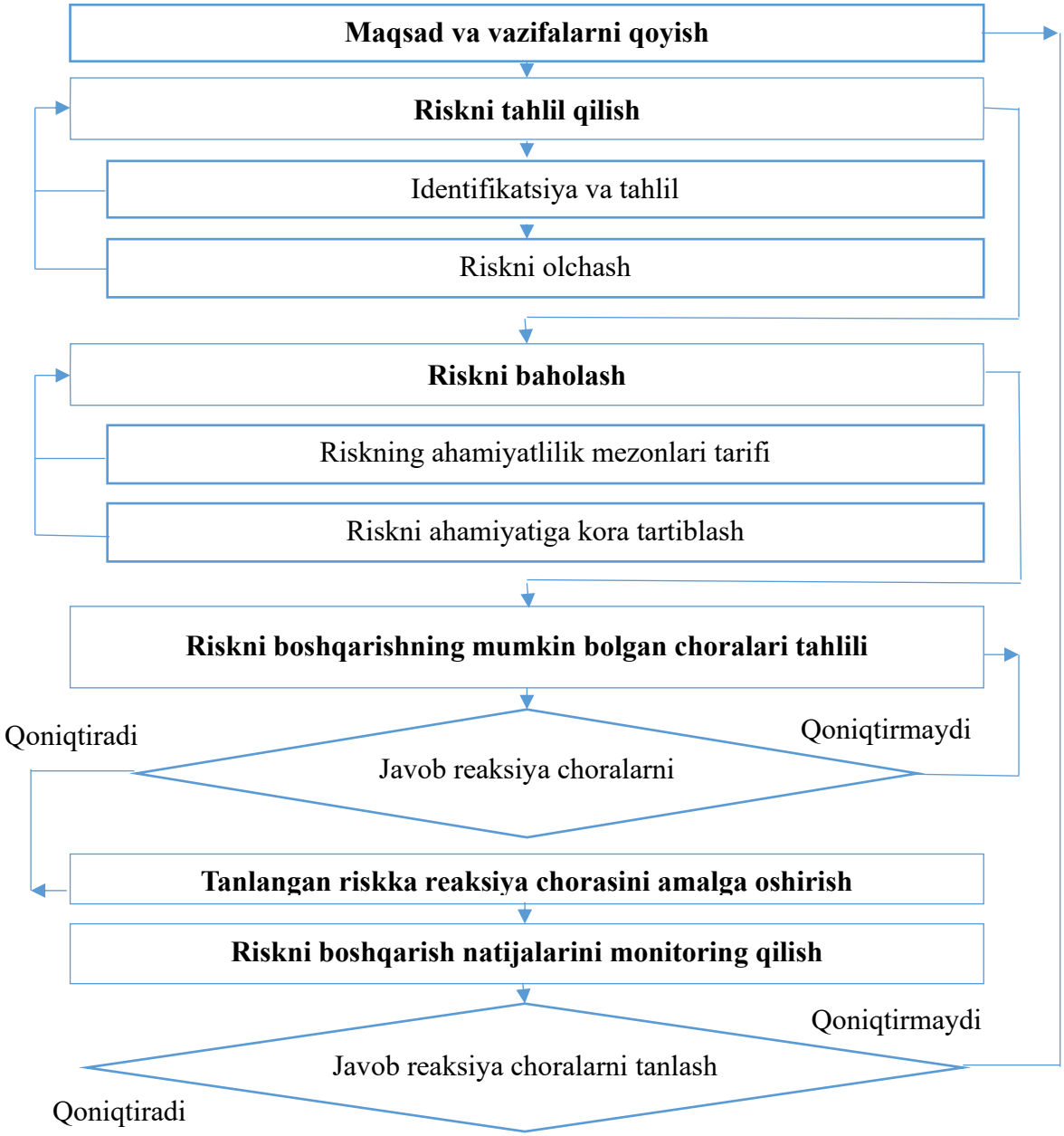
Taklif etilayotgan algoritm risklarni boshqarish tizimi haqidagi qarashlarimizga muvofiq ishlab chiqilgan. Algoritm noaniqlik holati mavjudligidan kelib chiqadi, uni risklarni boshqarish vositalaridan foydalangan holda aniqlikka aylantirish mumkin.

[8]Muallif ishlanmasi

Tadqiqotlar shuni korsatadiki, korxonalar oz faoliyati davomida bir risk bilan emas, balki bir qator turli xil riskli vaziyatlarga duch kelishadi, bu korxonalarni riskka qarshi kurashish uchun samarali chora-tadbirlarning yagona tizimini yaratish zarurligi haqidagi fikrga olib keladi.

Risk portfelini boshqarish keng qamrovli yondashuvni talab qiladi:

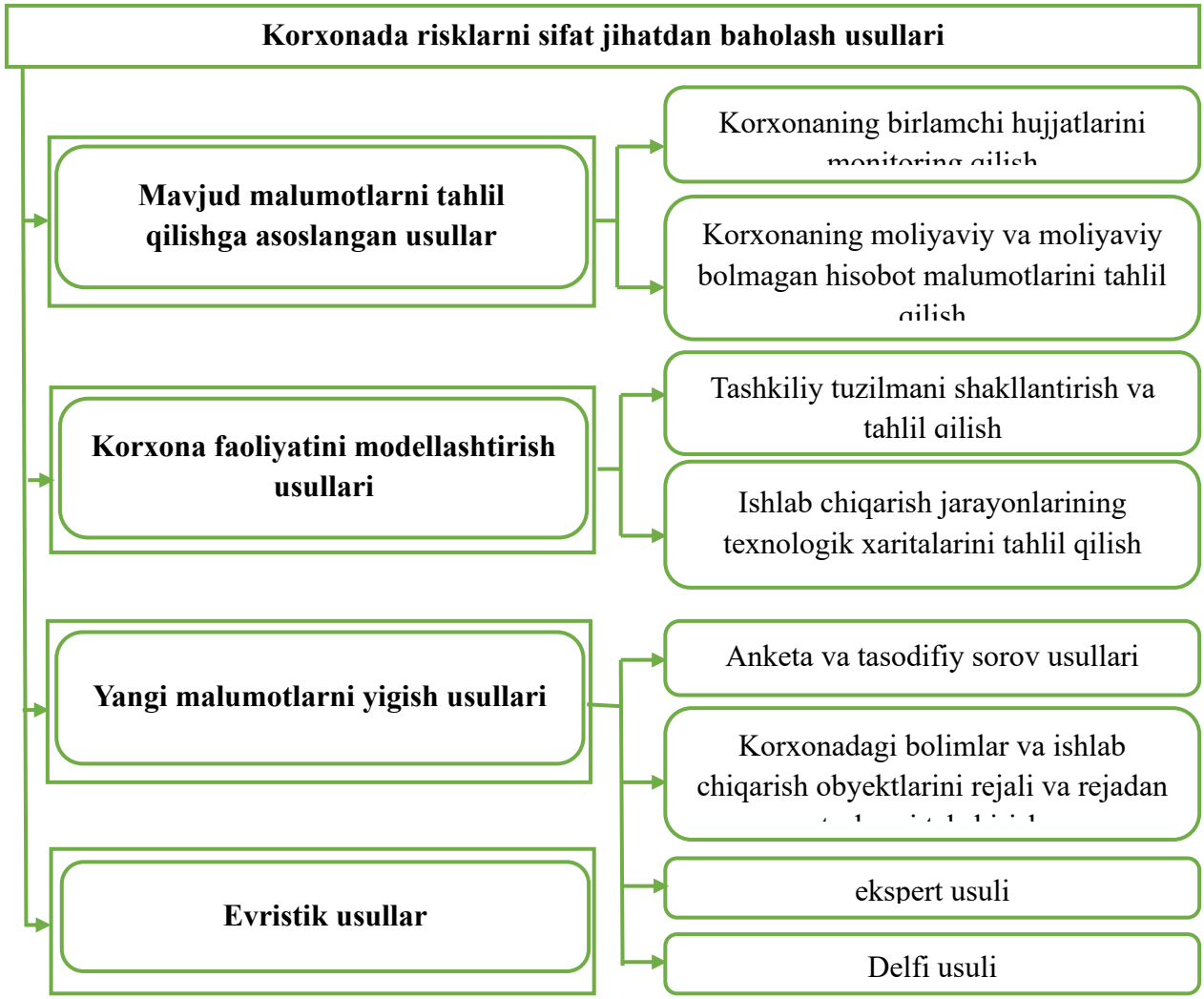
- Har bir riskni alohida tahlil qilish, malum risk holatlarining xususiyatlarini tushunishga va riskni boshqarish uchun mos vositalarni tanlashga imkon beradi;
- Risklar portfelini yaxlit tahlil qilishga qaratilgan bolib, bu risklarning malum bir biznes tuzilmasiga umumiy tasirini aniqlash imkonini beradi.
- Korxonadagi risklarni tahlil qilish va baholashning asosiy maqsadi kutilayotgan risk darajasini aniqlashga tizimlashtirish va kompleks yondashishdir.



2-rasm. Qurilish korxonalarida risklarni boshqarish jarayoni bosqichlari algoritmi[9]

Korxonadagi risklarni baholash uchun ikki guruhga bolinadigan turli usullar qollaniladi. Korxonada risklarni sifat jihatdan baholash usullarni qollash orqali tahlil qilinayotgan obyektning mumkin bolgan risklari aniqlanadi, yani ushbu riskning paydo bolishiga tasir qiluvchi manbalar va omillar aniqlanadi hamda tavsiflanadi, obyektning eng riskli hududlari aniqlanadi. Sanoat korxonalari faoliyatiga tasir qiluvchi risklarni aniqlash mutaxassislarga risklar soni boyicha risk darajasiga aniq baho berish va amalga oshirilayotgan loyihalarning dastlabki bosqichida malum qarorlaridan voz kechish imkonini beradi. Bizning fikrimizcha, risklarni sifat jihatdan tahlil qilishda qollaniladigan usullarni tort guruhga bolish mumkin (3-rasm).

[9] Muallif ishlanmasi



3-rasm. Korxonada risklarni sifat jihatdan baholash usullari[10]

Riskni sifat jihatdan baholash doirasida quyidagi usullar eng maqbulidir: ekspert baholash usuli, xarajatlarning texnik-iqtisodiy tahlili, analogiya usuli.

Ekspert baholash usuli muayyan muammo boyicha faoliyatning turli sohalaridagi malakali mutaxassislarni sorov otkazishdan, songra natijalarni statistik usullardan foydalangan holda qayta ishlashdan iborat. Hisob-kitoblar yoki taqqoslashlarni amalga oshirish uchun korxona rahbariyatidan zarur malumotlar yetarli bolmaganda yoki yoq bolganda murojaat qilinadi.

Korxonadagi risk darajasini pasaytirish uchun quyidagi harakatlar va vositalardan foydalanish mumkin:

1. Mutaxassislarni jalb qilgan holda loyihani boshlashdan oldin rejalashtirilgan ishlarni chuqur organish, shu jumladan SWOT tahlili metodologiyasidan foydalanish.

2. Kozda tutilmagan xarajatlarni qoplash uchun mablaglarni zaxiralash, bu potensial risklarning ushbu risklarning oqibatlarini bartaraf etish uchun zarur bolgan xarajatlar miqdori bilan bogliqligini nazarda tutadi.

[10]Iqtisodiy adabiyotlarni tahlil qilish orqali muallif tomonidan ishlab chiqilgan

3. Loyihada ishtiroklari ortasida risklarni taqsimlash, bu esa qoshimcha aksiyalar chiqarish, shoba korxonalar tashkil etish, birlashishni nazarda tutadi.

4. Cheklash - faoliyat jarayonida foydalaniladigan mablaglar, moddiy va mehnat resurslari miqdorini cheklash, jalb qilingan kredit resurslariga cheklovlar ornatish. U kreditga tovarlarni sotishda, debitorlik qarzlarini boshqarishda, kreditlar berishda va boshqa hollarda foydalaniladi.

5. Diversifikatsiya - qoyilgan mablaglarni daromadni yoqotish imkoniyatini kamaytirish maqsadida turli xil kapital qoyilma obyektlari ortasida taqsimlash.

6. Sugurta - risklarning bir qismini sugurta kompaniyalariga otkazish.

7. Oz-ozini sugurtalash - xojalik yurituvchi subyekt tomonidan natural va pul sugurta (zaxira) fondlarini mustaqil ravishda yaratish. U sugurtalangan mulkning qiymati butun biznesning mulkiy va moliyaviy parametrlariga nisbatan kichik bolgan hollarda qollaniladi. Bundan tashqari, juda kichik yoqotish ehtimoli bilan oz-ozini sugurta qilishdan foydalanish tavsiya etiladi.

Risklarni kamaytirish mexanizmini takomillashtirish uchun ushbu vositalarning kombinatsiyasidan foydalanish maqsadga muvofiq.

XULOSA.

Qurilish korxonalarida risklarni boshqarish - bu nafaqat xavflarni kamaytirish, balki loyiha samaradorligini oshirish, resurslardan oqilona foydalanish va barqaror rivojlanishni taminlashning muhim omilidir. Uslubiy yondashuvlar orqali risklarni aniqlash, baholash, ustuvorliklarini belgilash va ularni optimallashtirib beruvchi tizimli mexanizmlar shakllantiriladi.

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ENVIRONMENTAL POLLUTION AND MEASURES IN UZBEKISTAN

Abstract: *Environmental pollution remains one of the most urgent issues of modern Uzbekistan. The rapid development of industry, agriculture, and transport has led to air, water, and soil contamination, as well as the degradation of natural ecosystems. This article provides an analytical overview of the current environmental situation in Uzbekistan, discusses the main sources of pollution, and highlights governmental measures to improve ecological safety and promote sustainable development.*

Keywords: *environmental pollution, Uzbekistan, air quality, Aral Sea, soil degradation, ecological policy, sustainability.*

1. Introduction

Uzbekistan, located in Central Asia, is a landlocked country with limited water resources and an arid climate. Over the last several decades, economic expansion, urbanization, and industrialization have significantly increased anthropogenic pressure on the environment.

Air pollution, soil salinization, and the catastrophic drying of the Aral Sea are among the most pressing problems. Environmental degradation not only threatens ecosystems but also directly affects human health, agriculture, and national economic stability.

The government of Uzbekistan has recognized environmental protection as one of its key national priorities, integrating it into long-term development strategies such as the “Green Development Strategy 2030.”

2. Literature Review

Numerous studies have addressed the issue of environmental degradation in Uzbekistan.

According to Turdiev & Karimova (2021), air pollution in urban centers like Tashkent and Navoi has reached critical levels due to outdated industrial technologies and the rapid increase in vehicle numbers.

World Bank (2023) reports emphasize that 90% of Uzbekistan’s water resources are transboundary, making efficient regional cooperation essential.

The UNDP Uzbekistan Environmental Report (2022) highlights the Aral Sea crisis as one of the world's largest ecological disasters, which has drastically altered the regional climate and caused severe health problems.

FAO (2022) research focuses on land degradation, showing that over half of the irrigated lands suffer from moderate to severe salinization.

Meanwhile, Bektemirov (2020) notes that the success of environmental reforms in Uzbekistan largely depends on public awareness and institutional capacity.

These studies collectively confirm that environmental sustainability in Uzbekistan requires an integrated approach, combining technological modernization, ecological education, and legislative support.

3. Air Pollution in Uzbekistan

Air pollution is a major environmental concern in Uzbekistan. The largest sources include vehicle exhaust (about 55%), industrial emissions (30%), and the energy sector (10%).

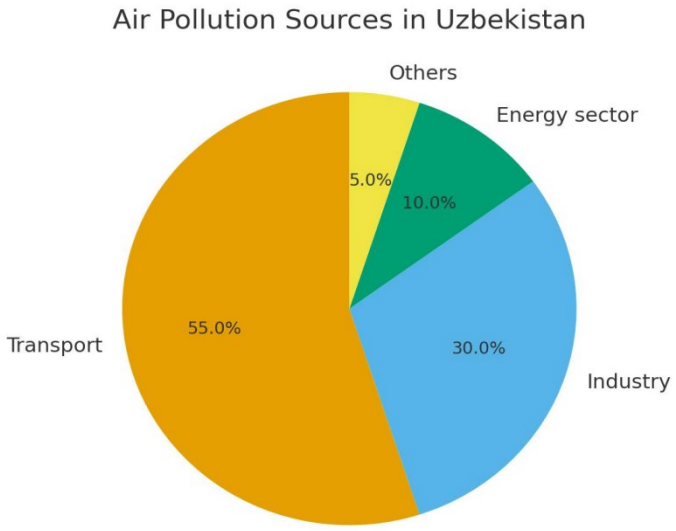


Figure 1: Air pollution sources in Uzbekistan (pie chart)
Transport – 55%
Industry – 30%
Energy sector – 10%
Others – 5%

According to the State Committee for Ecology, more than 700,000 tons of harmful gases are released into the atmosphere annually.

The main pollutants include carbon monoxide (CO), nitrogen oxides (NOx), sulfur dioxide (SO_2), and particulate matter (PM2.5).

High concentrations are observed in cities such as Tashkent, Angren, and Navoi.

Air contamination contributes to respiratory diseases, cardiovascular problems, and premature deaths. Studies by the World Health Organization

(WHO, 2023) estimate that air pollution reduces average life expectancy in Central Asian cities by up to two years.

4. Water Pollution and the Aral Sea Crisis

Water resources in Uzbekistan are under extreme stress.

Over 85% of available water is used for irrigation, which often leads to waste due to outdated canal systems.

Chemical fertilizers, pesticides, and industrial wastewater have further worsened the situation.

The Aral Sea disaster remains the most striking ecological tragedy. Excessive diversion of the Amu Darya and Syr Darya rivers for cotton irrigation caused the sea to lose over 90% of its volume since 1960.

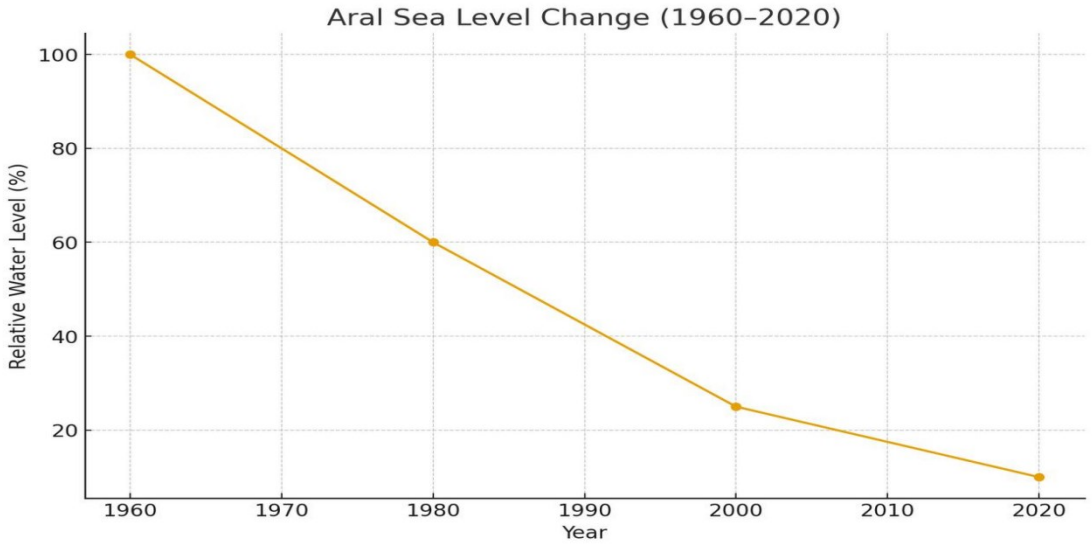


Figure 2: Aral Sea level change (line chart)
1960 – 100%
1980 – 60%
2000 – 25%
2020 – 10%

This catastrophe has turned once-flourishing fishing regions into barren deserts, created toxic dust storms, and negatively affected public health in the Karakalpakstan region.

However, recent projects such as the “Aral Sea Region Restoration Program” and international cooperation have begun to restore small water bodies and stabilize the ecosystem.

5. Soil Degradation and Land Salinization

Soil degradation is another major issue, particularly in irrigated areas of Bukhara, Khorezm, and Syrdarya.

More than 50% of agricultural land is affected by salinity. The primary causes include inefficient irrigation systems, lack of drainage, and overuse of agrochemicals.

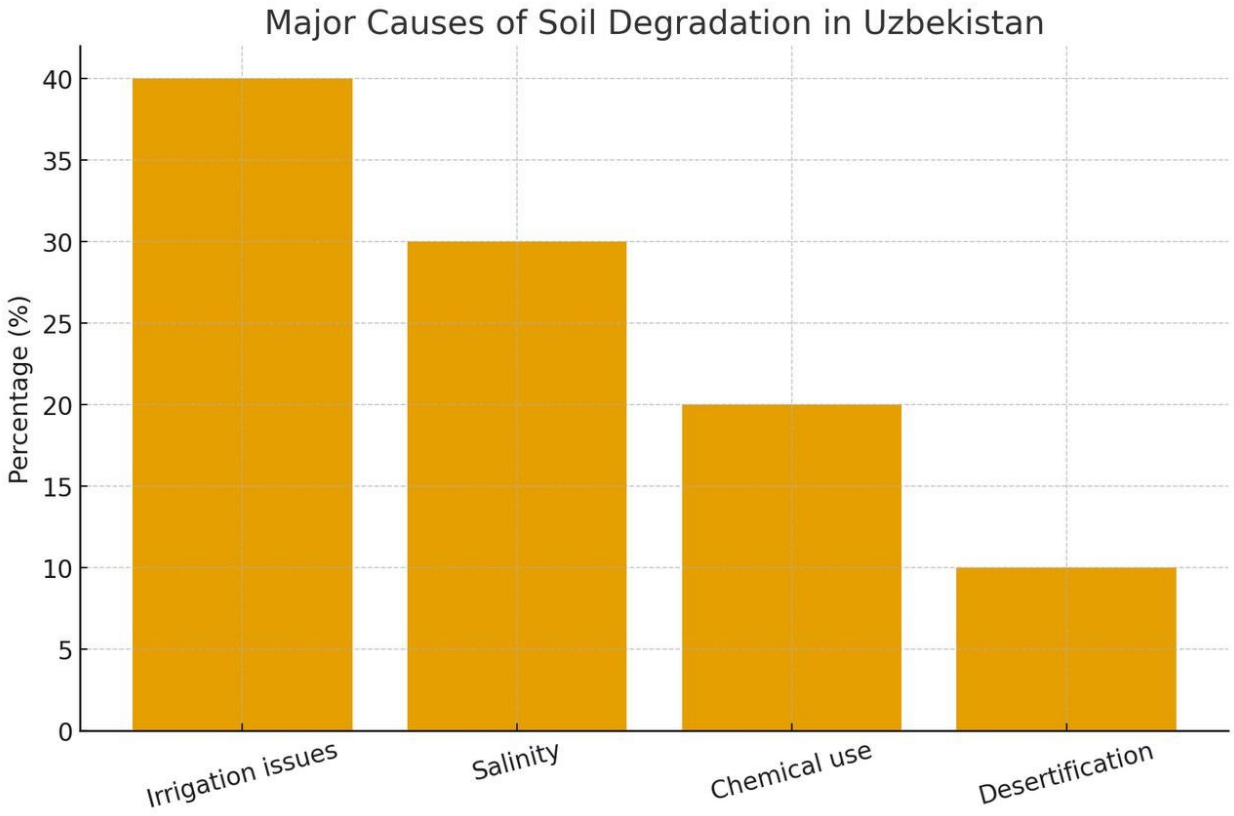


Figure 3: Major causes of soil degradation (bar chart)
Irrigation issues – 40%
Salinity – 30%
Chemical use – 20%
Desertification – 10%

Soil erosion reduces productivity, threatens food security, and accelerates desertification.

The FAO report (2022) warns that if current trends continue, Uzbekistan could lose up to 20% of its arable land by 2040.

6. Governmental Measures and National Programs

Recognizing the importance of environmental sustainability, the Uzbek government has launched several nationwide initiatives:

- "Yashil Makon" (Green Space) — a reforestation program aimed at planting more than one billion trees and shrubs by 2030.
- "Clean Air" Project — focuses on reducing vehicle emissions and promoting electric transport.
- "Aral Sea Restoration" Initiative — targets the re-greening of the dried seabed and improvement of water management systems.
- Environmental Protection Law (2021) — introduces stricter control over industrial emissions and waste disposal.
- Circular Economy Plan — promotes recycling and efficient resource use.

According to the Ministry of Ecology (2024), these initiatives have already reduced urban air pollutants by 8% compared to 2020 levels.

7. Public Awareness and Environmental Education

Environmental education plays a critical role in promoting sustainable practices.

In Uzbekistan, ecological knowledge is being introduced at all levels of education — from schools to universities.

Media campaigns, volunteer movements, and eco-festivals such as “Green Uzbekistan” and “Eco-Week” are fostering greater environmental awareness among young people.

The establishment of environmental clubs and student-led projects contributes to forming a new generation of ecologically responsible citizens.

8. Discussion

Despite noticeable progress, several challenges remain.

- Many enterprises still operate with outdated technologies.
- Waste recycling facilities are insufficient.
- Cross-border cooperation on water management remains limited.

Nevertheless, Uzbekistan’s transition toward a “Green Economy” and the adoption of renewable energy projects (solar and wind farms) demonstrate a positive shift.

Sustainable environmental management requires long-term monitoring, continuous public engagement, and international collaboration.

9. Conclusion

Environmental pollution in Uzbekistan is a multifaceted problem, affecting air, water, and soil quality.

However, the government’s consistent actions — combined with public awareness and global partnerships — are laying the foundation for a cleaner, greener future.

Continued scientific research, education, and international support will be crucial for ensuring ecological balance and sustainable development in the region.

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MARKAZIY ASAB TIZIMI GISTOLOGIYASI: NEYRON VA GLIAL HUJAYRALARNING O’ZARO TA’SIRI

Annotatsiya: *Maqolada Markaziy asab tizimida neyronlar va glial hujayralarning murakkab o‘zaro ta’siri tahlil qilinadi. Neyronlar signal uzatishda, glial hujayralar esa neyronlarni oziqlantirish, himoya qilish va impulslarni modulyatsiya qilishda muhim rol o‘ynaydi. Shuningdek, glial hujayralarning asosiy turlari va ularning sog‘lom hamda patologik jarayonlardagi ahamiyati yoritilgan. Neyron-glial aloqalarni chuqur o‘rganish nevrologiya va nevrofan rivoji uchun katta ahamiyatga ega.*

Kalit so’zlar: *Markaziy asab tizimi, neyron, glial hujayralar, astrositlar, mikrogliya, miyelin, nevrodegenerativ kasalliklar, nevroplastiklik.*

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HISTOLOGY OF THE CENTRAL NERVOUS SYSTEM: INTERACTION BETWEEN NEURONS AND GLIAL CELLS

Annotation: *The article analyzes the complex interactions between neurons and glial cells in the central nervous system. Neurons play a key role in signal transmission, while glial cells are essential for nourishing, protecting, and modulating neuronal impulses. The main types of glial cells and their significance in both normal and pathological processes are also discussed. A deep understanding of neuron-glial relationships is crucial for the development of neurology and neuroscience.*

Key words: *Central nervous system, neuron, glial cells, astrocytes, microglia, myelin, neurodegenerative diseases, neuroplasticity.*

Mavzuning dolzabligi

Markaziy asab tizimi (MAT) miya faoliyatini boshqarishda muhim rol o‘ynaydi. Neyronlar va glial hujayralar o‘rtasidagi o‘zaro ta’sir miya homeostazisi, neyronlarning oziqlanishi, himoyasi va signal uzatishda katta ahamiyatga ega. Ularning disfunksiyasi Altsgeymer, Parkinson va skleroz kabi kasalliklarning rivojlanishiga sabab bo‘ladi. Shu bois, neyron-glial munosabatlarni o‘rganish MAT fiziologiyasi va patologiyasini chuqur anglash uchun muhimdir.

Neyronlarning tuzilishi va funksiyasi

Neyronlar asab tizimining asosiy signal uzatuvchi hujayralari bo‘lib, hujayra tanasi, axon va dendritlardan tashkil topgan. Ular elektr va kimyoviy impulslar orqali informatsiyani qabul qiladi va boshqa neyronlar yoki effektor organlarga uzatadi.

Glial hujayralar va ularning turlari

Glial hujayralar markaziy asab tizimida neyronlarni qo‘llab-quvvatlaydi va himoya qiladi. Ularning asosiy turlari — astrositlar, oligodendrotsitlar, mikroglialar va ependimotsitlar. Astrositlar metabolik qo‘llab-quvvatlash va qon-miya to‘sig‘ida ishtirok etadi, oligodendrotsitlar miyelin qobig‘ini hosil qiladi, mikroglialar esa immun himoya vazifasini bajaradi.

Neyron va glial hujayralarning o‘zaro ta’sir mexanizmlari

Neyronlar va glial hujayralar kimyoviy hamda elektr signallar orqali o‘zaro ta’sir qiladi. Astrositlar glutamat va GABA darajasini hamda ion muvozanatini nazorat qilib, neyron faolligini tartibga soladi. Mikroglialar shikastlanish va infektsiyaga javoban faollashib, yallig‘lanish mediatorlarini ishlab chiqaradi. Oligodendrotsitlar miyelin qobig‘ini hosil qilib, impuls o‘tkazuvchanligini ta’minlaydi va asab tizimi faoliyatini qo‘llab-quvvatlaydi.

Patologik holatlarda o‘zaro ta’sirning buzilishi

Nevrologik kasalliklarda neyron va glial hujayralarning muloqoti buziladi. Masalan, astrositlarning disfunksiyasi neyronlarning metabolik stressga uchrashiga olib keladi, mikroglialarning doimiy faolligi esa surunkali yallig‘lanishni keltirib chiqaradi. Bu jarayon neyronlarning degeneratsiyasi va asab tizimining zaiflashishiga sabab bo‘ladi. Shu bilan birga, miyelin qoplamining buzilishi (demiyelinizatsiya) nevronlarning signal uzatishini sekinlashtiradi, bu esa ko‘plab asabiy kasalliklarda, masalan, sklerozda kuzatiladi.

Xulosa:

Neyron va glial hujayralarning o‘zaro ta’siri markaziy asab tizimining asosiy fiziologik jarayonlaridan biridir. Ushbu munosabatlarning buzilishi turli nevrologik kasalliklarning yuzaga kelishiga turtki bo‘ladi. Shu sababli, ushbu o‘zaro ta’sirlarni chuqur o‘rganish markaziy asab tizimining patologiyasini aniqlash va samarali davolash usullarini ishlab chiqishda muhim ahamiyatga ega.

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IMPROVING THE EFFECTIVENESS OF EDUCATION THROUGH ART PEDAGOGICAL TECHNOLOGIES

Annotation: *This article analyzes the role of art pedagogical technologies in the modern educational system, their theoretical and methodological foundations, and their importance in improving the effectiveness of the pedagogical process. Art pedagogy is an innovative approach aimed at developing the emotional, creative, and intellectual potential of an individual through artistic means. It deepens the principles of humanism, aesthetics, and creativity in education. The article thoroughly discusses the main theoretical directions of art pedagogy technologies, the teacher's professional skills, and the experience of implementing these technologies in the education system of Uzbekistan.*

Keywords: *art pedagogy, pedagogical technologies, innovative approach, educational effectiveness, creativity, learner-centered education, art, aesthetic education, art therapy.*

Introduction

In today's era of globalization, the primary task of the education system is to develop the individual comprehensively, shaping his or her creative, logical, and critical thinking abilities. The traditional system of education views the learner as a recipient of knowledge, whereas modern approaches transform the learner into an active creator of knowledge. From this perspective, art pedagogical technologies introduce emotional, aesthetic, and creative approaches to the educational process through the means of art.

Art pedagogy is also of great importance as a means of understanding the inner world of the individual, self-expression, and maintaining emotional balance. This article analyzes the theoretical foundations, methodological features, and the impact of art pedagogical technologies on improving the effectiveness of education.

Main Part

1. Theoretical and Methodological Foundations of Art Pedagogical Technologies

Art pedagogical technologies are innovative approaches that emerged at the intersection of modern pedagogy and psychology and serve to harmonize the aesthetic, emotional, and cognitive development of the individual. The theoretical roots of this direction trace back to the works of scholars such as L.S. Vygotsky, A. Maslow, C. Rogers, C. Jung, and S. Freud.

From a theoretical point of view, art pedagogy represents an integrative system in which psychological, aesthetic, cultural, and social factors are perceived as a unified process. In this system, the learner's emotional and intellectual state, aesthetic taste, and social activity develop together.

From a methodological perspective, art pedagogy is characterized by:

- learner-centered educational principles,
- creation of a creative environment,
- interactive and integrative teaching methods,
- emotionally oriented teaching techniques.

When applying these technologies in practice, the teacher combines strategies such as creating a creative atmosphere, encouraging students to express themselves freely, analyzing and supporting their emotional state. As a result, art pedagogy not only increases the effectiveness of the educational process but also contributes to the psychological stability, aesthetic perception, and social adaptability of the individual.

2. The Role of Art Pedagogical Technologies in the Educational Process

In the educational process, art pedagogy develops not only students' cognitive activity but also their emotions, imagination, and social behavior. Teaching through artistic means encourages students to gain aesthetic pleasure, appreciate beauty, and increase emotional sensitivity.

At the preschool and general education levels, art pedagogy revitalizes lessons, increases students' interest in learning, and activates creative thinking. For example:

- In visual arts, mood and emotions are expressed through colors;
- In music lessons, feelings are understood through melody and rhythm;
- In theatrical play, students learn to adopt and internalize social roles.

Thus, art pedagogical technologies ensure that education becomes more interactive, emotionally engaging, and personally meaningful to learners.

3. Ways to Develop Students' Creative Abilities through Art Pedagogy

Art pedagogical technologies make it possible to organize the educational process based on the principles of humanism, creativity, and emotional engagement. These technologies serve to harmonize students' personal experiences, emotions, and aesthetic perception with the content of education. Therefore, art pedagogy is regarded as a comprehensive system that develops not only the cognitive but also the affective (emotional) and social aspects of learning.

In the process of art pedagogy, teaching relies on artistic means such as visual arts, music, dance, theatre, literature, sculpture, puppetry, and other forms of creative activity. Through these means, the learner gains the opportunity to express his or her emotions, thoughts, and dreams in an aesthetic form. As a result, the student not only acquires knowledge but also develops the ability to understand his or her inner world, establish communication with others, and maintain socio-psychological balance.

At the preschool, primary, and general secondary education stages, art pedagogy organizes the learning process in a natural, engaging, and emotionally rich environment. For example, in **visual arts** lessons, children depict moods, seasons, and the beauty of nature through colors, thereby developing their perception, imagination, and aesthetic thinking skills. In **music** classes, elements such as melody, rhythm, and timbre help to cultivate emotional understanding and expression. **Theatrical performances**, in turn, assist students in mastering social roles, developing speech culture, and strengthening empathy and cooperation.

4. The Teacher's Mastery in Using Art Pedagogical Technologies

The effective implementation of art pedagogical technologies largely depends on the teacher's professional, pedagogical, and creative competencies. The teacher must be able to influence the learner's inner world through artistic means, create an emotional atmosphere, and involve students in creative activities. In this process, the teacher appears not as a traditional transmitter of knowledge but as a **facilitator** focused on the emotional, aesthetic, and spiritual development of the learner.

A teacher who successfully applies art pedagogical technologies must possess the following professional competencies:

- **Pedagogical-aesthetic competence:** understanding the principles of integrating different forms of art (music, visual arts, literature, theatre, etc.) into the learning process;
- **Psychological competence:** a deep understanding of child psychology, the ability to identify students' emotional states, and the application of a learner-centered approach;
- **Methodological competence:** the ability to effectively use art-pedagogical methods and techniques such as dramatization, color therapy, music therapy, and visual metaphor;
- **Creative competence:** the ability to plan lessons creatively, reveal students' individual talents, and encourage them to engage in aesthetic activity.

For a teacher, the use of art pedagogical technologies is not merely a change in lesson format, but rather the establishment of an **emotional and psychological connection** with students, building relationships based on mutual trust, motivation, and aesthetic pleasure. The teacher's **emotional intelligence** and **creative reflection** are among the most crucial factors determining the success of art pedagogy.

Teachers effectively utilize the following methods in art-pedagogical practice:

- **Dramatic role-playing** — helps students understand social roles, develop empathy, and strengthen communication culture;
- **Use of colorful visual materials** — enables emotional expression, mood regulation, and concentration;
- **Music- and rhythm-based activities** — promote emotional stability and reduce stress;

- **Visual art activities** — develop students' imagination, thinking, and aesthetic taste.

The teacher's personal aesthetic sense, cultural awareness, and artistic taste also play an important role in implementing art pedagogical technologies. A teacher who deeply understands aesthetic values can more easily instill them in students.

In the context of modern pedagogy, the teacher can elevate the learning process to a new level through creative use of **multimodal educational tools** such as digital art, interactive design, video, and audio materials. At the same time, continuous self-improvement, participation in professional development programs, and the study of innovative pedagogical technologies are essential for teachers.

5. The Importance of Art Pedagogical Technologies in Developing Children's Creative Abilities

Art pedagogical technologies play an important role in revealing a child's natural creative potential, enabling free self-expression, and enriching his or her emotional world. During the process of creative activity, the child re-creates the surrounding world through imagination and expresses inner feelings through color, sound, movement, and imagery. Therefore, art pedagogy is considered one of the most effective educational technologies aimed at the comprehensive development of the learner's personality.

For a child, creativity is not merely engagement with art, but also a process of self-discovery and testing one's abilities. For example, through drawing, the child expresses emotions; in music, he or she approaches the process not as a listener but as a performer; and through theatrical play, the child experiments with different social roles. These types of activities enhance children's verbal expressiveness, broaden their imagination, and foster independent thinking.

Art pedagogical technologies also contribute to a child's personal development by ensuring psychological stability, reducing stress, and strengthening self-confidence. In this process, the teacher or educator acts not as a leader but as a **collaborator**. The teacher does not criticize the child but encourages every creative attempt, which in turn increases the child's self-esteem and motivation.

Experimental results show that in groups where art pedagogical methods are regularly applied, children's social activity, communication culture, and aesthetic taste develop at a high level. They are able to articulate their thoughts figuratively and expressively and establish positive relationships with their peers.

Conclusion

Art pedagogical technologies are an integral part of the modern educational process, providing students not only with knowledge but also with opportunities for self-expression, personal formation, and the manifestation of creative potential. Art pedagogy enhances not only the effectiveness of teaching but also strengthens the humanistic relationship between teacher and student.

In the context of Uzbekistan's educational system, the widespread implementation of this approach is a key factor in fostering aesthetic culture, spirituality, and creative thinking among the younger generation.

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EFIR MOYLARINING KIMYOVIY TARKIBI VA ULARNING AMALIY AHAMIYATI

Annotatsiya: *Efir moylari tarkibidagi moddalar tuzilishi va ularning inson organizmiga foydali hamda zararli ta'sirlari haqida hamda ularning tibbiyotdagi ahamiyati. Efir moylarining fizik-kimyoviy xususiyatlari va Efir moylarini olish usullari.*

Kalit so'zlar: *Efir moyi, lavanda, mentol, menton, izomenton, sineol, evkalipt, ketona, izomenton, choy daraxti, asetat, antibakterial, yallig'lanish kasalliklari, teri kasalliklari.*

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CHEMICAL COMPOSITION OF ESSENTIAL OILS AND THEIR PRACTICAL SIGNIFICANCE

Annotation*: About the structure of substances contained in essential oils and their beneficial and harmful effects on the human body and their importance in medicine. Physicochemical properties of essential oils and methods of obtaining essential oils.*

Keywords*: Essential oil, lavender, menthol, menthone, isomenthone, cineole, eucalyptus, ketone, isomenthone, tea tree, acetate, antibacterial, inflammatory diseases, skin diseases.*

Zamonaviy kimyo, farmakologiya va kosmetologiya sohalarining rivojlanishi inson salomatligi uchun tabiiy manbalardan keng foydalanish imkonini bermoqda. Shunday tabiiy komponentlardan biri — efir moylari bo‘lib, ular o‘simliklarning turli organlarida to‘plangan uchuvchi, aromatik suyuqliklardir. Efir moylari qadimdan xalq tabobatida, parfyumeriya, oziq-ovqat, kimyo va farmatsevtika sanoatlarida muhim o‘rin tutadi. Ularning keng qo‘llanilish sababi — tarkibidagi biologik faol moddalarning xilma-xilligi va ularning fiziologik ta’sir mexanizmlaridir.

1. Efir moylarining fizik-kimyoviy xususiyatlari

Efir moylari — rangsiz yoki biroz rangli, suvda erimaydigan, lekin spirt, efir va yog‘larda yaxshi eriydigan suyuqliklardir. Ularning asosiy xususiyatlaridan biri — **uchuvchanlik**, ya’ni havo haroratida tez bug‘lanish qobiliyatidir. Shuning uchun ham ularning hidi uzoq masofadan seziladi.

Tabiat inson salomatligi va go‘zalligi uchun bebaho manbadir. O‘simliklardan olinadigan tabiiy mahsulotlar orasida **efir moylari** alohida o‘rin tutadi. Ular o‘zining yoqimli hidi, shifobaxsh xususiyatlari hamda kosmetika va farmatsevtika sohalaridagi keng qo‘llanilishi bilan qadimdan insoniyat e’tiborini tortib kelgan.

Efir moylarining zichligi odatda 0,8–1,1 g/sm³ atrofida bo‘ladi. Ular ko‘pincha **optik faol** bo‘lib, chiziqli qutblangan nur tekisligini o‘zgartira oladi. Ushbu xususiyatlar efir moylarini identifikatsiya qilishda va ularning tabiiy yoki sun’iyligini aniqlashda muhim ahamiyat kasb etadi.

Efir moylari nafaqat hid beruvchi komponent sifatida, balki tabiiy davo vositasi sifatida ham keng qo‘llaniladi. Ularning foydali jihatlaridan ba’zilarini sanab o‘tamiz:

Efir moylari – o‘simliklarning turli qismlaridan (gullari, barglari, po‘stloqlari, ildizlari) bug‘ distillash, sovuq presslash yoki erituvchi ekstraktsiya usullari bilan olinadigan konsentrlangan gidrofob suyuqliklardir. Ular o‘simliklarning o‘ziga xos hidi va ta'mi uchun javobgardir. Efir moylarining tarixi qadim zamonlarga borib taqaladi. Misr, Xitoy va Hindiston sivilizatsiyalari ularni diniy marosimlarda, kosmetikada va tibbiy maqsadlarda ishlatgan.

Miloddan avvalgi 2000-yillarda Misrda mumiyolash jarayonida efir moylaridan foydalanilgan. Gippokrat kabi qadimgi yunon tabiblari ularning shifobaxsh xususiyatlarini o‘rganishgan. O‘rta asrlarda esa arab olimi Ibn Sino efir moylarini distillash usulini takomillashtirib, ularning tibbiyotda keng qo‘llanilishiga zamin yaratgan

1. **Antibakterial va antiviral ta’sir** – choy daraxti, evkalipt, lavanda moylari mikroblarni yo‘qotadi.
2. **Tinchlantiruvchi va stressni kamaytiruvchi ta’sir** – lavanda, atirgul, yalpiz va bergamot moylari asab tizimini tinchlantiradi.
3. **Teri parvarishida** – efir moylari kosmetik krem, niqob va shampunlarga qo‘shilib, teri va sochni oziqlantiradi.
4. **Nafas olish tizimini yaxshilaydi** – mentol, evkalipt yoki qarag‘ay moylari burun bitishini kamaytiradi.
5. **Immunitetni mustahkamlaydi** – ayrim moylar organizmning tabiiy himoya kuchini oshiradi.

2. Efir moylarini olish usullari

O‘simliklardan efir moylarini ajratib olish bir necha asosiy usullar orqali amalga oshiriladi:

- **Bug‘ yordamida haydash (distillatsiya)** – eng keng tarqalgan usul bo‘lib, o‘simlik xom ashyosi suv bug‘i bilan ishlov beriladi va uchuvchi komponentlar kondensatsiyalanib, moy ajratiladi.

- **Presslash (mexanik siqish)** – asosan tsitrus mevalar po‘stlog‘idan efir moylarini olishda qo‘llaniladi.
- **Erituvchilar yordamida ekstraksiya** – nozik hidli gullardan (atirgul, yasemin, lavanda) moy olish uchun ishlatiladi.
- **Superkritik CO_2 ekstraksiyasi** – zamonaviy, ekologik toza usul bo‘lib, yuqori bosim ostida karbonat angidrid yordamida moy ajratiladi.

Har bir usulda olingan mahsulot tarkibi, rangi va hidi biroz farq qiladi, shuning uchun texnologik tanlov tayyor mahsulot sifatiga bevosita ta’sir etadi.

Efir moylari — bu o‘simliklarning turli qismlarida (guli, bargi, po‘stlog‘i, ildizi yoki mevasi) mavjud bo‘lgan uchuvchi, aromatik suyuqliklardir. Ular, asosan, bug‘ yordamida haydash (distillatsiya)**,** presslash **yoki** erituvchi yordamida ajratib olish usullari bilan olinadi.

Masalan:

- **Lavanda moyi** – lavanda gulidan bug‘ bilan haydash orqali olinadi.
- **Apelsin, limon, greypfrut moylari** – meva po‘stlog‘ini presslash yo‘li bilan olinadi.
- **Atirgul va yasemin moylari** – erituvchilar yordamida ajratiladi.
-

3. Kimyoviy tarkibi

Efir moylari murakkab aralashma bo‘lib, ularda terpenlar (limonen, pinene, mentol), aldehidlar (tsitral, sinnamaldegid), spirtlar (linalol, geraniol), ketonlar (kamfora, menton), efirlar (linalil asetat) va fenollar (evgenol, timol) kabi komponentlar mavjud.

Bu birikmalar o‘simlikning genetik turi, o‘sish muhiti, iqlim sharoiti, yig‘im vaqti hamda saqlash sharoitiga qarab o‘zgarib turadi. Shu sababli har bir o‘simlik turi o‘ziga xos xromatografik “barmoq izi” (chemical fingerprint) ga ega bo‘ladi.

Efir moylarining tarkibida terpenlar**,** spirtlar**,** efirlar**,** aldehidlar**,** ketonlar**,** fenollar kabi murakkab organik birikmalar mavjud. Ularning nisbati o‘simlik turiga qarab o‘zgaradi. Ana shu moddalarning uyg‘unligi efir moylariga o‘ziga xos hid, rang va biologik faollik beradi.

4. Biologik faolligi va amaliy qo‘llanilishi

Efir moylarining biologik ta’siri ularning kimyoviy tarkibi bilan chambarchas bog‘liqdir. Tadqiqotlar shuni ko‘rsatadiki, ayrim efir moylari antimikrob, antivirus, yallig‘lanishga qarshi, antiseptik, tinchlantiruvchi, immunomodulyator va antioksidant xususiyatlarga ega.

- **Lavanda moyi** — asab tizimini tinchlantiradi, uyqusizlikni kamaytiradi.
- **Choy daraxti moyi** — kuchli antibakterial va antifungal ta’sir ko‘rsatadi.
- **Evkalipt moyi** — nafas yo‘llari kasalliklarida foydali bo‘lib, bronxlarni tozalaydi.
- **Atirgul moyi** — kosmetologiyada teri parvarishida keng qo‘llaniladi.

Tibbiyotda efir moylari aromaterapiya, massaj, inhalyatsiya, kompress va hammom shaklida qo‘llaniladi. Farmatsevtik sanoatda esa ular malham, surtma, sprey va kremlarning faol komponenti sifatida ishlatiladi.

Efir moylaridan foydalanish sohasi juda keng:

- **Aromaterapiya** – ruhiy holatni yaxshilash uchun inhalyatsiya yoki massajda qo‘llaniladi.
- **Tibbiyotda** – antiseptik, yallig‘lanishga qarshi va tinchlantiruvchi vosita sifatida ishlatiladi.
- **Kosmetologiyada** – krem, loson, shampun, parfumeriya mahsulotlariga qo‘shiladi.
- **Maishiy hayotda** – havo tozalash, xonaga yoqimli hid berish uchun aroma lampalarda ishlatiladi.

Yalpiz — Yalpiz (Mentha piperita)

Yalpiz — xalq tabobatida eng ko‘p ishlatiladigan o‘simliklardan biri bo‘lib, asosan efir moyi uchun qadrlanadi. Asosiy kimyoviy moddalari:

Modda nomi / Kimyoviy sinfi Ta’siri / xususiyati. Mentol

($C_{10}H_{20}O$) Monoterpen spirt Sovutuvchi, og‘riqni kamaytiruvchi,

Antiseptic Menton ($C_{10}H_{18}O$) Ketona Hushbo‘y, tinchlantiruvchi1,8-Sineol

(Eukaliptol) Oksimonoterpen Nafas yo‘llarini tozalaydi Izomenton Ketona Antimikrob ta’sirga ega. Pulegon Monoterpen keton Kuchli aromatik ta’sir. Yalpiz efir moyi tarkibi (o‘rtacha):

Mentol – 35–55%

Menton – 10–30%

Izomenton – 3–10%

1,8-sineol – 5–10%

Limon – 1–3%

Lavanda - (Lavandula angustifolia)

Lavanda — efir moyi beruvchi dorivor o‘simlik bo‘lib, gullari va barglari kimyoviy jihatdan juda boy tarkibga ega.

Asosiy kimyoviy moddalari: Modda nomi / Kimyoviy sinfi Ta’siri / xususiyati Linalool ($C_{10}H_{18}O$) Monoterpenspirt Tinchlantiruvchi, antibakterial, yengil og‘riq qoldiruvchi Linalil asetat ($C_{12}H_{20}O_2$) Ester Tinchlantiruvchi, yoqimli hid beruvchi, mushaklarni bo‘shashtiradi Kampor ($C_{10}H_{16}O$) Ketona Antiseptik, yengil stimulyator1,8- Sineol (Eukaliptol) Oksimonoterpen Antiseptik,

yo‘taldan xalos qiluvchi Geraniol Monoterpen spirt Antibakterial, xushbo‘y Karyofillen Seskviterpen Yallig‘lanishga qarshi ta’sir Tanidlar, flavonoidlar Polifenollar Antioksidant va yallig‘lanishga qarshi

xususiyatga ega Lavanda efir moyi tarkibi:

Linalool – 25–38%

Linalil asetat – 25–45%

Karyofillen – 2–5%

Kampor – 1–2%

1,8-sineol – 1–3%

5. Xavfsizlik va saqlash talablari

Efir moylari yuqori konsentratsiyaga ega bo‘lgani sababli ularni me’yoridan ortiq ishlatish tavsiya etilmaydi. Ular ba’zi hollarda terini kuydirishi yoki allergik reaktsiya chaqirishi mumkin. Shuning uchun efir moylari bazaviy yog‘lar (masalan, zaytun, bodom, kokos yog‘i) bilan aralashtirilib qo‘llaniladi.

Shuningdek, efir moylari yorug‘lik va havoga sezgir bo‘lib, ularni qorong‘i shisha idishlarda, 10–15°C haroratda saqlash lozim.

Efir moylari tabiiy bo‘lishiga qaramay, ularni to‘g‘ri ishlatish muhimdir. Yuqori konsentratsiyadagi moylar **teri kuyishiga**, **allergik reaktsiyalarga** sabab bo‘lishi mumkin. Shuning uchun ularni har doim **bazaviy (tashuvchi) moy** – masalan, zaytun, bodom yoki kokos moyi bilan aralashtirish tavsiya etiladi.

Efir moylarining kimyoviy tarkibi va faol moddalari

Efir moylari murakkab kimyoviy birikmalar aralashmasidir. Ularning asosiy komponentlari terpenlar, terpenoidlar, fenollar, ketonlar, efirlar, aldegidlar va spirtlardan iborat. Aynan shu moddalar efir moylarining noyob terapevtik xususiyatlarini belgilaydi.

• Terpenlar: Yallig‘lanishga qarshi va analgetik (og‘riq qoldiruvchi) ta'sirga ega.

Masalan, limonend limon va apelsin moyida ko‘p uchraydi.

• Fenollar: Kuchli antibakterial va antiviral xususiyatlarga ega. Masalan, timol va

karvakrol timyan va oregano moyida mavjud.

• Efirlar: Tinchlantiruvchi va spazmolitik (tirishishga qarshi) ta'sirga ega. Masalan,

linalil asetat lavanda moyining asosiy komponentidir.

Har bir efir moyi o‘ziga xos kimyoviy profilga ega bo‘lib, bu ularning aniq terapevtik ta'sirini aniqlaydi. Ushbu murakkab kimyoviy tuzilma ularning biologik faolligini ta'minlaydi

Efir moylarining terapevtik xususiyatlari

Antibakterial va antiviral

Ko‘plab efir moylari, jumladan, choy daraxti, oregano va timyan moylari keng spektrli bakteriya va viruslarga qarshi samarali kurashadi.

Yallig‘lanishga qarshi

Lavanda, zanjabil va romashka moylari yallig‘lanish jarayonlarini kamaytirib, og‘riqni yengillashtirishga yordam beradi.

Og‘riq qoldiruvchi

Yalpiz, evkalipt va marjoram moylari mushak og‘riqlari, bosh og‘rig‘i va bo‘g‘inlardagi noqulaylikni bartaraf etishda yordam beradi

Tinchlantiruvchi va antidepressant

Lavanda, bergamot va ilang-ilang moylari stressni kamaytiradi, uyquni yaxshilaydi va kayfiyatni ko‘taradi.

Antifungal

Choy daraxti va oregano moylari zamburug‘li infektsiyalarni davolashda, masalan, oyoq kafti mikozida samarali.

Bu xususiyatlar efir moylarini tabiiy tibbiyotda qimmatli vositaga aylantiradi, ularni turli kasalliklar va holatlarni davolashda ishlatish imkonini beradi.

Muayyan kasalliklarni davolashda efir moylarining samaradorligi

Uyqusizlik va bezovtalik

Lavanda moyi markaziy asab tizimini tinchlantirib, uyquni yaxshilashga yordam beradi. Uni diffuzorga solish yoki yostiqqa bir necha tomchi tomizish orqali foydalanish mumkin.

Bosh og'rig'i va migren

Yalpiz moyi peshonaga yoki chakkalarga surtilsa, og‘riqni yengillashtirishga yordam beradi. Uning sovutuvchi ta'siri qon tomirlarini toraytirib, og‘riqni kamaytiradi.

Teridagi muammolar (Akne, kesiklar)

Choy daraxti moyi kuchli antiseptik xususiyatlari tufayli akne, kesiklar va boshqa teri infektsiyalarini davolashda samaralidir. Uni tashuvchi moy bilan suyultirib, zararlangan joyga surtish tavsiya etiladi.

Nafas olish yo'llari kasalliklari

Evkalipt va yalpiz moylari shamollash, sinusit va bronxitda nafas olishni yengillashtiradi. Ularni ingalyatsiya qilish yoki ko‘krak qafasiga surtish orqali foydalaniladi.

Efir moylarini ishlatishda ehtiyot choralari va qarshi ko'rsatmalar

Suyultirish qoidasi

Efir moylarini hech qachon toza holda teriga surtmang. Har doim ularni tashuvchi moylar (kokos, jojoba, bodom moyi) bilan suyultiring. Odatda, 1-2% suyultirish darajasi tavsiya etiladi (1 choy qoshiq tashuvchi moyga 1-2 tomchi efir moyi).

Allergiya testi

Har qanday yangi efir moyini ishlatishdan oldin, terining kichik bir qismida (masalan, bilakning ichki tomonida) allergiya testi o‘tkazing. Qizarish, qichishish yoki toshma paydo bo‘lsa, undan foydalanishni to‘xtating.

Homiladorlik va emizish

Homiladorlik va emizish davrida efir moylarini ishlatishdan oldin shifokor bilan maslahatlashing. Ba'zi moylar homila yoki chaqaloqqa zararli ta'sir ko‘rsatishi mumkin.

Bolalar va uy hayvonlari

Bolalar va uy hayvonlari bor joylarda efir moylarini ehtiyotkorlik bilan ishlating. Ba'zi moylar ular uchun toksik bo‘lishi mumkin. Ularni yuqori joyda, bolalar yeta olmaydigan joyda saqlang.

Ichki qabul qilish

Efir moylarini ichki qabul qilishdan qoching, agar mutaxassis tomonidan tavsiya etilmagan bo‘lsa. Ko‘pgina efir moylari ichki qabul qilish uchun xavfli hisoblanadi.

Ilmiy tadqiqotlar va kelajak istiqbollari

So‘nggi yillarda efir moylarining terapevtik xususiyatlarini o‘rganish bo‘yicha ilmiy tadqiqotlar soni sezilarli darajada oshdi. Tadqiqotchilar ularning antibakterial, yallig‘lanishga qarshi, antioksidant va saratonga qarshi ta'sirlarini chuqurroq o‘rganmoqdalar.

• Klinik sinovlar: Hozirda bir qator klinik sinovlar o‘tkazilmoqda, bu esa efir moylarining

turli kasalliklarni davolashdagi samaradorligini tasdiqlashga yordam beradi.

• Yangi dasturlar: Farmatsevtika va kosmetika sanoati efir moylari asosida yangi

mahsulotlar yaratish ustida ishlamoqda, bu ularning qo‘llanilish sohasini kengaytiradi.

• Mexanizmlarni o‘rganish: Efir moylarining hujayra darajasidagi ta'sir mexanizmlarini

tushunish, ulardan yanada samarali foydalanish imkoniyatini yaratadi.

Kelajakda efir moylari an'anaviy tibbiyot bilan birgalikda integrativ tibbiyotning muhim qismiga aylanishi va yanada ko‘proq insonlarning salomatligini yaxshilashga xizmat qilishi kutilmoqda.

XULOSA

Xulosa qilib aytganda, Efir moylari — tabiat in’om etgan noyob va ko‘p qirrali mahsulotdir. Ular inson salomatligini saqlash, ruhiy muvozanatni tiklash hamda go‘zallikni asrashda muhim ahamiyatga ega. To‘g‘ri va me’yorida qo‘llanilganda, efir moylari tabiiy davo va profilaktika vositasi sifatida hayotimizni yanada sog‘lom va yoqimli qiladi efir moylari to‘g‘ri qo‘llanilganda salomatlikni yaxshilash, kasalliklarning oldini olish va davolashda qimmatli yordamchi bo‘lishi mumkin. Ularning keng terapevtik spektri va tabiiy kelib chiqishi ularni zamonaviy sog‘liqni saqlash amaliyotida muhim o‘ringa qo‘yadi.

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A STUDY OF THE SPIRITUAL AND LITERARY EVOLUTION OF THE CHARACTER OF ZULAYKHA

Annotation. *This article examines the evolution of the "Yusuf and Zulaykha" narrative in the context of Eastern literary tradition, focusing on the transformation of the character of Zulaykha from a figure of human passion to a symbol of divine love. Drawing upon Qur'anic sources, classical tafsir literature, and Sufi philosophy, the study traces the thematic and symbolic development of the story across Persian and Turkic literary heritage. Particular attention is given to Mirzo Olim Devona's Ravzayi Asrār, which elevates the character of Zulaykha to a metaphysical level, representing the human soul's spiritual journey toward union with the Divine. Through comparative and interpretive analysis, the paper highlights how each era and poet–such as Firdawsi, Jami, Navoi, and Devona–reinterpreted the narrative in accordance with their philosophical and aesthetic worldview.*

Key words: *Yusuf and Zulaykha, Eastern literature, Sufism, Mirzo Olim Devona, divine love, spiritual transformation, classical poetics.*

In the history of Eastern literature, the "Yusuf and Zulaykha" narrative stands as one of the most frequently reinterpreted and artistically refined religious-epic stories endowed with profound spiritual dimensions. This legend is closely intertwined not only with Islamic culture but also with the literary thought of ancient civilizations.

In literary studies, the term "Yusuf and Zulaykha" cycle refers to a corpus of works in which the Prophet Yusuf symbolizes patience, chastity, and fidelity, while Zulaykha represents the transformation of human love into divine love. The storyline has been reinterpreted by prominent poets such as Nizami, Firdawsi, Khusraw Dehlavi, Jami, Alisher Navoi, and Mirzo Olim Devona, each reflecting the philosophical and aesthetic worldview of their respective eras.

According to textual and source-based research, the origins of the character of Zulaykha trace back to ancient Egyptian literature, specifically to "The Tale of the Two Brothers," which dates to the 13th century BCE. In this tale, the younger brother Bata is falsely accused by his master's wife and punished despite his innocence–a motif that was later imbued with new religious and moral meanings in the "Yusuf and Zulaykha" narrative.

The earliest source of the Yusuf story appears in sacred scriptures, particularly in the Book of Genesis (chapters 37–50) of the Torah. It recounts Yusuf's being cast into a well, sold into slavery in Egypt, and his encounter with

the wife of Pharaoh–known in Islamic tradition as Zulaykha. Yusuf's purity and steadfastness are interpreted in this version as the central moral and ethical ideals of the story.

In the Qur'an and Islamic exegesis, the story of Yusuf is portrayed as "the most beautiful of stories." The Surah Yusuf is presented in the Qur'an as a complete and independent narrative consisting of 111 verses. Although Zulaykha's name is not explicitly mentioned in the Qur'an, she is referred to as "the wife of al-'Aziz." In classical tafsir sources such as those by Ibn Kathir, al-Tabari, and al-Baydawi, this woman is identified as Zulaykha, and her love for Yusuf is interpreted as a divine trial – a spiritual test bestowed by God.

Within Sufi thought, Zulaykha's love is perceived as "the school of human love leading to divine love." In other words, her passion symbolizes the soul's journey toward union with the Divine.

In Persian and Turkic literature, the "Yusuf and Zulaykha" tradition became even more elaborated and widespread. Among the earliest writers to introduce this theme into Persian-Tajik literature was Firdawsi, whose "Yusuf and Zulaykha" narrative represents one of the oldest artistic treatments of the Yusuf motif. However, the most renowned author to compose "Yusuf and Zulaykha" as an independent masnavi is Abdurrahman Jami. Jami's "Yusuf and Zulaykha" poem is rich in Sufi symbolism, in which Yusuf represents "divine beauty," while Zulaykha embodies "the soul's yearning for God."

In Turkic literature, this tradition began to take shape from the 11th century onward. By the 13th century, poets such as Nurmuhammad Andalib and Qul Ali, and later in the 15th century, Durbek and Alisher Navoi, reinterpreted the "Yusuf and Zulaykha" narrative in a moral and philosophical spirit.

Mirzo Olim Devona's "Rawzayi Asrār" (The Garden of Mysteries) represents a later stage in the evolution of the "Yusuf and Zulaykha" cycle. In this work, the story of Yusuf and Zulaykha is depicted not merely as an allegory of earthly love, but as a symbol of spiritual perfection. At the core of the poem lies Zulaykha's process of inner transformation. Initially, she appears as a captive of physical beauty and sensual desire. However, through the influence of Yusuf's patience, faithfulness, and piety, she evolves from "external love" (zāhirī muhabbat) to "inner love" (bātinī muhabbat) - that is, divine love. This transformation corresponds to the Sufi concept of "muhabbat sulūkī," the spiritual path toward perfection through love for God.

Mulla Olim Devona portrays Zulaykha through the following symbolic images:

Tears – a sign of repentance and purification;

Love for the Beloved – a manifestation of the Divine Beauty;

Zulaykha's palace – a metaphor for the human heart filled with desires and temptations;

The light of Yusuf – a symbol of divine truth, awakening the soul.

While in Jami's interpretation Zulaykha attains divine beauty through the suffering of love and eventual union with Yusuf, in Navoi's rendition she is viewed primarily as a moral exemplar and a source of ethical reflection.

In his poem Ravzayi Asrār (The Garden of Mysteries), Mirzo Olim Devona reinterprets the traditional "Yusuf and Zulaykha" narrative within a Sufi framework, elevating the image of Zulaykha to a new spiritual and philosophical dimension. In this work, Yusuf symbolizes divine beauty -the manifestation of God's perfection (jamāl-i Ḥaqq), while Zulaykha embodies the human soul's inner longing to attain the Divine.

Zulaykha's love is no longer worldly; rather, it represents the soul's arduous, patient, and painful journey toward union with the Creator. Along this path, she transcends the physical shell of love, undergoes purification, moves toward perfection, and attains truth (ḥaqīqat) through love ('ishq).

In Devona's portrayal, Zulaykha's suffering symbolizes the inner struggle against the self (nafs), and her long years of separation from Yusuf become a spiritual trial through which she rediscovers her true essence by means of patience and repentance. Zulaykha no longer seeks Yusuf himself, but seeks the Divine through Yusuf.

This idea represents the highest Sufi ideal - the mystical journey from metaphor (majāz) to truth (ḥaqīqat). In Sufism, true love ('ishq-i ṣādiq) signifies reaching the Creator, finding Him, and ultimately annihilating the self (fanā) in the beauty of His presence.

Thus, the "Yusuf and Zulaykha" narrative in Eastern literature evolved beyond a mere tale of love; it became a profound allegory of the soul's journey toward perfection and the subtle connection between the human being and the Divine. Each century and each author revitalized this story through the lens of their own spiritual and social worldview, breathing new life into its timeless essence.

Most importantly, the enduring power of this narrative lies in its ability to awaken both hearts and minds. The "Yusuf and Zulaykha" theme remains one of the most ancient yet perpetually renewed motifs in Eastern literary tradition. Although its origins reach back to ancient Egyptian literature, under the influence of the Qur'an, Sufi philosophy, and classical literary thought, it acquired a distinctly spiritual and philosophical character.

Throughout its historical evolution, the image of Zulaykha transformed from that of a woman driven by human passion into a symbol of divine love. Mirzo Olim Devona's Ravzayi Asrār represents the most philosophical, symbolic, and spiritual stage of this transformation, elevating the figure of Zulaykha to a new Sufi dimension. In this work, Zulaykha personifies the human soul's suffering, purification, and enlightenment on its path toward recognizing and uniting with the Creator.

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O‘ZBEKISTONDA XALQARO MOLIYAVIY HISOBOT STANDARTLARIGA O‘TISHNING ZARURIYATI VA MUHIMLIGI

Annotatsiya: *Ushbu maqola O'zbekistonda moliyaviy hisobot standartlariga o'tish zarurati va ahamiyatini ko'rib chiqadi.*

Kalit so'zlar*: XMHS, o'tish davri, muammolar, moliyaviy respublika, me'yoriy-huquqiy baza.*

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THE NEED AND IMPORTANCE OF TRANSITION TO INTERNATIONAL FINANCIAL REPORTING STANDARDS IN UZBEKISTAN

Abstract: *This article examines the challenges that arise during the transition to international financial reporting standards in Uzbekistan.*

Keywords: *IFRS, transition, challenges, financial reporting, regulatory framework.*

XMHS ko'plab bozor iqtisodiyoti davlatlarining buxgalteriya hisobi amaliyoti va me'yoriy-huquqiy asoslarini aks ettiradi. Bu O’zbekiston Respublikasida yangi sifat standartlarini tezroq va tejamkor ishlab chiqish imkonini beradi. Har bir mamlakatda XMHSni joriy qiluvchi kompaniyalarning o'z ro'yxati mavjud. [1]

XMHSni ishlab chiqishdagi asosiy muammolar quyidagilardan iborat:

• XMHSga muvofiq tuzilgan moliyaviy hisobotlarga talablarning yo'qligi, shuningdek, XMHSni qo'llash uchun vaqt sarflanmaganligi;

• xo'jalik yurituvchi sub'ektlarning XMHSning ko'pgina toifalari, tamoyillari va talablariga rasmiy yondashuvi;

• xo'jalik yurituvchi sub'ektlar tomonidan Yevropa Ittifoqi mamlakatlari buxgalteriya hisobi standartlariga muvofiq tuzilgan moliyaviy hisobotlarni o'zgartirish orqali XMHSga muvofiq konsolidatsiyalangan moliyaviy hisobotlarni tayyorlash uchun katta xarajatlarni talab qilish zarurati;

• avtomatlashtirilgan buxgalteriya tizimi dasturiy ta'minotini XMHSga moslashtirish;

• ko'pchilik buxgalterlar uchun kasbiy tayyorgarlikning past darajasi, shuningdek, XMHSga muvofiq tayyorlangan ma'lumotlardan foydalanish bo'yicha ko'nikmalarning etarli emasligi.

Ushbu islohotning zarurati buxgalteriya hisobi tizimlari yuqori sifatli va o'z vaqtida boshqaruv qarorlarini qabul qilish uchun zarur bo'lgan ma'lumotlarni aks ettirganligidan kelib chiqadi. Buxgalteriya hisobi standartlarini unifikatsiya qilishning ob'ektiv jarayoni XMHS (Xalqaro moliyaviy hisobot standartlari) asosidagi XMHS davlat sektori uchun o'tish davri va yuqori sifatli moliyaviy hisobotlarni tayyorlash uchun xalqaro buxgalteriya standartlarining yagona, kompleks tizimi sifatida tan olinishini ta'minlaydi.[2]

XMHSni qo‘llash moliyaviy axborot sifatini yaxshilaydi, davlat sektori faoliyatini baholash imkoniyatini oshiradi va shaffoflikni oshiradi, axborotning to‘g‘riligi va to‘liqligini oshirish orqali davlat aktivlarini boshqarishni takomillashtiradi, davlat moliyaviy hisobotini xalqaro ko‘rsatkichlar bilan muvofiqlashtirishni ta’minlaydi.

XMHS OTini moslashtirish zarurati ham milliy dasturlar, ham O‘zbekistonda davlat moliyasini boshqarish tizimini rivojlantirishga chaqiruvchi XMHS tomonidan tasdiqlangan. Shunday qilib, 2010-2022 yillardagi davlat moliyasini boshqarish islohoti strategiyasi buxgalteriya hisobini isloh qilishning asosiy maqsadi sifatida XMHS OTga mos keluvchi BXMTni ishlab chiqish va joriy etishni belgilaydi.[3]

XMHS OT talablariga muvofiqligi Davlat xarajatlari va moliyaviy hisoboti (PEFA) doirasida davlat moliyasini baholash uchun muhim ko‘rsatkich hisoblanadi. Ushbu mezonlarni inobatga olgan holda, Jahon banki ekspertlari O'zbekistonda yaqinda o'tkazilgan davlat moliyasini baholash chegarasida bo'lib, ular to'liq bo'lmagan ma'lumotlar bo'yicha xalqaro standartlarga qisman mos kelmasligini ko'rsatadi.

Shunday qilib, XMHS OTni qo'llashni hisobga olgan holda, normativ-huquqiy bazada quyidagi kamchiliklarni aniqlash mumkin:

1) axborotni oshkor qilish uchun aniq asosning yo'qligi. Amaldagi qonunchilikda buxgalteriya hisobida operatsiyalarni aks ettirish tartibi aniq belgilanmagan. Byudjet hisobining barcha masalalari Budjet tashkilotlari uchun buxgalteriya hisobi bo‘yicha yo‘riqnomada o‘z aksini topishi ko‘zda tutilgan, biroq mazkur muassasalar moliya-xo‘jalik faoliyatining barcha jihatlarini yagona yo‘riqnomada jamlashning iloji yo‘qligi isbotlangan;

2) quyi darajadagi moliyaviy, byudjet va byudjetdan tashqari operatsiyalarni hisobga olish tartib-qoidalarining yo'qligi. Xususan, davlat tashkilotlarining operatsiyalari, qishloq xo'jaligi chegaralari, valyuta operatsiyalari va boshqalar;

3) buxgalteriya hisobi va hisobotining ayrim jihatlarini takrorlaydigan ko'plab buxgalteriya qoidalari;

4) tashqi foydalanuvchilar uchun davlat moliyasi statistikasini tahlil qilishning mumkin emasligi. Amaldagi buxgalteriya tizimi tashqi foydalanuvchilarning talablariga javob beradigan ma'lumotlarni yaratishga imkon bermaydi. Xususan, davlat byudjeti tomonidan ishlab chiqarilgan GFSM 2011

hisobot shakli XVF talablariga muvofiq taqdim etilgan hisobot shakllaridan farq qiladi;

5) barcha davlat moliya hisoblarining konsolidatsiya qilinmaganligi. Xususan, davlat byudjeti va barcha byudjetdan tashqari jamg‘armalarning buxgalteriya hisobi hozirda alohida yuritiladi.

XMHS OT asosida buxgalteriya hisobini isloh qilish masalalarini muhokama qilish maqsadida BMTTD-Moliyaning “O‘zbekistonda byudjet tizimini isloh qilish” qo‘shma loyihasi doirasida bir qator ishchi uchrashuvlar o‘tkazildi, unda tegishli vazirlik va idoralarning 50 ga yaqin mutaxassislari ishtirok etdi.[4]

Davlat sektori uchun xalqaro moliyaviy hisobot standartlariga to‘g‘ri muvofiqligini ta’minlash maqsadida 2013-2014-yillarda loyiha ishga tushirildi. Bu davlat sektorida buxgalteriya hisobi va hisobotini isloh qilishning boshida qisqacha bayon qilingan edi. Loyiha XMHS OT asosida ko'rinadigan buxgalteriya hisobi va hisobot tizimiga ega bo'lgan Kontseptsiyani ishlab chiqdi. Xususan, 12 ta Byudjet hisobi standartlari (BAS) loyihasi tayyorlandi. Ularni milliy buxgalteriya hisobi amaliyotiga tatbiq etishda ulardan to‘g‘ri foydalanish bo‘yicha mutaxassislar tayyorlash, jumladan, davlat sektorida buxgalterlar va moliya xodimlarini tayyorlash va qayta tayyorlash, ta’lim muassasalaridagi maktab o‘quv dasturlarini qayta yo‘naltirish, turli toifadagi o‘quvchilarning o‘quv-uslubiy ta’minotini yangilash va rivojlantirish zarur[5].

O‘zbekistonning jahon iqtisodiy hamjamiyatida rivojlanish va xalqaro tashkilotlardagi ishtirokini kengaytirishga intilishi milliy buxgalteriya hisobi standartlarining xalqaro amaliyotda qabul qilingan tibbiy tamoyillar bilan bir xilligini ta’minlashni, milliy tadbirkorlik sub’ektlarining moliyaviy ko‘rsatkichlarini rivojlanayotgan mamlakatlarda qo‘llaniladigan ko‘rsatkichlarga mos ravishda ishlab chiqishni taqozo etadi.

O‘zbekiston jahon iqtisodiy tizimining to‘laqonli a’zosi bo‘lib borayotgani sari bu mahalliy buxgalteriya hisobi va jahon amaliyotining rivojlanishiga ta’siri kuchayib bormoqda.

Uni tartibga solishning asosiy yo'nalishlarini belgilash bizga mahalliy buxgalteriya tizimining rivojlanishini prognoz qilish va unga ma'lum talablarni shakllantirish imkonini beradi.

Foydalanilgan adabiyotlar:

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EPIDEMIOLOGICAL ANALYSIS AND PREVENTION OF PULMONARY TUBERCULOSIS IN THE POPULATION

Summary: *Tuberculosis is a socially significant infection and is one of the ten leading causes of death in the world. In this regard, the World Health Organization (WHO) has developed a strategy for the elimination of tuberculosis for the period 2016-2035. The implementation of this strategy involves a thorough epidemiological assessment of the situation to identify regions and subpopulations with a high burden of the disease in order to achieve targets for reducing the incidence and mortality from this infection.*

Keywords: *epidemiology of tuberculosis, mycobacterium tuberculosis, poverty, opportunistic infections*

Abstract

Tuberculosis is an infectious disease, one of the leading causes of human morbidity, which is one of the ten most common causes of death in the world and more often than other infectious agents (including HIV / AIDS) causes death. Tuberculosis is caused by the bacterium Mycobacterium tuberculosis, which is spread by exposure to the air from TB patients, such as coughing. The pathogen usually affects the lungs (pulmonary tuberculosis) but can also affect other organs (extrapulmonary tuberculosis). M. tuberculosis infection affects about a quarter of the world's population1. Anyone can get TB, but the disease mostly affects adults and is more common in men than in women; 90% of annual new cases occur in the 30 high-burden countries. Tuberculosis is a disease of poverty, and affected people often experience financial hardship, vulnerability and marginalization, stigma and discrimination. Tuberculosis is curable and preventable. Approximately 85% of TB patients can be successfully treated with a six-month treatment regimen; treatment also helps prevent further spread of the infection. Since 2000, TB treatment has helped save more than 60 million lives worldwide, but with universal health coverage (UHC) still lacking, millions more remain undiagnosed and untreated. Patients with TB infection may receive prophylactic treatment. In addition, taking multisectoral action to address the determinants of TB, such as poverty, malnutrition, HIV, smoking and diabetes, can reduce the number of new TB infections and diseases (and hence the number of deaths) each year. Breakthrough research advances (eg, a new vaccine) are needed to rapidly reduce global TB rates to levels achieved in low-burden TB countries, where the disease is often a thing of the past. The high information content of the QOL indicator is related to the multi-component nature of its constituent criteria. Thus,

according to the WHO, the following indicators determining the quality of human life are defined: - physical (strength, energy, fatigue, pain, discomfort, sleep, rest); - psychological (positive emotions, thinking, learning, memorization, concentration, self-esteem, appearance, negative experiences); - level of independence (daily activities, indicators, dependence on drugs and treatment); - social life (personal relationships, social value of the subject, sexual activity); - environment (welfare, safety, life, safety, availability and quality of medical and social care, availability of information, opportunities for training and professional development, free time, ecology (pollutants, noise, population, climate, etc.); - spirituality (din, There are many studies in the scientific literature devoted to the analysis of the quality of life of patients diagnosed with tuberculosis, but attempts to use this indicator to assess the socially determined factors of the development of tuberculosis and to predict the epidemiological situation have not yet been made.

According to the literature, among the contingent with a high risk of developing tuberculosis, its detection occurs 6-8 times more often than in the general population. The first risk group includes epidemiological factors that are in close contact with patients with tuberculosis. The second risk group includes people with chronic somatic diseases, alcohol abusers, people working in hazardous production conditions - these are called biomedical risk factors.

The level of study of the problem.

The clinic of tuberculosis, including pulmonary tuberculosis, and the effectiveness of its treatment are mainly determined by the presence of multimorbidity, which aggravates the specific process and complicates its treatment. The frequency of multimorbidity in patients with pulmonary tuberculosis ranges from 80% to 100%. The effects of chronic viral and alcoholic hepatitis, peptic ulcer disease, diabetes mellitus, as well as adverse reactions during chemotherapy have been fully studied in the course of tuberculosis (Aminev H.K. et al., 2017;

Muazzamov B.R. (2009) established that the epidemiological indicators of tuberculosis in Bukhara region depend on the climate-geographic characteristics of the region. It has been proven that more adverse conditions affecting the epidemiological indicators of tuberculosis occur in arid regions.

Purpose of the study

Assessment of the level of application of socio-economic factors to characterize the epidemic situation in tuberculosis and the use of these factors in mathematical modeling of the development of the tuberculosis epidemic.

Research objectives:

1. Conducting a comparative epidemiological analysis and assessing the medical and social aspects of the population living with pulmonary tuberculosis, by age, gender, place of residence (on the example of the Bukhara region)

2. Carrying out short-term and long-term forecasting by conducting a comparative analysis of the ways of transmission of the disease in the population living with pulmonary tuberculosis.

3. Study and evaluation of the effectiveness of treatment results by analyzing the results of treatment of the population with pulmonary tuberculosis.

4. Taking into account the epidemiological features of pulmonary tuberculosis infection, development of ways to optimize primary and secondary prevention of patients with pulmonary tuberculosis.

Object and subject of study: Statistical indicators of the incidence of pulmonary tuberculosis in the Bukhara region for 2012-2022 and data from an epidemiological survey of patients with pulmonary tuberculosis.

Research methods.

The research uses the following methods:

- microbiological methods (identification of microorganisms; determination of the sensitivity of microorganisms to antibiotics);
- statistical methods (using computer programs "Excel" for biomedical research).

Scientific novelty of the work.

Develop proposals for improving the system of epidemiological control of pulmonary tuberculosis in the Bukhara region and give specific recommendations for the prevention of this infection.

Conclusion.

The studies presented in the review support the view that the epidemiology of tuberculosis is associated with social determinants. The most significant socio-economic factors are poverty, lack of work, low level of education, migration, lack of a permanent place of residence, stay in correctional labor institutions, unbalanced nutrition.

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SEMANTIC RELATIONSHIPS OF LEXICAL UNITS OF THE LEGAL LANGUAGE

Annotation. *In world linguistics, there is a great need to study the problems of the legal language, its lexicon and terminology, to develop the scientific basis for improving the legal language as a system. Today, such intermediate linguistic fields as linguoculturology, psycholinguistics, sociolinguistics, and computational linguistics have emerged. Among them, the field of jurisprudence, which studies the language of laws, also requires the identification of the linguistic features of the legal language and its in-depth scientific and theoretical study.*

In linguistics, the object of research is the identification of lexical units within lexical-semantic groups, the study of their interrelationships within the framework of the lexicon of fields. This article examines the semantic relationships of lexical units within the legal lexicon of the Uzbek language.

Keywords: *lexicon, jurisprudence, judicial body,legal document,legal term, systemic lexicology, semantic field, hyponymy, graduonymy, hyperonym, gradation.*

Introduction

Today, the field of legal linguistics is widely developing in Central Asia. In particular, it is worth noting the merits of legal scholars F.Bakirov, A.Saidov, and G.Sarkisyans on legal language and legal terminology in Uzbekistan. The treatise “Legal Language and the Speech of a Lawyer” by A. Saidov and G. Sarkisyants, along with other scholarly works, is highly valuable (1994). In them, the idea of creating a scientific-theoretical model of the national legal Uzbek language is put forward. In this area, research has been conducted by such scientists as L.M.Boyko, M.Kosimova, L.A.Karimova, Sh.N.Kuchimov, G.Y.Gulomova, O.F.Tursunova, Kh.Khayitov, Sh.N.Berdiyarov, R.I.Mirzaev. It is also noteworthy that in order to bring such scientific research conducted in our country to world linguistics, Sh.Kuchimov launched a special website.

MATERIALS AND METHODS

The lexicon of the legal language is also a unique semantic field, consisting of certain lexico-semantic groups. More precisely, the units of the lexico-semantic group in the lexicon of the legal language interact with each other: 1) synonymous; 2) hyponymic; 3) semantic graduonymic; 4) antonymic; 5) partonymic; 6) is observed in functional relations.

It is known that Western linguistics has achieved many successes in the last century as a result of viewing reality as a vast and complex system consisting of numerous paradigms and searching for its reflection in language. In particular, the genus-species relationship introduced into the systematics of plants and animals by biologists such as John Ray, Carl Linnaeus, Charles Darwin, later began to be applied to language units. In 1968, the English scientist J. Lyons introduced the words hyponymy, *hypernym,* hyponym into linguistics as terms expressing gender-species relations. His book "Semantics", published in London in 1977, provides complete information about hyponymy. The phenomenon of hyponymy was widely studied by the English linguist J. Lyons, the French linguist V. Gak, the Russian linguists Y.S.Stepanov, A.A. Ufimtseva, L.A. Novikov, M.V. Nikitin [7], and in Uzbek linguistics, it was discussed in the monographs of H. Nematov, R. Rasulov [4], R.Safarova [6] and A. Sobirov [7]. In particular, according to A. Sobirov's monograph: "The term *hyperonym* is used in relation to the main word, the dominant, which expresses a general meaning in relation to certain types and is located in the core (center) of the semantic field. This word denotes gender. *Hyponym* appears as a lexical unit denoting a certain type of gender. Together with homonymous hyponyms of equal value, it is subordinate to the hyperonym"[7].

Hyponymic relations are also often observed between units related to the lexicon of the legal language. In terms of usage, they are second only to synonyms.

We will not dwell specifically on the hyponymic relations between commonly used words in the lexicon of the legal language. Because there are enough opinions about some of them in linguistics. We will mainly focus on the hyponymy of legal terms used in the legal language. G. Gulyamova, emphasizing that hyponymic connection forms the basis of legal terminology, expresses her opinion about the hyponyms of the hyperonyms *crime,* punishment[11].

Result and discussion

A hyper-hyponymic relationship is observed between the following units of the lexicon of the legal language:

Hyponyms of the hypernym of the protocol: witness interrogation report, victim interrogation report, confrontation report, scene examination report, identification report, search report, accused interrogation report, etc.: *The court record states: "Illegal entry into Mamatova's house," but Mamatova admitted to opening the door herself [10,* 41]. *Also,...in the report of the investigative action he indicated that he was talking with S.Erpulatov in the room where the television was located... and other circumstances* [10, 36].

Hyponyms of the hyperonym *liability* : property liability, material liability, administrative liability, international legal liability, criminal liability, etc.: *The criminal liability established in the lower court's decision was changed to administrative liability by the panel of the higher court* [2]

Hyponyms of the judicial hyperonym: *Supreme Court, Civil Court, Criminal Court, Military Court, Economic Court, Open Court, Closed Court, etc.:*

Judge of the _____ Regional Economic Court S. Sadirov, having considered economic case No. - on the claim of the plaintiff "Olmos-Farrux" private production enterprise for the recovery of 2,000,000 soums from the defendant "Farhod" LLC, established the following [8, 14].

Hyponyms of forensic examination: forensic philological examination, forensic linguistic examination, forensic biological examination, forensic chemical examination, forensic medical examination, handwriting examination, forensic narcological examination, forensic psychiatric examination, forensic accounting examination, exhumation (excavation and reburial of a corpse), forensic electroacoustic examination, forensic autotechnical examination, forensic ballistic examination, forensic tracing examination, etc.: *Investigator I.Muminov, citing the conclusion of the forensic medical examination No. 52/215 dated March 6, 2004, as objective evidence confirming the guilt of M.Ortikov, once again proves that the investigative actions were conducted one-sidedly* [10, 107].

The court, having heard the explanations of the plaintiff and defendant, issued a ruling on the appointment of an additional forensic medical examination [2]

Let us remind you that lexemes united in a certain semantic field are combined or differentiated according to their common and specific features. More precisely, the hyponyms of the hyperonym "forensic examination" are united in terms of content, purpose, and use, while in terms of implementation they are private and separate. As A. Sobirov noted: "It is precisely this aspect that ensures the inviolability and specificity of words in language and allows them to be combined into certain paradigms"[7,12].

Hyponyms of the hyperonym *Decision: decision on refusal to initiate criminal proceedings, decision on initiating criminal proceedings, decision on transferring the preliminary investigation to a group of investigators, decision on increasing the group of investigators during the preliminary investigation, decision on changing the composition of the investigative group, decision on sending the criminal case under investigation, decision on conducting a search, decision on conducting a personal search, decision on changing the charge, decision on the compulsory appearance of the victim, decision on behalf of the Republic of Uzbekistan, decision on arrest, decision on appointing a forensic medical examination ,* etc.: *The decision shall be immediately enforced* [8, p. 43]. *Having heard the explanations of the plaintiff and defendant, the court issued a ruling on the appointment of an additional forensic medical examination* [2].

Murder. Murder. To be a murderer, to be a murderer, to kill [5, 347]. Hyponyms of the hypernym of murder: *stabbing, poisoning, strangling, shooting, choking, suffocating, hitting, beating, hiring a killer, hanging on a rope* and others.

If the hyponyms of the hyperonym "forensic examination" differ from each other according to their implementation, then the hyponyms of the hyperonym "murder" differ from each other according to the method of committing the crime of murder. Comparison: *murder* - murder in general; *Hiring a killer* -Murder with

the help of a hired killer; *stabbing* - murder committed by means of a piercing sharp-edged weapon - a knife; *poisoning* - murder committed with the use of poisonous substances; *strangulation* -murder committed by means of a poisonous gas; *shooting* - murder committed by means of a weapon (rifle, pistol, etc.); *strangulation* -murder committed by strangulation;strangulation -murder committed by drowning; *beating, assault* - murder committed using solid objects, etc.

Thus, hyperonyms are generality (genus), and hyponyms are particularities (species), which are realized through semantically different units.

In systemic lexicology, hyper-hyponymic, holo-meronymic (whole-part), graduonymic (degree), functional, and other relations are widely studied. Among them, one can observe that the phenomenon of graduonymy (grading) has been widely studied in linguistics.

In world linguistics, J.Locke, E.Sepir, D.Bolinger, Y.D.Apresyan, Y.S.Stepanov, L.N.Tolstoy, I.V.Chervenkova, T.N.Grigorenko expressed valuable opinions about graduonymy, while in Uzbek linguistics this issue is covered in the research of E.Begmatov, H.Ne'matov, R.Rasulov, O.Bozorov, S.Giyosov, R.Safarova, M.Narziyeva, Sh.Orifjonova, M.Fayzullayev. In Uzbek linguistics, there are also fundamental studies devoted to graduonymy [5].

G. Gulyamova notes that there are no such types of semantic relations as graduonymic, hierarchonymic in legal terminology[11]. Our observations on the lexicon of court speech confirm the opposite. More precisely, one can find active semantic graduonymy between units related to the lexicon of court speech. Semantic graduonymy is observed in units specific to the layer of common words and legal terms of the lexicon of court speech. In particular, in the lexicon of court speech, the following units in a graduonymic relationship can be cited as examples:

suspect →*defendant* →*accused* → *guilty* → *convict* → *prisoner* →*residevist;*

residevist → dangerous residevist → especially dangerous residevist (Articles 44-52 of the Criminal Code of the Republic of Uzbekistan);

fine → deprivation of a certain right → correctional labor → restriction of service → detention → assignment to a disciplinary unit → imprisonment → life imprisonment (Article 434 of the Criminal Code of the Republic of Uzbekistan);

to click → to push → to hit → to beat;

to damage → to inflict injury → to cause partial death → to kill;

preliminary investigation→investigation→stages of inquiry→arrest→court→punishment (or acquittal) →appeal→cassation;

minor crime → crime of minor social danger → crime of great social danger → grave crime → especially grave crime;

thief → thief leader → thief in law;

petty hooliganism → hooliganism→crime;

payment of a fine → confiscation of property → imprisonment → life imprisonment;

suspect detention room → detention center → pre-trial detention center → detention center → solitary confinement cell → maximum-security detention center, etc.: *Apply Article 57 of the Criminal Code of the Republic of Uzbekistan and impose a sentence of 2 (two) years of imprisonment* (from the court verdict). *Aripjanov Olimjon Karimjonovich, on the basis of paragraph "a" of part two of Article 227 of the Criminal Code of the Republic of Uzbekistan, shall be sentenced to seven years of imprisonment. The imposed sentence shall be served in maximum-security colonies* (from the court verdict). *A party dissatisfied with the decision may file an appeal within 10 days to the Tashkent City Criminal Court or to the chairman of the district court.* (from the court verdict). *He has been held in a pre-trial detention center since January 20, 2004, separated from his family and society.*[10,121]

Consequently, within the units of the lexicon of the legal language, graduonymic relations are distinguished by: 1) internal gradation; 2) gradation between lexico-semantic groups or semantic groups; 3) gradations between units representing the basic concepts of material existence [7,146-149] are observed. These units in a graduonymic relationship can indicate how a criminal or offensive act begins, develops, and ultimately ends.

Conclusion

In short, just as there is no separate thing in objective reality, separated from everything, linguistic units in language are interconnected through one or another relationship, united into certain paradigms. These paradigmatic series are characterized by openness. They are constantly being updated in accordance with the spirit of the times and the demands of the times. After all, the lexical system itself is an open system, a system that is renewed and enriched. In particular, legal terminology is quite complex in terms of quality (meaning), and "infinite" in terms of quantity, forming one of the largest layers in the vocabulary of the Uzbek language and is significant because it covers almost all areas, spheres, and processes of people's life.

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INNOVATIVE WAYS OF ACHIEVING SUCCESS IN TEACHING ENGLISH TO DEAF CHILDREN

Annotation: *This following article about how to achieve success in teaching English to children who are deaf. And also author mentions that General stage of teaching English for deaf children. It is given essential information on teaching English for deaf students.*

Keywords*: Deaf, In native deafness, non-in native deafness, psychological condition, speech, signal system.*

Introduction.

It is natural that disabled children will have more difficulty learning a foreign language than healthy children. However, using these child-friendly methods and creating psychological conditions in teaching foreign languages can eliminate any problems that may arise. For this purpose children with disabilities, who are deaf, are separated into special groups[1].

- low hearing ability;
- lost hearing ability;
- In native deafness;
- no - In native deafness.

There are special groups for children with hearing impairments in pre-schools and vocational colleges in Uzbekistan. Children with mild hearing impairments can be educated in public preschools and Scholl's along with their healthy peers. Education in these institutions is based on the state requirements and programs of 11-year general education.

Theoretical Basis.

Deaf educators are making great strides in working with children with hearing impairments. Boarding school for this category of children have a pre-school education department. This category of anomalous children successfully graduates from higher education after studying in special evening schools and works equally with everyone in various enterprises of the country. The main task of educators and teachers is to separate healthy children from hearing-impaired children and to ensure that they receive education in special institutions or are involved in integrated education if they need a special approach. Hence the elimination of hearing loss can compensate for the fibres. A student who feels he or she is unable to express himself or herself orally in a private institution should be able to express himself or herself in writing. To this end, students are taught to express themselves orally and in writing on the basis of practical speaking skills and competencies. In deaf and hard of hearing students, teachers and student

activities are organized on the basis of exercises in a certain system of lessons and classes on the formation of spoken and written speech. In order to ensure the practical acquisition of speech materials, situations that require special written problem-solving and written explanations are planned in advance. It is required to be able to adapt all types of didactic tools to the speech process. In this case, the speech materials are predetermined in the planning of the curriculum of the correctional pedagogical process is carried out on the basis of a certain system. Speech materials for each lesson are prepared in strict accordance with the principles of the correctional utility system. A wide range of conditions is being created for students to be able to do it in practice without fear or shame. Pupils' pronunciation is clear and their range of hearing is chosen from light to complex. Their extensive communication and warm relationship with a deaf child develops the child's ability to receive and transmit speech information to the neat deaf and hard of hearing children. Nurturing the need for conversational speech begins in the family. The speaking skills and competencies acquired in the new school should be strengthened in the natural environment of the family. In addition, the development of deaf and hard of hearing children requires the use of loudspeakers in special institutions. These conditions are created with the participation of family members. Deaf and hard of hearing children acquire their mother tongue on the basis of corrective communicative principles adapted to the mental and speech abilities of the child, arising from the features of the laws of this language.

Classroom are specially equipped, the formation of boarding school in accordance with the direction of the material and technical base increases the effectiveness of educational content. Because, now, he has the skills on how to receive information. It is also possible to learn a foreign language in the same way after mastering one's mother tongue. They should be able to motivate children when needed. Deaf and dumb children need to be in constant contact with their parents and teachers to prevent them from developing depression when they reach adulthood. This means that the mental state of children is a priority in order to achieve positive results in learning foreign languages. Learning a foreign language seems a little easier for a child than learning his or her mother tongue. Teachers and educators have a great responsibility. If the child is approached with the right intention and strategy, he will develop positive qualities and will be able to learn foreign languages fluently. Because at that time, he has the skills on how to receive information. Speech is a complex mental action. It effects to growing to children with mental and generally mature. Speech is based on hearing organ and it becomes developing a way of comparison. A hearing analyser, the moving speech analyser which effects of speech. The moving speech analyser works with hearing analyser as a companion. Developing of the hearing analyser depends on pronunciation. Developing speech of children belongs to speech sounds, physiological and phonetical progressing. Most importantly, it is also characterized by the ability to distinguish the structure of words in one's own speech and the speech of others, the structure of sound. Both signals systems, as well as the interaction of speech with cognition, form the basis of mental

development. According to dermatologists (T. A. Vlasova, R. M. Boskis, D. V. Neumann, etc.), The level of development of a child with hearing impairment depends on the stage of the child's life and the severity of the defect. In deaf pedagogy, children with hearing impairments are studied as a group of children who become deaf, hard of hearing, and later deaf. Absolute deafness in both ears during congenital infancy leads to deafness. Children with speech impairment as a result of partial hearing impairment are included in the group of hearing-impaired children. Children who become deaf after speech development are later included in the group of those who become deaf. Even if the defect occurs after the speech has been composed, there may still be hearing loss due to a defect in the ear. Deafness can be congenital or acquired due to the causes of permanent hearing loss 25-30% of deaf and dumb children have congenital hearing loss. This due to various disease of the mother during pregnancy, such as influenza. Acquired defects in hearing may be due to defects in the structure of the ear or hearing analyser. This is caused by changes in the upper nerve centre, conduction pathways, or the ear itself. Children with hearing impairments are included in the category of anomalous children. Because this defect has a negative impact on the children overall development and mastery of the application materials. Causes a number of specific difficulties in mastering kindergarten and school programs. After hearing development in young children, for example, after the age of two, the child does not hear the speech of others as a result of deafness. He even slowly forgets what he knows. The deafness in the child gradually merges with the deafness and he becomes deaf and dumb. Teachers and educators in special instructions should help such children to receive an appropriate education. If the child is not given special care in time, he will also show signs of mental retardation.

Results.

However, a positive result is achieved if the necessary measures are taken to compensate for the defect. Children with mild hearing impairment hear a spoken speech at a distance of 6 to 8 m from the ear scores 3 to 6 m. Hearing-impaired children, in turn, are divided into children with mild to moderate hearing loss, depending on the degree of hearing impairment. A pre-school and a boarding school for children with hearing impairments have the necessary facilities. Children with moderate hearing loss can hear a spoken word in a loud whisper from a distance of 1 to 3 m. As mentioned above, in deaf pedagogy, hearing-impaired children include children who were born deaf and later became hearing-impaired. Hearing impairment results in several deficiencies in the child's speech Poor spelling Poor grammatical component Words in a sentence Misuse of words inability to connect them inconsistent word-formative modifiers inability to use suffixes. In the severe hearing loss, the child hears a moderately spoken speech from a distance of 0. 5 m. Misleading similar-sounding consonants, and so on. Some educators and teachers mistakenly treat the child as a lazy, irresponsible bully, as a result of which the child's whimsical cries become slurred, which leads to secondary mental changes.

Discussion.

The conclusion is that every teacher working with children with disabilities should have sufficient psychological qualifications in addition to being a teacher.

It is clear that minor actions can have a negative impact on the character of the child in the future. In addition to the profound knowledge of the English language, the use of effective, well-rounded techniques is the key to achieving good results. Every student with disabilities can learn a foreign language, If we create the right atmosphere for them, if teacher use right, efficient methods and strategies if parents support their children.

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METHODS OF DEVELOPING THE ABILITY TO COMMUNICATE IN ENGLISH IN DEAF STUDENTS (BY SIGN LANGUAGE)

Annotation: *This article discusses the theoretical and practical aspects of developing deaf students communication skills in English. There are also examples of the most effective methods of learning sign language alphabet that are convenient for them.*

Keywords: *deaf, sign language alphabet, method, strategy, communication, language, style.*

Language, Conversation is a means of social communication. In social relations, information is delivered and received. Deaf and dumb people can also speak. They do this through the Surdo language. This language allows them to receive information using hand gestures and share information in the same way. This means that deaf and dumb people can also speak and communicate freely. Only the style is unique: through hand and fingers, as well as lip movements. Given their ability to speak, it is an important task to develop speaking skills in applicants who want to learn English.

First, you need to master the English finger-marked letters. Because there are more than 100 finger-marked alphabets all over the world [1]. American or English character-finger alphabets can be used to communicate in English. The following is the American character-finger alphabet:

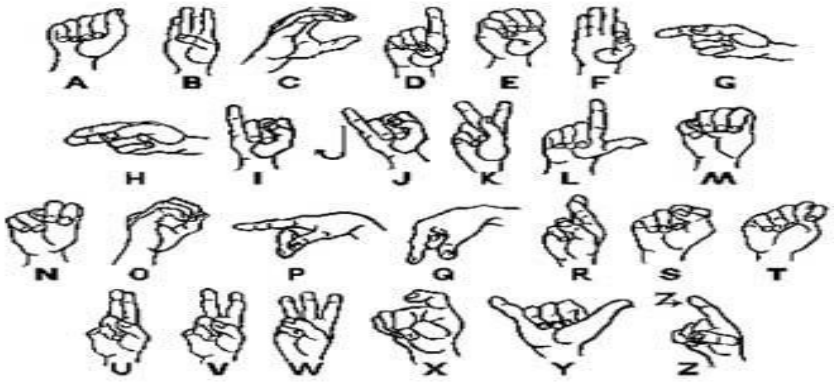


Figure 1. Character-finger (American) alphabet.

This alphabet is widely used around the world because it is very easy to learn and use. It has a total of 26 letters. Some letters serve as independent words or meanings [2]. Once all of the character-finger letters have been mastered, new words begin to be memorized as usual.

Technologies for learning the alphabet:

- The age of the learners is important in teaching this alphabet. We can also divide this category into 3:

• Young children
• Adolescents and middle-aged people
• The elderly

Each category differs in the duration of learning and mastering a specific letter. For example, letter learning in young children is relatively slow, 1 letter per day and its technology is enough. The teacher who teaches them the letter should teach them more through a variety of fun games, videos. The learning process can naturally take a long time. However, given that the knowledge learned at a young age is like a pattern carved in stone, the earlier they learn the letter, the more information they will be able to learn. The second category is adolescents and middle-aged people. These categories show a more effective result than the other categories. They learn the letters very quickly. They can learn letters independently, through manuals. They do not need the help of a teacher. The third category, this category will be as long-term as the first category. Unlike the first category, they are more likely to quickly forget the technology they have learned. Therefore, the responsible teacher attached to them should not only learn from the most effective methods, but also constantly review the Methods learned. Only then will a positive result be achieved.

Once the alphabet is fully mastered, the stage of memorizing new words and preparing them for communication using hand gestures begins. At this stage, the skill of the teacher plays a big role. He must constantly monitor that every word is presented by learners without the correct technological errors. The following are examples of effective word memorization techniques:

- Use more picture dictionaries to memorize new words;

- Write the Uzbek and English versions of the memorized words on the cards and then mix them well. Then for one minute (in the order of not more than 10 words, if time is added, the words can be added) the words are placed in English and Uzbek variants. This exercise will help the new words to stay in the memory.

- Memorized word in memory is displayed slowly, using the manual character-finger alphabet. To master this technique, a "quick finger word" game is played. In doing so, the teacher shows the new Memorized word to the students. Then a student comes up to the board. For a minute, you are required to show this given word frequently and repeatedly, without confusing the misspelled letters. Students who do are listed. The teacher warns him when the time is up. So the game continues until all the students in the class are involved. At the end of the game, the student with the most moves is the winner. This game develops the ability to show words clearly, fluently and quickly in hand movements. Another game related to this technique. The teacher hangs an apple tree with apples on the board. Behind these apples are hidden English words. After the student on the board selects one of them, he explains it to his friends using the sign-finger alphabet. The reader, noticing which word he is saying, should stand up and

explain the Uzbek version of this word using the sign-finger alphabet. Whoever finds the answer will be able to go to that board and get one of the apples where the words on the apple tree are hidden, and the game will continue in this way. Through this method, students develop the ability to understand words clearly and concisely and to explain them in the same way. Most importantly, the ability to convey information without getting excited in public is polished.

- The next stage is also called the "Chain" stage. Because at this stage, students are taught to compose short sentences using words they have memorized. It is recommended to use the following methods:

Sudoku game [5]. In this game, the teacher places cards with 5 or more words next to their desk for each child. They are placed in boxes, pre-mixed, resembling a Sudoku game.

When all students have been given a command, the one who finds the first sentence correctly and places it in the correct order is the absolute winner. And he will be given an incentive card. The remaining 2nd and 3rd graders will be given cards accordingly.

Dialog method [6]. Students are placed in pairs. And together they form a dialogue. The couple, whose dialogue is ready, go to the board and compose a dialogue using finger-letters. From the students who watched this dialogue, the teacher invites any pair of students to the board and asks them to repeat the dialogue the pair did. They are then allowed to perform their own dialogues. And it continues until all the couples have performed their dialogues. This method not only develops students' ability to communicate with others, to express their thoughts, but also to strengthen their memory.

- It is recommended to watch deaf-translated videos. Because they have a high level of speed, professionalism and socialization. That is why these video lessons are well-established in the minds of students. Significantly enhances communication skills.

If the above methods and recommendations are used correctly and systematically, continuously, the intended goal will be achieved. The result is visible in few opportunities. Deaf and dumb people who have mastered foreign languages are an example to many people with disabilities and inspire them. People with disabilities, like themselves, create the conditions for people to take their rightful place in society.

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FEATURES CLASSIFICATION IDIOMATIC EXPRESSIONS IN ENGLISH AND AMERICAN VOCABULARY

Abstract: *A phraseological unit is a complex phenomenon with a number of important features, which can therefore be approached from different points of view. Hence, there exist a considerable number of different classification systems devised by different scholars and based on different principles.*

Keywords: *approaches, classification, phraseological units, classification, principles, phenomena, idioms, borrowings.*

The traditional and oldest principle for classifying phraseological units is based on their original content and might be alluded to as "thematic" (although the term is not universally accepted). The approach is widely used in numerous English and American guides to idiom, phrase books, etc. On this principle, idioms are classified according to their sources of origin, "source" referring to the particular sphere of human activity, of life of nature, of natural phenomena, etc. So, L. P. Smith gives in his classification groups of idioms used by sailors, fishermen, soldiers, hunters and associated with the realia, phenomena and conditions of their occupations. In Smith's classification we also find groups of idioms associated with domestic and wild animals and birds, agriculture and cooking. The term does not seem appropriate since we usually mean something different when we speak of the etymology of a word or word-group: whether the word (or word-group) is native or borrowed, and, if the latter, what is the source of borrowing. It is true that Smith makes a special study of idioms borrowed from other languages, but that is only a relatively small part of his classification system. The general principle is not etymological.

Smith points out that word-groups associated with the sea and the life of seamen are especially numerous in English vocabulary. Most of them have long since developed metaphorical meanings which have no longer any association with the sea or sailors. Here are some examples.

To be all at sea - to be unable to understand; to be in a state of ignorance or bewilderment about something (e. g. How can I be a judge in a situation in which I am all at sea? I'm afraid I'm all at sea in this problem). V. H. Collins remarks that the metaphor is that of a boat tossed about, out of control, with its occupants not knowing where they are.

To sink or swim - to fail or succeed (e. g. It is a case of sink or swim. All depends on his own effort.)

In deep water - in trouble or danger.

In low water, on the rocks - in strained financial circumstances.

To be in the same boat with somebody - to be in a situation in which people share the same difficulties and dangers (e. g. I don't like you much, but seeing that we're in the same boat I'll back you all I can). The metaphor is that of passengers in the life-boat of a sunken ship.

To sail under false colours - to pretend to be what one is not; sometimes, to pose as a friend and, at the same time, have hostile intentions. The metaphor is that of an enemy ship that approaches its intended prey showing at the mast the flag ("colours") of a pretended friendly nation.

To show one's colours - to betray one's real character or intentions. The allusion is, once more, to a ship showing the flag of its country at the mast.

To strike one's colours - to surrender, give in, admit one is beaten. The metaphor refers to a ship's hauling down its flag (sign of surrender).

To weather (to ride out) the storm - to overcome difficulties; to have courageously stood against misfortunes.

To bow to the storm - to give in, to acknowledge one's defeat.

Half seas over (sl.) - drunk.

According to the degree of idiomatic meaning of various groups of phraseological units, V.V. Vinogradov classified them as follows:

Phraseological fusions are units “whose meaning cannot be deduced from the meanings of their component parts, the meaning of phraseological fusions is unmotivated at the present stage of language development.”[2]. “Such word-groups represent the highest stage of blending together. The meaning of components is completely absorbed by the meaning of the whole, by its expressiveness and emotional properties.”[6].

Phraseological fusions are specific for every language and do not lend themselves to literal translation into other languages:

- To come a cropper - to come to disaster;
- Neck and crop - entirely, altogether;
- At sixes and sevens - in confusion or in disagreement;
- To leave smb. In the lurch - to abandon a friend when he is in trouble;

Phrasemes are two-member groups in which one of the members has a particular meaning dependent on the second components it is found only inn the given context, e.g. in small hours - the second component (hours) serves as the only clue to this particular meaning of the first component. Phrasemes are always binary, e.g. in small talk, husband's tea, one of the components has a phraseologically bound meaning, the other serves a s a distinguishing context.

Idioms are distinguished from phrasemes by the idiomaticity of the whole word-group. The difference between phrasemes and idioms is based on semantic relationship without accepting the structural approach, and the demarcation line between the two groups seems rather subjective”[2].

We may see that the approaches to the classification of phraseological units differ from native linguists to foreign linguists. This fact should be included while studying of the critical literature and manuals. The proper understanding gives the better result of the research work and helps in searching of the idioms concerning the subject.

Phraseological units can be also classified according to the way they are formed. A.V. Kunin pointed out primary and secondary ways of forming phraseological units.

Primary ways of forming phraseological units are those when a unit is formed on the basis of a free word-group:

a) the most productive in Modern English is the formation of phraseological units by means of transferring the meaning of terminological word-groups;

b) a large group of phraseological units was formed by transforming the meaning of free word groups , e.g. granny farm, Trojan horse - «a person or thing used secretly to cause the ruin of an enemy»;

c) phraseological units can be formed by means of alliteration , e.g. a sad sack, culture vulture;

d) phraseological units can be formed by means of distorting a word group , e.g. odds and ends was formed from «odd ends»;

Secondary ways of forming phraseological units are those when a phraseological unit is formed on the basis of another phraseological unit; they are:

a) conversion , e.g. to vote with one's feet was converted into vote with one's feet;

b) changing the grammar form , e.g. Make hay while the sun shines is transferred into a verbal phrase - to make hay while the sun shines;

c) shortening of proverbs or sayings , e.g. the phraseological unit to make a sow's ear was formed from the proverb - You can't make a silk purse out of a sow's ear by means of clipping the middle of it;

d) borrowing phraseological units from other languages , either as translation loans, e.g. living space (German), to take the bull by the horns (Latin), or by means of phonetic borrowings, e.g. meche blanche (French), corpse d'elite (French), sotto voce(Italian) etc. [6]

We may see how phraseological units are formed. Trying to select phraseological units from the great variety of them this knowledge helps to shortcut the list and to find certain idioms faster.

The class of phraseological units describing human appearance may be divided into several subclasses, according to the object which is described. It comes as follows:

1. Facial features, beauty - one may be attractive or ugly. One's face may express different emotions, such as anger, happiness etc.

face like thunder - somebody looks very angry.

2. Eyes - one's eyes may have different shape or express different emotions.

pie-eyed - completely drunk.

3. Nose - one's nose may be big or small, hooked or straight.

snub nose - a small nose that curves up at the end

4. Hair - one may have hair or not, or lose hair. Different hair-does may be dscribed.

thin on the top - If someone, usually a man, is thin on the top, they are losing their hair or going bald.

5. Beard - PUs are used to describe the shape of it.

A young gentleman with a Vandyke beard was talking loudly.

An idiom may be treated as a natural manner of speaking to a native speaker of a language. So idioms are integral part of language which make our speech more colourful and authentically native.

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BUXORO VILOYATI HUDUDIDA QISHLOQ XO 'JALIGINI RIVOJLANTIRISH IMKONIYATI VA ISTIQBOLLARI

Annotatsiya: *Buxoro viloyati O'zbekiston Respublikasining siyosiy, ijtimoiy-iqtisodiy hayotida muhim o'rin egallaydi. 40,3 ming kv.km hududni o'zida mujassamlashtirgan, 1,7 mln kishidan ortiq aholi istiqomat qilayotgan ushbu maskanda strategik ahamiyatga ega sanoat, qishloq xo'jalik va nomoddiy sohalarning tarmoqlari rivojlangan. Muallif tomonidan Buxoro viloyatida qishloq xo'jaligini rivojlantirish imkoniyati va istiqbollari haqida fikr mulohaza yuritilgan.*

Kalit so'zi*: Buxoro, go'sht, sut, tuxum, jun, qorako'l teri.*

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OPPORTUNITIES AND PROSPECTS FOR THE DEVELOPMENT OF AGRICULTURE IN THE BUKHARA REGION

Abstract: *The Bukhara region occupies a key position in the political and socioeconomic life of the Republic of Uzbekistan. Covering an area of 40,300 square kilometers and home to over 1.7 million people, this region boasts developed, strategically important industrial, agricultural, and non-resource sectors. The author examines the possibilities and prospects for the development of agriculture in the Bukhara region.*

Keywords: *Bukhara, meat, milk, eggs, wool, karakul leather.*

Buxoro viloyati O'zbekiston Respublikasining siyosiy, ijtimoiy-iqtisodiy hayotida muhim o'rin egallaydi. 40,3 ming kv.km hududni o'zida mujassamlashtirgan, 1,7 mln kishidan ortiq aholi istiqomat qilayotgan ushbu maskanda strategik ahamiyatga ega sanoat, qishloq xo'jalik va nomoddiy sohalarning tarmoqlari rivojlangan. 2018 yilga kelib viloyatning barcha toifa xo'jaliklarida yiliga o'rtacha 182657 tonnadan ortiq go'sht, 723979 tonnadan ziyod sut, 286436 mln dona tuxum, 34512 s jun, 398742 dona qorako'l teri ishlab chiqarilmoqda. Ammo bugungi kunda Buxoro viloyatida demografik vaziyat turg'un bo'lib, aholi soni yildan-yilga ko'paymoqda. Shuningdek, turizm industriyasining keskin rivojlanishi sayyohlar soni ham oshmoqda. Shu bilan bir qatorda davlatlararo iqtisodiy aloqalarning kengayishi tufayli viloyat eksport

mahsulotlari tarkibida mazkur mahsulotlardan ayrimlarini ulushining oshishiga sabab bo‘lmoqda. Yuqoridagi omillar viloyatda chorvachilikni rivojlantirish hamda oziq-ovqat mahsulotlari ko‘lamining muttasil oshirishni talab etmoqda.

Cho‘l zonasida joylashgan Buxoro viloyati sharoitida chorvachilikning rivojlanishi birinchi navbat sug‘oriladigan yerlarda ekiladigan beda, makkajo‘xori, tariq, arpa va boshqa ekinlarni yetishtirish hajmi, hosildorligi, sifati hamda cho‘l-yaylovlar holatiga bog‘liq.

Buxoro viloyatining tabiiy-geografik komplekslari iqlim, relyef va tuproq turlari bo‘yicha farqlanadi. Viloyatda uchraydigan asosiy tabiiy geografik komplekslar quyidagilar: allyuvial-daryo vodiylari, sug‘oriladigan cho‘l zonalari, tabiiy cho‘l komplekslari va sho‘rlangan pasttekisliklar. Har bir kompleks o‘ziga xos qishloq xo‘jaligi yo‘nalishlarini rivojlantirish uchun imkoniyat yaratadi.

Masalan, Zarafshon daryosi vodiylari atrofidagi allyuvial tuproqlar unumdorligi yuqori bo‘lib, asosan paxtachilik, g‘allachilik va sabzavotchilik uchun qulay hisoblanadi. Cho‘l zonalarida esa chorvachilik, ayniqsa qo‘ychilik va tuyalarning boqilishi uchun tabiiy sharoit mavjud. So‘nggi yillarda Buxoro viloyatida tomchilatib sug‘orish va suvni tejovchi agrotexnologiyalar joriy etilmoqda. Bugungi kunda viloyat qishloq xo‘jaligi iqtisodiyotning asosiy tarmoqlaridan biri hisoblanadi.

Buxoro viloyatida dehqonchilik va chorvachilik asosiy tarmoqlar bo‘lib, ularning rivojlanishi tabiiy-geografik komplekslardan oqilona foydalanishga bog‘liq. Hozirgi statistik ma’lumotlarga ko‘ra, viloyatdagi sug‘oriladigan yerlar maydoni 250 ming gektardan ortiq. Asosiy ekin turlari – paxta, g‘alla, sabzavot-poliz ekinlari, yem-xashak o‘simliklari hisoblanadi. Shuningdek, ayrim tumanlarda bog‘dorchilik va uzumchilik sohalari rivojlanmoqda.

Cho‘l hududlarida yaylov resurslaridan foydalanish asosiy yo‘nalish bo‘lib, qo‘y, echki va tuya boqish orqali go‘sht, sut, jun mahsulotlari olinadi. Biroq, yaylovlarning haddan ortiq foydalanilishi natijasida ularning tabiiy tiklanish sur’atlari pasaygan. Shuning uchun ekologik barqaror chorvachilik tizimlarini joriy etish zarur. Viloyat qishloq xo‘jaligida asosiy muammolar quyidagilardan iborat: suv resurslarining cheklanganligi, tuproqning sho‘rlanishi, yaylovlarning degradatsiyasi va iqlim o‘zgarishlari ta’siri. Suv ta’minotining yetarli emasligi, ayniqsa, yoz oylarida hosildorlikka salbiy ta’sir ko‘rsatadi. Amudaryo suvining kamayishi va suvni tejash texnologiyalarining to‘liq joriy etilmaganligi bu jarayonni yanada kuchaytirmoqda.

Muammolarni hal etish uchun quyidagi yo‘nalishlar taklif etiladi:

- tomchilatib sug‘orish texnologiyalarini keng joriy etish;
- tuproq unumdorligini oshiruvchi agrotexnik chora-tadbirlarni kuchaytirish;
- yaylovlarni muhofaza qilish va ularni rekultivatsiya qilish;
- ilmiy asoslangan qishloq xo‘jaligi tizimlarini keng joriy etish.

Buxoro viloyati tabiiy-geografik komplekslari qishloq xo‘jaligi ishlab chiqarishining asosiy manbasi hisoblanadi. Hududning tabiiy sharoitlarini to‘g‘ri baholash, resurslardan oqilona foydalanish va zamonaviy agrotexnologiyalarni

joriy etish orqali viloyatning iqtisodiy salohiyatini yanada oshirish mumkin. Kelajakda ekologik barqarorlikni saqlagan holda, qishloq xo‘jaligi tarmoqlarini diversifikatsiya qilish va ilmiy yondashuvni kuchaytirish muhim ahamiyat kasb etadi.

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SUN’IY INTELLEKTNING O‘ZBEKISTON IJTIMOIY-IQTISODIY RIVOJLANISHIGA TA’SIRI

Annotatsiya. *Ushbu maqolada sun’iy intellekt texnologiylarining O‘zbekistonning ijtimoiy-iqtisodiy geografik rivojlanishiga ta’siri tahlil qilingan. Mamlakat iqtisodiyotining raqamlashtirilishi, sanoat, transport, qishloq xo‘jaligi va xizmat ko‘rsatish sohalarida sun’iy intellekt tizimlarining joriy etilishi jarayonlari ko‘rib chiqilgan. Shuningdek, sun’iy intellektning hududlar o‘rtasidagi iqtisodiy tafovutlarini kamaytirish, yangi ish o‘rinlarini yaratish hamda resurslardan samarali foydalanishni ta’minlashdagi o‘rni yoritilgan. Tadqiqot davomida ilmiy manbalar, ochiq ma’lumotlar va amaliy misollar asosida tahliliy xulosalar berilgan.*

Kalit so’zlar*: Sun’iy intellekt, ijtimoiy-iqtisodiy geografiya, raqamli iqtisodiyot, hududiy rivojlanish.*

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THE IMPACT OF ARTIFICIAL INTELLIGENCE ON THE SOCIO-ECONOMIC DEVELOPMENT OF UZBEKISTAN

Abstract*. This article analyzes the impact of artificial intelligence technologies on the socio-economic and geographical development of Uzbekistan. The study examines the processes of economic digitalization and the implementation of AI systems in industry, transport, agriculture and services. The role of AI in reducing regional disparities, creating new jobs and improving resources efficiency is highlighted. The research is based on the analysis of scientific literature and practical examples.*

Keywords*: artificial intelligence, socio-tconomic geography. digital economy, regional development.*

Kirish.

So‘nggi yillarda sun’iy intellekt (SI) texnologiyalari jahon miqyosida iqtisodiy va ijtimoiy jarayonlarning rivojlanishida muhim omilga aylanmoqda. Raqamli transformatsiya jarayonlari ishlab chiqarish, transport, ta’lim, sog‘liqni

saqlash, xizmat ko‘rsatish va boshqaruv tizimlarida keng qo‘llanilmoqda. Ayniqsa sun’iy intellekt tizimlari geografik axborot texnologiyalari (GAT) uyg‘unlashganda, hududiy tahlil, resurslardan samarali foydalanish va rivojlanish strategiyalarini shakllantirish imkoniyatlari yanada kengaydi. O‘zbekistonda raqamli iqtisodiyotni rivojlantirish va innovatsion texnologiyalarni joriy etish borasidagi isloxotlar mamlakat hududlarining ijtimoiy-iqtisodiy rivojlanishida sun’iy intellektning ahamiyatini yanada oshirdi. Bugungi kunda iqtisodiy geografiya fanida SI texnologiyalarining ta’sirini o‘rganish dolzarb masalaga aylandi, chunki ular ishlab chiqarish kuchlari va aholi joylashuvi, transport-logistika tizimlari, xizmat ko‘rsatish tarmoqlari hamda mehnat bozori geografiyasini o‘zgartirmoqda.

Tadqiqot maqsadi - O‘zbekiston ijtimoiy-iqtisodiy geografik rivojlanishida sun’iy intellekt texnologiyalarining o‘rni va tas’irini tahlil qilish, ularning hududiy rivojlanishiga qo‘shayotgan hissasini aniqlashdan iborat.

Tadqiqot maqsadidan kelib chiqib quyidagi vazifalar belgilab olindi:

- Sun’iy intellekt tushunchasining mohiyati va uning ijtimoiy-iqtisodiy geografiya bilan bog‘liqligini ochib berish;
- O‘zbekiston iqtisodiyotining turli tarmoqlarida sun’iy intellektdan foydalanish holatini o‘rganish;
- sun’iy intellektning hududiy iqtisodiy rivojlanish va bandlikka ta’sirini tahlil qilish;
- SI texnologiyalarining geografik boshqaruv va rejalashtirishda qo‘llash istiqbollarini baholash.

Asosiy qism.

Iqtisodiy geografiya inson faoliyati va ishlab chiqarish kuchlarining hududiy tashkil etilishini, ularning o‘zaro ta’sirini o‘rganadi. So‘nggi o‘n yilliklarda bu fan yangi ilmiy texnologiyalar, ayniqsa, raqamli iqtisodiyot va sun’iy intellekt bilan chambarchas bog‘lanmoqda. Sun’iy intellekt yoki sun’iy idrok (inglizcha artificial intelligence AI) – inson intellektiga taqlid qilishga qodir bo‘lgan mashinalar yaratishga qaratilgan fan va texnologiya sohasi. Bugungi kunda keng qo‘llanilib kelinayotgan sun’iy intellekt texnologiyalariga aqlli veb-qidiruv tizimlari (masalan YouTube Search), tavsiya tizimlari (YouTube, Amazon va Netflix), tabiiy tilni tushunish (Google Assistant, Siri va Alexa), o‘zini-o‘zi boshqaradigan avtomobillar (masalan Waymo) va boshqalarni misol qilish mumkin.

Sun’iy intellekt bo‘yicha tadqiqotlar 20-asr o‘rtalaridan boshlangan bo‘lsada, 2020-yillar boshlarida ko‘plab shirkatlar, universitetlar va labaratoriyalar sun’iy intellekt sohasida sezilarli yutuqlarga erishib kelishmoqda. Sun’iy intellektning iqtisodiy geografiya faniga kirib kelishi ilmiy tahlil sifatini yanada oshirmoqda. Masalan, SI vositalari yordamida hududlarning iqtisodiy ko‘rsatkichlari, transport oqimlari, ishlab chiqarish resurslari va aholining joylashuvi haqidag katta hajmdagi ma’lumotlarni qisqa vaqt ichida tahlil qilish imkoniyati paydo bo‘ldi. Bu esa geografik tadqiqotlarning aniqligini, tezligini va ilmiy samaradorligini oshiradi. Sun’iy intellektning iqtisodiy geografiyadagi nazariy ahamiyati shundaki, u hududiy rivojlanish modellarini aniqlashda, tabiiy

resurslardan oqilona foydalanishda, ishlab chiqarish quvvatlarini joylashtirishda va urbanizatsiya jarayonlarni tahlil etishda yangi yondashuvlarni taqdim etadi. Ayniqsa, “Big Data” (katta ma’lumotlar), “Machine learning” (mashina o‘rganish) va “Geographic Information Systems” (GIS) texnologiyalarining birgalikda qo‘llanishi mintaqaviy siyosatini shakllantirishda muhim omil bo‘lib xizmat qilmoqda.

O‘zbekistonda sun’iy intellekt sohasining rivojlanishi davlat siyosati darajasiga ko‘tarilgan va raqamli texnologiyalarni iqtisodiyotning barcha tarmoqlariga joriy etish, SI mutaxassislarini tayyorlash hamda ilmiy-tadqiqot markazlarini yaratish maqsad qilingan. Jumladan, qishloq xo‘jaligida SI dronlar va sun’iy yo‘ldoshlar orqali olingan ma’lumotlarni tahlil qilish asosida tuproq namligi, hosildorlik va ekinar holati monitoringida (suv, mineral o‘g’it va pestitsidlardan samarali foydalanish), shuningdek, hosilni prognoz qilishga yordam beradi. Kasallik va zararkunandalarni aniqlashda tasvirlarni tahlil qiluvchi SI modellari ekin kasalliklari va zararkunandalarini erta aniqlab, vaqtida chora ko‘rish imkonini beradi. Sanoatda ishlab chiqarish jarayonlarini optimallashtirish, SI uskunalarining ishlashini monitoring qilish, prognozli texnik xizmat, sifat nazorati, mahsulotlardagi nuqsonlarni aniqlashda yordam beradi. Logistika va tadqiqot zanjiri, SI yo‘nalishlarini optimallashtirish, omborlarni boshqarish va talabini bashorat qilish orqali logistika xarajatlarini sezilarli darajada kamaytiradi.

Energetikada SI elektr tarmoqlaridagi yukni taqsimlash va uzilishlarni oldindan bashorat qilish orqali energiyaning samaradorligini oshiradi. Qayta tiklanadigan energiyada esa quyosh va shamol stansiyalarining ishlashini prognoz qilish va boshqarishda muhimdir.

Moliya va bank sohasida SI an’anaviy usullarga qaraganda kredit reytingini aniqroq hisoblab, banklar uchun riskni kamaytiradi. Tranzaksiyadagi firibgarlikni aniqlash, naqd pul o‘tkazmasida g‘ayritabiiy o‘tkazmalarni aniqlash, mijozlarni himoya qilish va xizmat ko‘rsatish hamda operatsiyalarni avtomatlashtirishda katta ahamiyatga ega.

Turizmda SI sayyohlarga ularning qiziqishlari asosida yo‘nalishlar, mehmonxonalar va tadbirlarni tavsiya qiladi, virtual yo’lboshchilar va tarjimonlar vazifasini bajaradi, tarixiy obidalar haqida ma’lumot beradi va real vaqtda tarjima qiladi.

Ta’limda individual yondashuv, ya’ni SI har bir o‘quvchining zaif va kuchli tomonlarini aniqlab, ularga moslashtirilgan o‘quv dasturlarini yaratishi mumkin. Sog‘liqni saqlashda tashxislash, rentgen, KT va MRT tasvirlarni tahlil qilishda shifokorlarga yordam berish, kasalliklarni erta bosqichda (masalan, saraton) aniqlash imkoniyatini oshiradi. Masofaviy tibbiy konsultatsiya (telemeditsina): SI belgilarini dastlabki tahlil qilish va shifokorlarni og‘ir holatlar bilan bog‘lanishda, yangi dori vositalarini ishlab chiqarish jarayonlarini tezlashtirishda yordam beradi.

Davlat xizmatlarida fuqarolarning so‘rovlari va murojaatlarini avtomatik tarqatish va javob berish, SI ma’lumotlari asosida ijtimoiy-iqtisodiy dasturlarni ishlab chiqish, byudjetni samarali taqsimlashda yordam beradi. Til baryerlarini

bartaraf etish, real vaqtda tarjima qilish vositalari O‘zbekistonning ko‘p millatli muhitida aloqani osonlashtiradi.

Aqlli shaharlar va infratuzilmada SI yo‘l harakatini tahlil qilib, tirbandlikni kamaytiradigan va jamoat transportining ishlashini optimallashtiradigan signal sxemalarini yaratadi. Chiqindilarni saralash va qayta ishlash jarayonlarini avtomatlashtirish, xavfsizlik, jinoyatchilarni aniqlash va favqulodda vaziyatlarni boshqarishda ahamiyati katta.

Shu bialn birga ayrim muammolar ham mavjud, xususan, malakali kadrlar yetishmasligi, texnik infratuzilmaning to‘liq shakllanmaganligi va sun’iy intellektga doir ma’lumotlar bazalarining chegaralanganligi. Bu holatlarni bartaraf etish uchun ilmiy tadqiqotlarni kuchaytirish, universitetlarda SI yo‘nalishlarini kengaytirish va xalqaro hamkorlikni rivojlantirish zarur.

Sun’iy intellekt texnologiyalari O‘zbekistonning ijtimoiy-iqtisodiy geografiyasida tub o‘zgarishlarni keltirib chiqarmoqda. SI tizimlari hududlar o‘rtasidagi iqtisodiy tafovutlarni kamaytirishi, yangi ishlab chiqarish markazlarini shakllantirish va bandlik darajasini oshirishga xizmat qilmoqda. Masalan, sun’iy intellekt asosidagi logistika tizimlari transport tarmoqlarini optimallashtiradi, bu esa uzoq hududlarda joylashgan sanoat korxonalarining iqtisodiy aloqalarini kuchaytiradi. Raqamli xaritalash texnologiyalari esa tabiiy resurslarni aniqlash va ulardan samarali foydalanishda yordam beradi. Ijtimoiy sohada esa sun’iy intellekt ta’lim, sog‘liqni saqlash va bandlik tizimlarida keng imkoniyatlarni yaratmoqda. Masalan, ta’lim sohasida SI yordamida masofaviy o‘qitish platformalari hududlararo bilim farqini kamaytiradi, tibbiyotda esa sun’iy intellekt asosida kasalliklarni erta aniqlash imkoniyati oshmoqda. Kelajakda, sun’iy intellekt O‘zbekistonning raqamli iqtisodiyotida “hududiy raqobatbardoshlik” ni kuchaytiradi. U iqtisodiy geografiya uchun yangi ilmiy yo‘nalishlarni – “raqamli geografiya”, “intellektual infratuzilma”, “aqlli shaharlar geografiyasi” kabi yo‘nalishlarni shakllantirmoqda. Shu sababli sun’iy intellektdan oqiona foydalanish O‘zbekistonning barqaror va innovatsion rivojlanishida asosiy omillardan biri hisoblanadi.

Xulosa.

Yuqoridagi tahlillar shuni ko‘rsatadiki, sun’iy intellekt texnologiyalari O‘zbekistonning ijtimoiy-iqtisodiy rivojlanishida muhim o‘rin egallamoqda. Shu bilan birga sun’iy intellekt O‘zbekiston uchun strategik ahamiyatga ega bo‘lib, u an’anaviy sohalarni modernizatsiya qilish, raqobatbardoshlikni oshirish va aholi turmush tarzini yaxshilash imkoniyatini beradi. Davlatning raqamli iqtisodiyot hamda “Sun’iy intellekt” ni rivojlantirishga qaratilgan tashabbuslari (masalan, SI ni rivojlantirish konsepsiyasi) bu yo‘lda muhim qadam hisoblanadi. Buning uchun ta’lim tizimini isloh qilish, qulay investitsion muhit yaratish va qonunchilik bazasini rivojlantirish zarur. SI O‘zbekistonni kelajakda nafaqat mintaqaviy, balki global miqyosda raqobatbardosh bo‘lgan iqtisodiyotga aylantirishning kalitidir. O‘zbekistonning “Raqamli iqtisodiyot” ga o‘tish strategiyasida, xususan “Raqamli O‘zbekiston – 2030” dasturi sun’iy intellektning iqtisodiy geografiyada qo‘llanilishi uchun keng imkoniyatlar yaratdi. Shu bilan birga, ilmiy va amaliy

yondashuvlarni uyg‘unlashtirish, kadrlar tayyorlash, ma’lumotlar bazalarini kengaytirish va texnologik infratuzilmani mustahkamlash bugungi kunning eng muhim vazifalaridan biri hisoblanadi.

Kelgusida sun’iy intellekt texnologiyalarini geografik tadqiqotlarga kengroq tatbiq qilish, iqtisodiy rivojlanish ko‘rsatkichlarini prognozlash va hududiy innovatsion infratuzilmani shakllantirish O‘zbekistonning barqaror rivojlanishiga hissa qo’shadi.

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LANDSHAFT SANATIDA SUV VA YASHIL OSIMLIKLARNING BADIIY IFODASI

Annotatsiya. *Mazkur maqolada landshaft sanatining muhim tarkibiy elementlari hisoblangan suv va yashil osimliklarning badiiy ifodasi ilmiy jihatdan tahlil qilinadi. Suv insoniyat madaniyatida hayot manbai, poklik va ruhiy osoyishtalik ramzi sifatida qadrlangan bolsa, yashil osimliklar tabiatning jonli ifodasi, hayotiylik, gozallik va barqarorlik timsoli sifatida talqin qilingan. Tadqiqotda suv va osimliklarning qadimiy Sharq, Garb va milliy bog-park ananalaridagi orni, ularning falsafiy va estetik ramziyligi, zamonaviy landshaft arxitekturasi va dizaynidagi talqinlari keng yoritilgan. Shuningdek, maqolada suv va osimlik uygunligining inson psixologiyasi, ekologik barqarorlik va badiiy kompozitsiyalarni boyitishdagi roli tahlil qilinadi. Yapon boglari, islomiy bog sanati va zamonaviy ekologik landshaft loyihalari misolida suv va yashil osimliklarning uygunlashuvi sanat asari sifatida korib chiqiladi. Natijada, maqola landshaft sanati nazariyasi va amaliyotida suv hamda yashil osimliklarning badiiy ifodasi chuqur ilmiy asoslanganligini korsatadi.*

Kalit sozlar: *landshaft sanati, suv, yashil osimliklar, ekologik barqarorlik, bog-park madaniyati, estetik ifoda.*

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ARTISTIC EXPRESSION OF WATER AND GREENERY IN LANDSCAPE ART

Abstract: *This article provides a scientific analysis of the artistic expression of water and green plants, which are essential components of landscape art. Throughout human history, water has been perceived as a source of life, a symbol of purity and spiritual tranquility, while green plants have been interpreted as the living emblem of nature, symbolizing vitality, beauty, and sustainability.*

The study examines in detail the role of water and vegetation in ancient Eastern, Western, and national garden traditions, their philosophical and aesthetic symbolism, as well as their interpretations in modern landscape design and architecture. Furthermore, the article analyzes the importance of harmony

between water and greenery in enriching artistic compositions, ensuring ecological sustainability, and influencing human psychology.

Using examples from Japanese gardens, Islamic garden art, and contemporary ecological landscape projects, the synthesis of water and greenery is explored as a form of artistic creation. Ultimately, the article demonstrates that the artistic expression of water and green plants has a profound scientific foundation within the theory and practice of landscape art.

Keywords: *landscape art, water, green plants, ecological sustainability, garden culture, aesthetic expression.*

Kirish.

Landshaft sanati insoniyatning tabiat bilan uygun yashashga intilishining eng yorqin namunasidir. Unda inson ijodi, memoriy tafakkur va tabiat gozalligi uygunlashadi. Landshaft sanatining asosiy elementlari sifatida **suv** va **yashil osimliklar** qadimdan alohida etiborga molik bolib kelgan.

Suv qadimdan hayot manbai, poklik, ruhiy osoyishtalik va abadiylik ramzi sifatida sanatda muhim orin tutgan. Hovuzlar, favvoralar, sharsharalar va oqimlar orqali suv manzaralari landshaft sanatiga dinamiklik va hayotiylik baxsh etadi. Shu tariqa, suvning aks ettirish xususiyati bog-park kompozitsiyalariga nafislik va falsafiy ohang bagishlaydi.

Yashil osimliklar esa tabiatning muhim timsoli, ekologik omili, hayotiylik va gozallik ifodasi sifatida qaraladi.

Landshaft sanatida suvning badiiy ifodasi.

Suv qadimiy Sharq falsafasida hayotning asosiy unsuri, tozalash va yangilanish manbai sifatida qaralgan. Masalan, qadimgi Mesopotamiya va Misr madaniyatlarida daryo va kanallar shaharsozlikning markazida turar edi. Islomiy ananalarda suv jannat boglarining ajralmas qismi bolib, Quronda suv “hayot manbai” sifatida tariflangan.

Garb sanatida ham suv ramziy ahamiyat kasb etgan. Antik davr Rim va Yunon boglarida suv havzalari va favvoralar sanat asari sifatida ishlatilgan bolib, ular boylik va estetik did timsoli edi.



1. Vatikan boglari. https://i.pinimg.com/originals/0e/94.

Bog-park sanatida suv elementlarining qollanilishi.

Suv elementlari landshaft sanatida turli shakllarda qollanadi: **Hovuzlar** osuda, tinchlik va osoyishtalik ifodasi; **Favvoralar** hayotiylik, dinamiklik va quvonch timsoli; **Sharsharalar** tabiatning kuchi va uygunligini ifodalovchi manzara; **Kanallar va ariqlar** hududni boglash va uygunlashtirish vositasi.

Masalan, Samarqanddagi Amir Temur davridagi bog-park majmualarida suv inshootlari alohida estetik va muhandislik yechimlari bilan ajralib turgan.

Zamonaviy landshaft dizaynida suvning ekologik va estetik vazifalari. Bugungi kunda suv elementlari nafaqat badiiy, balki ekologik funksiyaga ham ega. Ular mikroiqlimni tartibga soladi, shovqinni kamaytiradi, ekologik uygnlikni taminlaydi. Zamonaviy landshaft arxitekturasi suv orqali interaktiv sanat yaratishda ham faol foydalanmoqda.

Yashil osimliklarning landshaft sanatidagi orni. Osimliklarning ramziy va estetik ifodasi.



2. landshaft dizaynida suvning ekologik va estetik vazifalari , https://i.pinimg.com/originals/82.

Osimliklar turli xalqlarda turlicha ramziylik kasb etgan: **Daraxtlar** mustahkamlik va abadiylik timsoli; **Gullar** gozallik va muhabbat ramzi; **Maysazorlar** tinchlik va kenglik timsoli.

Sharq bog sanatida daraxtlarning joylashuvi falsafiy mazmun bilan uygunlashgan, Yevropa barokko boglarida esa simmetrik kompozitsiya ustun bolgan.



3.4.5. Daraxtlar, Gullar, Maysazorlar.

Milliy bog-park sanatida osimliklarning uygunlashtirilishi. Ozbekiston hududida qadimdan koplab bog-park madaniyati shakllangan. Samarqand, Buxoro va Xiva boglarida mevali va manzarali daraxtlar uygunlashtirilgan. Bu nafaqat estetik gozallik, balki xalq xojaligida amaliy ahamiyatga ega bolgan. **Osimliklarning psixologik va ekologik tasiri**. Yashil rang inson ruhiyatiga ijobiy tasir etadi, stressni kamaytiradi va osoyishtalik baxsh etadi. Ekologik nuqtai nazardan esa osimliklar havo sifatini yaxshilaydi, shovqin darajasini kamaytiradi.

Suv va osimlik uygunligining sanat asari sifatida talqini. Yapon boglari: suv va osimlik uygunligi.



6. Yapon bog sanati tabiat va inson uygunligi.
https://pix8.agoda.net/geo/poi/18.

Yapon bog sanati tabiat va inson uygunligiga asoslangan. Unda suv va osimliklar muvozanatli tarzda joylashtirilib, har bir element ramziy manoga ega. Suv hayotning oqimi, osimliklar esa fasllarning gozalligini ifodalaydi.

Islomiy bog sanati: jannat konsepsiyasi. Islomiy bog sanati “chahor bog” (tort qismli bog) shaklida qurilib, markazida suv havzasi joylashtirilgan. Bu jannat tasvirining ramziy talqini bolib, suv va osimliklar uygunligi orqali ruhiy osoyishtalik yaratilgan.

Zamonaviy landshaft sanatida ekologik uygunlik yaratish. Bugungi kunda landshaft sanati ekologik dizayn tamoyillariga asoslanmoqda. Suv havzalari va yashil hududlar shahar iqlimini yumshatadi, inson salomatligini qollab-quvvatlaydi. Zamonaviy loyihalarda suv va osimlik uygunligi sanat bilan bir qatorda ekologik muvozanatni taminlash vositasi sifatida qaralmoqda.



7. loyihalarda suv va osimlik uygunligi. https://www.arch2o.com/wp-content/uploads/2.

XULOSA.

Tadqiqot natijalari shuni korsatadiki, suv va yashil osimliklar landshaft sanatining ajralmas tarkibiy qismi bolib, ular estetik, ramziy va ekologik vazifalarni birlashtiradi. Suv hayotiylik va poklik timsoli, yashil osimliklar esa hayot, gozallik ramzi sifatida sanat asarlarida ifodalanadi.

Yapon boglari, islomiy bog sanati va zamonaviy landshaft dizayni tajribasi suv va osimliklarning uygunlashuvi sanat asari sifatida qadrlanishini korsatadi.

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RESPUBLIKAMIZDA DAVLAT KADASTRLARINI YARATISH VA YURITISHNING HUQUQIY ASOSLARI

Annotatsiya: *Ushbu ilmiy ishda O‘zbekiston Respublikasida davlat kadastrlarini yaratish va yuritishning huquqiy asoslari, ularning shakllanishi hamda rivojlanish jarayonlari tahlil qilinadi. Tadqiqotning maqsadi — kadastr tizimini boshqarish, yangilash va takomillashtirishda amal qilinadigan qonun hujjatlari, normativ-huquqiy hujjatlar hamda ularning amaliy ahamiyatini o‘rganishdan iborat. Ishda “Davlat kadastrlari to‘g‘risida”gi Qonun, Prezident farmonlari, hukumat qarorlari va soha bo‘yicha me’yoriy hujjatlar asosida kadastr axborot tizimining tashkil etilishi, yuritilishi va ochiqligi masalalari tahlil qilingan. Tadqiqot natijalari kadastr ma’lumotlarining aniqligi, shaffofligi va boshqaruv samaradorligini oshirishga qaratilgan ilmiy-amaliy tavsiyalar ishlab chiqish imkonini beradi.*

Kalit so‘zlar: *davlat kadastri, huquqiy asos, normativ-huquqiy hujjatlar, kadastr tizimi, boshqaruv, shaffoflik.*

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LEGAL BASIS FOR THE CREATION AND MAINTENANCE OF STATE CADASTRES IN THE REPUBLIC OF UZBEKISTAN

Abstract: *This research paper examines the legal framework for the creation and maintenance of state cadastres in the Republic of Uzbekistan and analyzes the processes of their formation and development. The purpose of the study is to examine the legislative and regulatory acts governing the management, updating, and improvement of the cadastral system, as well as to determine their practical significance. The paper analyzes the provisions of the Law "On State Cadastres," presidential decrees, government resolutions, and other regulatory documents related to the organization, maintenance, and openness of the cadastral information system. The results of the study allow for the development of scientific and practical recommendations aimed at improving the accuracy, transparency, and efficiency of cadastral data management.*

Key words*: state cadastre, legal basis, regulatory legal acts, cadastral system, management, transparency.*

Kadastr munosabatlarini tartibga solishning huquqiy asosini O‘zbekiston Respublikasining Konstitutsiyasi, O‘zbekiston Respublikasining Fuqarolik kodeksi, O‘zbekiston Respublikasining Yer kodeksi, O‘zbekiston Respublikasining Shaharsozlik kodeksi, O‘zbekiston Respublikasining Soliq kodeksi, O‘zbekiston Respublikasining Uy-joy kodeksi, O‘zbekiston Respublikasining “Davlat yer kadastri to‘g‘risida”gi, “Davlat kadastrlari to‘g‘risida”gi, “Suv va suvdan foydalanish to‘g‘risida”gi”, “Muhofaza etiladigan tabiiy hududlar to‘g‘risida”gi, “Madaniy meros obyektlarini muhofaza qilish va ulardan foydalanish to‘g‘risida”gi, “Avtomobil yo‘llari to‘g‘risida”gi, “Temiryo‘l transporti to‘g‘risida”gi, “Telekommunikatsiyalar to‘g‘risida”gi, “Xavfli ichlab chiqarish obyektlarining sanoat xavfsizligi to‘g‘risida”gi, “Chiqindilar to‘g‘risida”gi, “Geodeziya va kartografiya to‘g‘risida”gi, “Ko‘chmas mulkka bo‘lgan huquqlarni davlat ro‘yxatidan o‘tkazish to‘g‘risida”gi va boshqa Qonunlari, shuningdek O‘zbekiston Respublikasi Prezidentining farmon va qarorlari, Vazirlar Mahkamasi qarorlari hamda boshqa me’yoriy-huquqiy hujjatlar tashkil etadi.

O‘zbekiston Respublikasining Fuqarolik kodeksi fuqarolik muomalasi ishtirokchilarining huquqiy holatini, mulk huquqi va boshqa ashyoviy huquqlarning, intellektual faoliyat natijalariga bo‘lgan huquqlarning vujudga kelish asoslarini hamda ularni amalga oshirish tartibini belgilaydi, shartnoma majburiyatlari va o‘zga majburiyatlarni, shuningdek boshqa mulkiy hamda u bilan bog‘liq shaxsiy nomulkiy munosabatlarni tartibga soladi. [43, 10-11 b.].

O‘zbekiston Respublikasining Yer kodeksida yer to‘g‘risidagi qonunchilikning asosiy vazifalari, xususan hozirgi va kelajak avlodlarning manfaatlarini ko‘zlab yerdan ilmiy asoslangan tarzda, oqilona foydalanish va uni muhofaza qilishni, tuproq unumdorligini tiklash va oshirishni, tabiiy muhitni asrash va yaxshilashni, xo‘jalik yuritishning barcha shakllarini teng huquqlilik asosida rivojlantirish uchun sharoit yaratishni, yuridik va jismoniy shaxslarning yer uchastkalariga bo‘lgan huquqlarini himoya qilishni ta’minlash maqsadida yer munosabatlarini tartibga solishdan, shuningdek bu sohada qonuniylikni mustahkamlashdan, jumladan korrupsiyaga oid huquqbuzarliklarning oldini olishdan iborat, deb belgilab qo‘yilgan.

O‘zbekiston Respublikasining Shaharsozlik kodeksi hududiy rejalashtirish, shaharsozlik, hududlar planirovkasi, arxitektura-qurilish loyihasi, kapital qurilish obyektlarini qurish, ularni rekonstruksiya qilish, shuningdek, tarkibiy va boshqa xususiyatlarga ta’sir qiluvchi kapital ta’mirlash bo‘yicha munosabatlarni tartibga soladi, davlat shaharsozlik kadastrini yuritishning asosiy yo‘nalishlarini belgilab beradi. O‘zbekiston Respublikasining Soliq kodeksi soliqlar va yig‘imlarni belgilash, joriy etish va bekor qilishga, hisoblab chiqish hamda to‘lashga doir munosabatlarni, shuningdek soliq majburiyatlarini bajarish bilan bog‘liq munosabatlarni tartibga soladi.

O‘zbekiston Respublikasining Uy-joy kodeksi fuqarolar, yuridik shaxslar, davlat boshqaruv organlari va mahalliy davlat hokimiyati organlarining quyidagi masalalar bo‘yicha munosabatlarini tartibga soladi: uy-joy fondini hisobga olish;

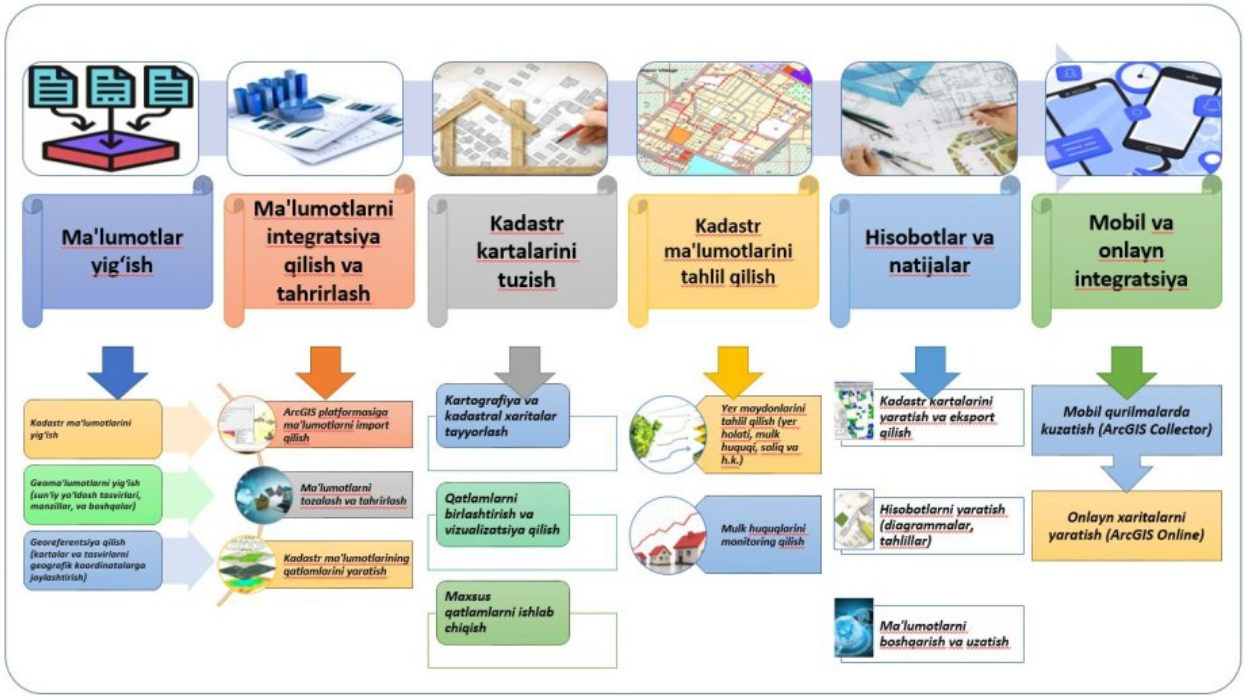
uy-joy fondini saqlash, qarash va ta’mirlashni ta’minlash; fuqarolarning uy-joy huquqlariga rioya etilishi va uy-joy fondidan maqsadli foydalanish ustidan nazorat qilish. Uylarni qurish, turar joylarni qayta qurish va o‘zgartirish, muhandislik qurilmalaridan foydalanish, kommunal xizmatlar bilan ta’minlash bilan bog‘liq munosabatlar ushbu Kodeks va boshqa qonunchilik hujjatlari bilan tartibga solinadi.

O‘zbekiston Respublikasining “Davlat yer kadastri to‘g‘risida”gi Qonunining maqsadi davlat yer kadastri yuritishning, iqtisodiyotni rivojlantirish, yer uchastkalariga bo‘lgan huquqlarning kafolatlarini ta’minlash, yerlardan oqilona foydalanish, ularni qayta tiklash va muhofaza qilish uchun kadastr ma’lumotlaridan foydalanishning huquqiy asoslarini belgilashdan iborat. O‘zbekiston Respublikasining “Davlat kadastrlari to‘g‘risida”gi Qonunining maqsadi davlat kadastrlarini yuritish, kadastrga doir axborotni to‘plash va undan foydalanish sohasidagi munosabatlarni tartibga solishdan iboratdir. Ushbu qonunda davlat kadastri tushunchasi, Davlat kadastrlari yagona tizimi (DKYaT), uning tarkibi, davlat kadastrlari obyektlari, davlat kadastrlarini yuritishning asosiy prinsiplari, davlat kadastrlarini yuritish sohasida davlat boshqaruvi, kadastr obyektlariga bo‘lgan huquqlarni davlat ro‘yxatidan o‘tkazish, kadastr obyektlarini hisobga olish, baholash, kadastr hujjatlari, davlat kadastrlariga doir axborotni taqdim etish, davlat kadastrlari to‘g‘risidagi qonunchilikni buzganlik uchun javobgarlik tartibi belgilab qo‘yilgan.

O‘zbekiston Respublikasining “Ko‘chmas mulkka bo‘lgan huquqlarni davlat ro‘yxatidan o‘tkazish to‘g‘risida”gi Qonunining maqsadi ko‘chmas mulkka bo‘lgan huquqlarni davlat ro‘yxatidan o‘tkazish sohasidagi munosabatlarni tartibga solishdan iborat. Ko‘chmas mulkka bo‘lgan huquqlarni davlat ro‘yxatidan o‘tkazish boshqarmasi faoliyatining asosiy maqsad va vazifalari – ko‘chmas mulkka bo‘lgan huquqlarni davlat ro‘yxatidan o‘tkazishni tashkil etish va amalga oshirishdir. Ma’lumki, ko‘chmas mulkka bo‘lgan huquqlarni davlat ro‘yxatidan o‘tkazish sohasidagi munosabatlarni tartibga solish maqsadida O‘zbekiston Respublikasining “Ko‘chmas mulkka bo‘lgan huquqlarni davlat ro‘yxatidan o‘tkazish to‘g‘risida”gi Qonuni 28.11.2022 yilda O‘zbekiston Respublikasi Prezidenti tomonidan imzolangan va 2023-yil 1-mart kunidan kuchga kirgan.

Mazkur Qonunning amal qilishi ko‘chmas mulkning quyidagi turlariga bo‘lgan huquqlarni davlat ro‘yxatidan o‘tkazishga nisbatan tatbiq etiladi: • yer uchastkalariga; • binolarga, inshootlarga, shu jumladan qurilishi tugallanmagan obyektlarga; • ko‘p yillik dov-daraxtlarga; • mulkiy majmua sifatidagi korxonaga. Ushbu Qonunning amal qilishi yer osti boyliklariga bo‘lgan huquqlarni davlat ro‘yxatidan o‘tkazishga nisbatan tatbiq etilmaydi. Ko‘chmas mulkka bo‘lgan huquqlarni davlat ro‘yxatidan o‘tkazishning asosiy prinsiplari quyidagilardan iborat: • qonuniylik; • ko‘chmas mulkka bo‘lgan huquqlarni davlat ro‘yxatidan o‘tkazishning majburiyligi; • davlat ro‘yxatidan o‘tkazilgan ko‘chmas mulkka bo‘lgan huquqlarning ustuvorligi; • ko‘chmas mulkka bo‘lgan huquqlar to‘g‘risidagi axborotning ochiqligi; • taqqoslanuvchanlik va muvofiqlik.

Ko‘chmas mulkka bo‘lgan mulk huquqi va boshqa ashyoviy huquqlar, bu huquqlar yuzaga kelganligi, boshqa shaxsga o‘tganligi, cheklanganligi va bekor qilinganligi davlat ro‘yxatidan o‘tkazilishi lozim. Ko‘chmas mulk obyektlariga bo‘lgan huquqlar davlat ro‘yxatidan o‘tkazilmasdan amalga oshirilgan ko‘chmas mulk bilan bog‘liq bitimlar haqiqiy emas deb hisoblanadi. Ko‘chmas mulkka bo‘lgan quyidagi huquqlar yoki cheklovlar davlat ro‘yxatidan o‘tkazilishi lozim: • mulk huquqi; • doimiy egalik qilish huquqi; • doimiy foydalanish huquqi; • meros qilib qoldiriladigan umrbod egalik qilish huquqi; • ijara huquqi; • ikkilamchi ijara huquqi; • xo‘jalik yuritish huquqi; operativ boshqarish huquqi; • ko‘chmas mulkni ishonchli boshqarish huquqi; • bepul foydalanish huquqi; • renta; • ipoteka; • servitut; • ko‘chmas mulkka bo‘lgan huquqlarga nisbatan qonundan kelib chiqadigan yoki vakolatli davlat organlari tomonidan qo‘yilgan (belgilangan) cheklovlar. Keyingi yillarda davlat kadastrlari sohasida qator islohotlar amalga oshirildi, davlat kadastrlarini tartibga solishning huquqiy asoslari mustahkamlab borilmoqda.



Rasm. ArcGIS dasturiy ta’minotlari asosida yaratilgan davlat kadastrlari kartalarini yaratishning umumiy texnologik sxemasi .

Xususan, O‘zbekiston Respublikasi Prezidentining “Yer hisobi va davlat kadastrlarini yuritish tizimini tubdan takomillashtirish chora-tadbirlari to‘g‘risida” 2020-yil 7-sentyabrdagi PF6061-son farmoni hamda “O‘zbekiston Respublikasi Davlat soliq qo‘mitasi huzuridagi Kadastr agentligi faoliyatini tashkil etish chora-tadbirlari to‘g‘risida” 2020-yil 7-sentabrdagi PQ-4819-son qarori hamda uni amalga oshirish maqsadida 2021-yilning 22-iyunida O‘zbekiston Respublikasi Vazirlar Mahkamasining “Davlat kadastrlarini yuritish sohasini tartibga soluvchi ayrim normativ-huquqiy hujjatlarni tasdiqlash to‘g‘risida”gi 389- son qarori qabul

qilingan. O‘zbekiston Respublikasi Prezidentining 2022-yil 21-dekabrdagi “Yangi O‘zbekiston ma’muriy islohotlarini amalga oshirish chora-tadbirlari to‘g‘risida”gi PF-269-son Farmoniga muvofiq Davlat soliq qo‘mitasi huzuridagi Kadastr agentligining tashkiliy bo‘ysunuvi o‘zgartirilib, Iqtisodiyot va moliya vazirligi bo‘ysunuviga o‘tkazildi.

Xulosa

O‘zbekiston Respublikasida davlat kadastrlarini yaratish va yuritish tizimi mamlakatning iqtisodiy, huquqiy hamda ijtimoiy rivojlanishida muhim o‘rin tutadi. Tadqiqot natijalari shuni ko‘rsatadiki, kadastr sohasini boshqarishning huquqiy asoslari “Davlat kadastrlari to‘g‘risida”gi Qonun, Prezident farmonlari, Vazirlar Mahkamasi qarorlari va boshqa me’yoriy-huquqiy hujjatlar bilan mustahkamlangan. Ushbu hujjatlar davlat kadastrlarini shakllantirish, yuritish, yangilash va ulardan foydalanish tartibini belgilab beradi hamda sohada yagona axborot tizimini joriy etishga xizmat qiladi.

Davlat kadastrlarini samarali yuritish natijasida tabiiy, iqtisodiy va mulkiy resurslar to‘g‘risidagi ma’lumotlarning ishonchliligi, aniqligi va ochiqligi ta’minlanadi. Shu bilan birga, kadastr axborot tizimini raqamlashtirish va zamonaviy GAT texnologiyalarini joriy etish bu sohada boshqaruv samaradorligini yanada oshiradi.

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OROLBO‘YI MINTAQASINING ASOSIY EKOLOGIK MUAMMOLARI: TARKIB TOPISHI VA O‘ZGARISH TENDENSIYALARI

Annotatsiya: *Ushbu ilmiy ishda Orolbo‘yi mintaqasida yuzaga kelgan ekologik muammolarning shakllanish jarayoni, ularning hududiy xususiyatlari va rivojlanish tendensiyalari tahlil qilinadi. Tadqiqotning asosiy maqsadi — Orol dengizining qurishi natijasida vujudga kelgan tabiiy-geografik o‘zgarishlar, iqlim, tuproq, suv va biologik resurslarga bo‘lgan salbiy ta’sirni ilmiy asosda o‘rganish hamda ekologik barqarorlikni ta’minlash yo‘llarini aniqlashdan iborat. Ishda tarixiy-geografik tahlil, masofadan zondlash ma’lumotlari va GAT texnologiyalari asosida mintaqadagi ekologik jarayonlar fazoviy tahlil qilingan.*

Orolbo‘yi hududida cho‘llanish, tuproq sho‘rlanishi, biologik xilma-xillikning kamayishi, aholi salomatligiga salbiy ta’sir ko‘rsatadigan chang-tuz bo‘ronlarining kuchayishi kabi asosiy ekologik muammolar aniqlanadi. Tadqiqot natijalari Orolbo‘yi mintaqasida ekologik muvozanatni tiklash, tabiiy resurslardan oqilona foydalanish va barqaror rivojlanishni ta’minlash bo‘yicha ilmiy asoslangan tavsiyalar ishlab chiqish imkonini beradi.

Kalit so‘zlar: *Orolbo‘yi, ekologik muammolar, cho‘llanish, iqlim o‘zgarishi, tabiiy resurslar, ekologik barqarorlik, GAT.*

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MAIN ENVIRONMENTAL PROBLEMS OF THE ARAL SEA REGION: FORMATION AND TRENDS OF CHANGE

Abstract: *This research paper examines the development of environmental problems in the Aral Sea region, their territorial characteristics, and development trends. The primary objective of the study is to scientifically examine the natural and geographical changes resulting from the desiccation of the Aral Sea and to identify ways to ensure environmental sustainability despite the negative impacts on climate, soil, water, and biological resources. The study provides a spatial analysis of the region's environmental processes based on historical and geographical analysis, remote sensing data, and GIS technologies.*

The key environmental problems identified in the Aral Sea region include desertification, soil salinization, loss of biodiversity, and increased dust and salt storms, which negatively impact public health. The study's results enable the development of scientifically based recommendations for restoring ecological

balance, rationally using natural resources, and ensuring sustainable development in the region.

Key words: *Aral Sea region, environmental issues, desertification, climate change, natural resources, environmental sustainability, GIS*.

Orol dengizi − noyob ulkan ko‘l, Markaziy Osiyodagi yirik cho‘llar Qoraqum, Qizilqum, Ustyurt, Katta va Kichik Bo‘rsiq, Orolbo‘yi Qoraqumlari oralig‘ida joylashgan. U Amudaryo va Sirdaryo suvi hisobiga eramizdan avvalgi 1 miningchi yilning birinchi yarmidan beri mavjud. 1961 yildan e’tiboran Markaziy Osiyoda sug‘orishning tez sur’atlarda rivojlanishi munosabati bilan unga quyilayotgan suv hajmi yildan yilga kamayib bordi, 2005 yildan e’tiboran esa Amudaryo o‘z suvini Orol dengiziga quyishni batamom to‘xtatdi. Tabiiy bug‘lanishning muntazam davom etishi tufayli uning sathi falokatli tarzda tushib borishi kuzatilmoqda. 2022 yil oxirida uning sathi 22,5 m (1961 yilda 53 m) mutlaq balandlikda bo‘lganligi qayd etildi. Buning oqibatida uning 57 ming km^2 qismi qurib, quruqlikka aylandi.

Yangitdan vujudga kelgan kontinental quruqlik tabiiy muhitning tipik cho‘l xususiyatlarga egaligi va uning atrofdagi qum-sho‘rxok landshaftlaridan deyarli farq qilmasligi bilan ajralib turadi. Dengiz suvining har yili tub qirg‘og‘idan ma’lum masofaga chekinishi va tubidagi yotqiziqlarning litologik tarkibiga ko‘ra shamolning relyef hosil qiluvchi faoliyati natijasida o‘tgan 60 yil mobaynida uning yer usti tuzilishi murakkablashib bordi. Vujudga kelayotgan yangi tabiiy komplekslar strukturasi, dinamikasi va ularning rivojlanish yo‘nalishlari hamda istiqboldagi o‘zgarishlari dengiz tubidagi yotqiziqlar tarkibi, gidrogeologik rejim, tuproqlarning vujudga kelishi, taraqqiyoti va tuz rejimi, o‘simliklarning faoliyati va suksessiyasi, ular negizida landshaftlarning tadrijiy o‘zgarishlari va taraqqiyoti Orolning qurigan qismini sinchiklab o‘rganishni taqozo etadi.

Oligotsen (Oligotsen davri, Bu davrda o‘simliklar va hayvonlar evolyutsiyasi o‘zgargan) ning oxirida Turon plitasining sharqiy hududlari sekin asta ko‘tarilib, quruqlikka aylanadi va denudatsiya jarayonlari kuchayadi. Miotsen(Miotsen (yoki "miotsen davri") — bu geologik davr bo‘lib, u 23 million yil oldin boshlangan va taxminan 5.3 million yil oldin tugagan. Miotsen, Neogen erasi ichida joylashgan va biologik evolyutsiyada katta o‘zgarishlarni yuzaga keltirgan davr hisoblanadi)da Orolbo‘yi va Qizilqum o‘rnida pasttekislik tarkib topadi.

Aniqlanishicha, Orol cho‘kmasining vujudga kelishi pliotsen(Bu davrda yer yuzasidagi iqlim o‘zgarishlari va hayvonot dunyosidagi katta evoulutsion jarayonlar davom etgan)da sodir bo‘la boshlagan. U tektonik, deflyatsiya, suffoziya-karst jarayonlarning ta’siri natijasida vujudga kelgan bo‘lishi ehtimol qilinadi. Oqchag‘ildan oldinroq hududning umumiy ko‘tarilishi tufayli avval to‘plangan yotqiziqlar kuchli eroziyaga berilishi natijasida ular butunlay yuviladi. Bunda sarmatning yumshoq (bo‘sh) terrigen allyuvial-deltali yotqiziqlari deyarli to‘lig‘i bilan yo‘qolgan. Bu murakkab jarayonda shimoli-sharqda hozirgi Aralsk

shahridan boshlab to janubi-g‘arbda Sariqamishning janubiy sohiligacha bo‘lgan hududda ulkan erozion botiq tarkib topgan (1-rasm).





2019-y. **Dengiz qurigan tubi**

1-rasm. Orol dengizi suvidan qurigan tubining ko‘rinishi

Orol cho‘kmasining ilk bor suv bilan to‘lishi yuqori pliotsenda ro‘y bergan, o‘shanda Kaspiyning oqchag‘il transgressiyasi Turon pasttekisligining katta qismini bosgan. Bu voqelik Orolbo‘yidagi Qushxonatov va Beltov balandliklaridagi oqchag‘ilning qushxonatov (qalinligi 60 m), Dengizko‘l (70-80 m) va zoir ko‘l-dengiz yotqiziqlaridan iborat bo‘lgan svitalar asosida tasdiqlanishi mumkin. Apsheron epoxasi (pliotsen)da Sariqamish-Orol cho‘kmalari yana Kaspiy transgressiyasi bilan qoplanadi. Orol cho‘kmasida qum-gil yotqiziqlari vujudga keladi, ularda dengiz chig‘anoqlari mavjud. Dengizning shimoliy tub qirg‘og‘ida bu yotqiziqlar 54-62 m mutlaq balandlikda tarqalgan.

Amudaryo yotqiziqlari bilan Sariqamish, Xorazm va Oqchadaryo botiqlarini to‘lishi natijasida yuqori to‘rtlamchi davr (golotsen)da Sariqamishbo‘yi va Oqchadaryo deltalari, eramizdan avvalgi 1 miningchi yilning birinchi yarmida Orolbo‘yi (hozirgi Amudaryo) va Sirdaryo deltalari vujudga kelgan va Amudaryo bilan Sirdaryo Orolga quyila boshlagan. Eramizdan avvalgi 1 miningchi yilning o‘rtalarida Orol dengizida eng baland transgressiya yuz bergan, uning ko‘l-dengiz yotqiziqlari 58-59 m mutlaq balandlikda uchraydi va u qadimgi orol terrasasi bilan mashhur. Eramizdan oldingi VII-IV asrlarda yangi orol transgressiyasi sodir bo‘lgan. O‘shanda dengiz sathi 54,5 m mutlaq balandlikkacha ko‘tarilgan va Orol tarixida yangi orol terrasasi bilan taniqli. Orol dengizining janubiy qismi Amudaryo yotqiziqlari bilan band va ko‘pincha avandelta deb ham aytiladi.

I.V.Rubanov va uning hammualliflarining ta’kidlashicha, Orol dengizi tubining yotqiziqlari turli mexanik tarkibdagi qumdan tortib gilgacha mavjud. Qumlar delta va qirg‘oq yotqiziqlari, alevritlar daryo faoliyati, gil va mergel dengiz (markaziy qismda) ishi bilan bog‘liq. Katta hamda Kichik dengizning

markaziy va g‘arbiy chuqur (Ustyurt chinki yaqinida) qismlarida karbonatli gillar tarqalgan, qirg‘oqqa yaqin hududlarda ular turli mexanik tarkibdagi alevritlar bilan o‘ralgan. Tub qirg‘oqqa yaqin hududlar turli mexanik tarkibdagi qum yotqiziqlar bilan band. Ayniqsa, sharqiy qirg‘oqqa yaqin joylar va Lazarev-Vozrojdeniya orollari (Arxangelskiy marzasi) atrofi qalin qumlardan iborat. Delta va dengiz yotqiziqlari ostida paleogenning dengiz transgressiyasida vujudga kelgan gil, qum mergel qatlamlari yotadi, ular bo‘r davrining terrigen jinslari ustida tarqalgan.

Dengizning qurigan qismida tabiiy komplekslarni vujudga kelishi, dinamikasi va taraqqiyoti Quyosh radiatsiyasi, grunt suvlari rejimi va tuproqning suv tuz maromi, o‘simliklar suksessiyasi, tabiiy jarayonlarning rivojlanishi va boshqa omillarga bog‘liq. Avvalo qurigan tubning tabiiy nishablik bo‘yicha grunt suvlarini yer osti oqimi va uning Orol sathini tushib borishi natijasida borgan sari chuqurlashishi oqibatida tuproqning suv-tuz rejimini o‘zgarishi tabiiy komplekslarni vujudga kelishi va shakllanishiga jiddiy ta’sir etishi aniqlangan. Dengiz sathining 26 m dan ziyod pasayishi tufayli 1960-1970 yillarda suvdan xalos bo‘lgan qismlarida (49-53 m mutlaq balandlik) grunt suvlari yuzasi 10-12 m dan ko‘proq chuqurlashdi. Binobarin, avtomorf sharoitning barqaror mavjudligi tuproqlarning tabiiy sho‘rsizlanish vaziyatda shakllanishiga ta’sir etishi tufayli sho‘rlangan tuproqlar va sho‘rxoklar 1990 yillardayoq qoldiq sho‘rxoklarga aylandi. Bu mintaqada asosan eol qum relyef shakllari rivojlangan. 1980-yillarning birinchi yarmida suvdan ozod bo‘lgan qismlarda (42-49 m) avvalgi tipik sho‘rxoklar ham qoldiq sho‘rxoklarga aylangan va mexanik tarkibi og‘ir bo‘lgan tuproqlarda taqirli tuproq belgilari namoyon bo‘la boshladi, shuni hisobga olib bu tuproqlarni taqirsimon qoldiq sho‘rxoklar deb hisoblash mumkin, lekin evolyutsion jarayon davom etmoqda.

1980 yillarning ikkinchi yarmida dengiz suvi chekingan mintaqalar (39-42 m) da grunt suvlari sathining 7 m dan quyiga pasayishi tufayli tipik sho‘rxoklar qoldiq sho‘rxoklarga aylanish bosqichiga kirgan. 1990 yillar arafasida dengizning qurigan qismi (37-39 m) grunt suvlari sathining 5-7 m da mavjud bo‘lishi sho‘rxoklarning faollik xususiyatini yo‘qota boshlashidan darak beradi, binobarin ularda tuz to‘planish xususiyati susaya boshlagan. 2000-yillarda suvdan holi bo‘la boshlagan qurigan qismda (32-36 m) grunt suvlari sathi 0-3 m da joylashganligi sababli tuproqlarda tuz to‘planishi faol davom etmoqda. Dengiz qirg‘og‘idan 0,5-0,8 km masofada quruqlik ichkarisi tomon marshli sho‘rxoklar rivojlangan .

Grunt suvlari sathining joylashuvi, minerallashuv darajasi, tuproq turi va uning tuz rejimiga bog‘liq holda o‘simlik qoplami rivojlangan. Eol qum relyefi mavjud bo‘lgan mintaqada qora saksovul, cherkez, yulg‘un va bir yillik sho‘ralar tarqalgan. Taqirsimon qoldiq sho‘rxoklar mintaqasida yulg‘un, sarisazan, bir yillik sho‘ralar; qoldiq sho‘rxoklar mintaqasida qorabaroq, yulg‘un, bir yillik sho‘ralar; tipik sho‘rxoklar mintaqasida yulg‘un, qorabaroq, kermek, bir yillik sho‘ralar; o‘tloq sho‘rxoklarda bir yillik sho‘ralar; marshli mintaqada o‘simlik mutlaqo yo‘q.

Tuproq sho‘rlanishi darajasi bilan o‘simlik turi orasida yaqindan bog‘liqlik mavjud. O‘ta sho‘r tuproqda qorabaroq, sho‘rxokda yulg‘un, sarisazan, bir yillik sho‘ralar, sho‘r tuproqda kermek, qora saksovul, turli o‘tlar vegetatsiyasi

kuzatiladi. Shuning uchun ham tub qirg‘oqdan to dengiz qirg‘og‘igacha tuproq va o‘simliklarning, shuningdek grunt suvlari rejimini ma’lum mintaqalar bo‘yicha joylashuvi aniqlangan. Tub qirg‘oqdan boshlab dengiz markazi tomon uning tubida yotqiziqlarning mexanik tarkibi og‘irlashib boradi (yirik-o‘rta-mayda donali qumlar, alevrit, qumli gil-gil, mergel). Shunga muvofiq grunt suvlarining yer osti oqimi sekinlashib boradi, markaziy qismida oqim deyarli kuzatilmaydi, shuning uchun ularning minerallashuv darajasi tub qirg‘oq yaqinida har litr suvda o‘rtacha 30-45 g bo‘lsa, o‘tloq mintaqada 100-120 g va undan ziyod. Shunga muvofiq tuproq sho‘rlanishi ham o‘zgarib boradi: eol qum mintaqada cho‘l qum tuproqlari turli darajada sho‘rlangan, sho‘rxoklar mintaqasida qoldiq sho‘rxoklar yuqori qatlamda tuz quyi tomon biroz yuvilgan, tipik sho‘rxoklarda yuqori qatlamda tuz miqdori 7-15, ba’zan 25-40 foizni tashkil qiladi, o‘tloq mintaqada tuz miqdori 10-20, marshli sho‘rxoklarda 5-10 foizga boradi. Ayrim chuqurroq botiqlarda, xususan Oqpetki (avvalgi arxipelag)dagi qo‘ltiqlarda grunt suvlari minerallashuvi 40-50 g, sho‘rxokdagi tuz miqdori 100 foiz atrofida. Tuzning ko‘pligidan qumli yotqiziqlarda ham sho‘rxok vujudga kelgan .

Relyef hosil qiluvchi omillar – deflyatsiya, eroziya, akkumulyativ jarayonlar dengizning qurigan qismida eng faol harakat qiladi. Sho‘rxokning yuqori qatlamini qurishi bilan shamol faoliyatiga berila boshlaydi, tub qirg‘oqqa tutashgan qumli mintaqa va Arxangelskiy marzasida Qizilqumdagidek tipik eol relyef shakllari tarkib topgan, bu hududlarda barxan va do‘ng qumlar hukmron, ularga tutashgan qoldiq sho‘rxoklarda buta oldi fitogen qumlar keng tarqalgan. Joylarda deflyatsiya botiqlari barxanlar yaqinida umumiy majmua hosil qilgan. Qoldiq sho‘rxoklarda deflyatsiya va akkumulyatsiya shakllanish, sho‘rsizlanayotgan va quriyotgan qum yotqiziqlarida deflyatsiya kuchayish bosqichida faollashmoqda. Tipik sho‘rxoklarda deflyatsiya endigina jonlana boshlaydi, bunda qavariq relyefdagi bo‘rsildoq sulfatli tuzlar shamol ta’sirida to‘zish bosqichiga kirgan. O‘tloq sho‘rxoklar deflyatsiyaga namligi tufayli berilmaydi. Marshli mintaqada dengiz suvning toshishi va qaytishi jarayonida, ayniqsa keyingisining katta tezlikda bo‘lishi natijasida tuproq o‘yila boshlaydi va ba’zan rasmana ariqsimon botiqlar tarkib topadi. Demak, relyef shakllari va ularni vujudga keltiruvchi omillar ham ma’lum mintaqalar bo‘yicha joylashgan.

Yuqoridagi tabiiy komplekslar vujudga keltiruvchi o‘zgaruvchan tabiiy muhitni tahlil qilish natijasiga ko‘ra dengizning qurib borayotgan qismida turli darajada shakllanayotgan va vujudga kelayotgan landshaftlar tizimlarini ajratish mumkin bo‘ladi. Bunda shunday tabiiy qonuniyat mavjud, ya’ni tub qirg‘oqdan boshlab ichkari tomon landshaftlarning gidromorfli (gidrogalomorfli) xususiyati ortib boradi. Binobarin, tub qirg‘oqdan boshlab elyuvial, yarimgidromorf va gidromorf landshaft guruhlari ma’lum mintaqalar bo‘yicha joylashadi. Bu hodisa landshaftlarning shakllanishi, rivojlanishi va joylashuvida ma’lum tartib yoki tabiiy qonuniyat mavjudligi sezilib turadi .

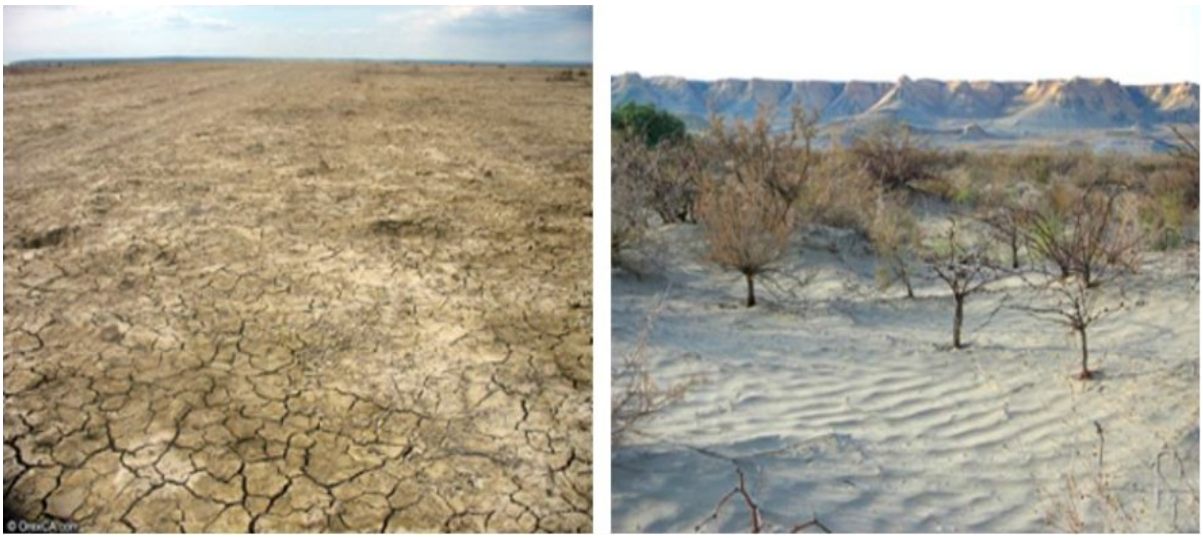
Tub qirg‘oq yaqinidagi avvalgi plyaj va qirg‘oq bo‘yi suvlar egallagan mintaqa (53-49 m) dengiz tubining yonbag‘ri bo‘lgan. Orol chekinishi natijasida uning ostidagi suvdan holi bo‘lgan qumlar deflyatsiya faoliyati tufayli eol

akkumulyativ relyef shakllarini vujudga keltirishga berildi. Bu mintaqadagi tipik do‘ng-barxan relyef turlari endilikda to‘la rivojlanish bosqichiga yetgan va shamol ta’sirida ular asosida marzali qum relyef shakllari tarkib topishi yo‘nalishida evolyutsion taraqqiyot belgilari mavjud. Mintaqadagi eol landshaftlar turini rivojlanish bosqichiga ko‘ra yetarli darajada vujudga kelgan tabiiy komplekslar deb baholash mumkin, chunki keyingi bosqichni amalga oshishi uchun nisbatan juda uzoq muddat zarur bo‘ladi.

Avtomorf landshaft sharoiti yo‘nalishida rivojlanish bosqichiga o‘tgan qoldiq sho‘rxoklar landshaftlar turi egallagan mintaqa (49-37 m) grunt suvlari sathining muttasil tushib borishi tufayli tezkor taraqqiyot bosqichini o‘tamoqda. Bu mintaqada barcha komponentlar tezkor rivojlanish bosqichida bo‘lganliklari tufayli ularning tabiiy xususiyatlari yildan-yilga takomillashib bormoqda, ayniqsa, grunt suvlari rejimi, tuproqning fizik va kimyoviy xususiyatlari, o‘simlik assotsiatsiyalari suksessiyasi, relyef sharoitlari, tabiiy jarayonlar dinamikasi va ular asosida landshaftning morfologik qismlarini vujudga kelishi, dinamikasi va shakllanishi sodir bo‘lmoqda. Bu bosqich mintaqada tipik taqirli tuproq (agarda tuproqning mexanik tarkibi og‘ir bo‘lgan taqdirda) yoki haqiqiy eol qum relyef shakllari (agarda qum yotqiziqlari xukumron bo‘lsa)dan iborat tabiat komplekslari bunyod bo‘lganga qadar davom etishi mumkin. Shularni e’tiborga olgan holda bu mintaqa landshaftlar turini shakllanayotgan yoki rivojlanish bosqichini o‘tayotgan guruhga kiritish mumkin.

Tipik sho‘rxoklar rivojlanayotgan mintaqa landshaftlar turi eng yosh bo‘lib, 1990-yillarda tarkib topa boshlagan. Bu mintaqa landshaftlarining tabiiy xususiyatlari endigina takomillashib bormoqda, grunt suvlari rejimi, tuproqning fizik va kimyoviy xususiyatlari shakllanmoqda, qatqaloq, bo‘rsildoq, o‘tloq, nam, botqoq sho‘rxoklar va sho‘rlarning tuz rejimi, gidromorfli xossalari, gumus to‘planishi va boshqa biokimyoviy jarayonlar rivojlanishi tufayli arid komplekslar belgilari tarkib topmoqda. Relyef hosil qiluvchi omillar ta’sirida dengiz tubining birlamchi yuzasi kuchli o‘zgarishlarga uchramoqda, chunonchi deflyatsiya, suffoziya va eroziya natijasida relyefning o‘ydim-chuqurligi tarkib topmoqda. O‘z navbatida bu jarayonda landshaftning morfologik qismlari murakkablashmoqda.

Tipik sho‘rxoklar mintaqasida ular tarkibida tuzning haddan tashqari mo‘l (15-25, ba’zan 35 foiz) bo‘lishligi oqibatida va grunt suvlari minerallashuv darajasining yuqoriligi (har litr suvda 40-60, ba’zan 100 g va undan ziyod) tufayli bir yillik sho‘ralarning ham vegetatsiyasi murakkablashmoqda, shuning uchun ham o‘simlik juda siyrak, yoki umuman yo‘q. 2000 yillarning ikkinchi yarmidan boshlab dengiz suvidan holi bo‘layotgan Orol tubida o‘simlik deyarli o‘smayotganligi qayd etilmoqda Bundan keyingi yillarda uning chekinishi natijasida yangi ochiladigan tubida o‘simlik mutlaqo o‘smasligi mumkin, chunki sho‘rxoklar usti oppoq tuz bilan qoplanish bosqichi boshlanmoqda. Tipik sho‘rxoklar mintaqasi landshaftlarini rivojlanish darajasi jihatdan dastlabki vujudga kelayotgan tabiiy komplekslar guruhiga kiritish mumkin (2-rasm) .



2-rasm. Tipik shoʻrxoklar mintaqasi landshaftlarini rivojlanish darajasi jihatdan dastlabki vujudga kelayotgan tabiiy komplekslar guruhi

Orol dengizining taqdiri Amudaryo va Sirdaryodan keladigan suv miqdoriga bogʻliq. 2000 yildan boshlab daryolardan kelayotgan suv hajmining keskin kamayib ketishi uning sathini falokatli tushib ketishiga olib keldi. Orol sathining 28,5 m (2004 y.) mutlaq balandlikka tushishi natijasida Katta dengiz Arxangelskiy marzasi boʻyicha ikki qismga ajraldi. Ustyurt platosining sharqiy chinkiga tutashgan kambar akvatoriyada nisbatan chuqur (dengiz sathidan minus 16 m pastda) gʻarbiy qism va sayoz sharqiy qism tarkib topdi. Bu vaziyatda gʻarbiy qism uzoq vaqt kichik shoʻr koʻl vazifasini oʻtaydi, sharqiy qism tobora shoʻrlanib borishi va bugʻlanishga sarf boʻlishi natijasida sekinlik bilan qurib, ulkan shoʻr-koʻlga aylandi. Bunda markaziy qismda sayoz oʻta namokobli koʻl va uning atrofida ulkan shoʻr tarkib topdi. Nihoyat, 2009 yilning ikkinchi yarmida dengizning sharqiy qismi bugʻlanishga sarf boʻlishi natijasida batamom qurib ketdi. Shoʻr atrofida ma'lum mintaqalar boʻyicha kuchli shoʻrlangan shoʻrxoklar (avaliga botqoqli, bilqillama, undan keyingi mintaqada nam, soʻngra qatqaloq shoʻrxoklar mintaqasi vujudga keldi. Demak, Katta dengizning qurib qolgan sharqiy qismida gidrogalomorfli kontinental va gʻarbiy qismda akvatorial landshaftlar tarkib topishini toʻliq geografik bashorat qilish mumkin.

I.V.Rubanovning hisob-kitobiga koʻra, Katta dengiz suvining minerallashuv darajasi xar litrda 120 g dan oshganda qishda mirabilit tuzlari tarkib topa boshlaydi, shoʻrlik 320-425 g ga yetganda osh tuzi bilan astraxanit tuzi majmua holda vujudga keladi. Dengiz suvida erigan holda 6 milliard tonna osh tuzi mavjudligini e'tiborga olinsa, kelajakda ulkan tuz koni vujudga kelishi muqarrar.

Yuqoridagilarni tahlil qilib, quyidagi umumiy xulosaga kelish mumkin, ya'ni dengizning qurishi natijasida uning oʻrnida ulkan qum-shoʻr-shoʻrxokli landshaftlar majmuasidan iborat tipik choʻl tarkib topadi. Bu choʻlni Orolqum deb atash maqsadga muvofiq.

Dengizning qurigan qismi katta tuz makoni hisoblanishi tufayli atrof muhitga jiddiy xavf tugʻdiradi, shamol ayniqsa, sulfat tuzlarni toʻzitishi natijasida

Orolbo‘yiga tuz yog‘ini yog‘ilmoqda, hisob-kitoblarga ko‘ra Mo‘ynoq kengligida har gektar maydonga 1000 kg, Nukus kengligida esa 150 kg gacha tuzli chang tushadi.

Xulosa

Orolbo‘yi mintaqasida yuzaga kelgan ekologik inqiroz nafaqat mintaqaviy, balki global ekologik muammolardan biri sifatida e’tirof etiladi. Tadqiqot natijalari shuni ko‘rsatadiki, Orol dengizining qurishi natijasida suv balansining buzilishi, cho‘llanish jarayonining tezlashuvi, tuproq va suv resurslarining sho‘rlanishi, shuningdek, biologik xilma-xillikning keskin kamayishi kuzatilmoqda. Ushbu jarayonlar mintaqaning tabiiy-geografik tizimida chuqur o‘zgarishlarga, shuningdek, aholining ijtimoiy-iqtisodiy hayotiga salbiy ta’sir ko‘rsatmoqda.

Masofadan zondlash va GAT texnologiyalaridan foydalanish orqali o‘tkazilgan tahlillar Orolbo‘yi hududida ekologik holatning yildan-yilga yomonlashayotganini, cho‘l maydonlarining kengayib borayotganini hamda tuproq degradatsiyasi darajasining ortib borayotganini tasdiqlaydi. Shu bilan birga, so‘nggi yillarda amalga oshirilayotgan xalqaro va milliy miqyosdagi ekologik dasturlar — “Yashil Orol” tashabbusi, o‘rmonzorlashtirish ishlari va barqaror suv resurslarini boshqarish choralari mintaqada ekologik vaziyatni yumshatishda muhim rol o‘ynamoqda.

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ZAMONAVIY GAT TEXNOLOGIYALARI ASOSIDA EKOLOGIK KARTALARNI YARATISH BO‘YICHA TAKLIF VA TAVSIYALAR ISHLAB CHIQISH

Annotatsiya: *Ushbu ilmiy ishda zamonaviy geografik axborot tizimlari (GAT) texnologiyalaridan foydalangan holda ekologik kartalarni yaratishning nazariy va amaliy jihatlari yoritilgan. Tadqiqotning asosiy maqsadi — atrof-muhit holatini kompleks baholash, ekologik muammolarni aniqlash va ularni vizual ko‘rinishda ifodalash uchun GAT imkoniyatlarini samarali qo‘llash bo‘yicha taklif va tavsiyalar ishlab chiqishdan iborat. Ish jarayonida kosmik tasvirlar, masofadan zondlash ma’lumotlari hamda statistik ekologik ko‘rsatkichlar tahlil qilinadi. Qatlamli ma’lumotlar asosida ifloslanish darajasi, yer resurslarining degradatsiyasi va biologik xilma-xillikning holatini aks ettiruvchi ekologik xaritalar yaratiladi. Tadqiqot natijalari ekologik monitoring, hududiy rejalashtirish hamda barqaror rivojlanish siyosatini shakllantirishda amaliy ahamiyat kasb etadi.*

Kalit so‘zlar: *GAT, ekologik xaritalar, masofadan zondlash, atrof-muhit, ekologik monitoring, barqaror rivojlanish.*

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DEVELOPING PROPOSALS AND RECOMMENDATIONS FOR CREATING ENVIRONMENTAL MAPS BASED ON MODERN GIS TECHNOLOGIES

Abstract: *This research paper explores the theoretical and practical aspects of creating environmental maps using modern geographic information*

systems (GIS). The primary objective of the study is to comprehensively assess environmental conditions, identify environmental issues, and develop proposals for the effective use of GIS for their visualization. The study analyzes satellite images, remote sensing data, and statistical environmental indicators. Using multilayered data, environmental maps are created that reflect pollution levels, land degradation, and the state of biodiversity. The results of the study have practical implications for environmental monitoring, territorial planning, and sustainable development policy.

***Keywords**: GIS, environmental maps, remote sensing, environment, environmental monitoring, sustainable development.*

Har qanday kartografik tadqiqot ishlarida yeng asosiy boshlang‘ich jarayonlarning biri bu ma’lumotlarni to‘plash va ularni integratsiya qilishdir. Tadqiqot natijalariga asoslanib ma’lumotlarni to‘plash va ularni integratsiya qilish bo‘yicha quyidagicha taklif va tavsiyalar ishlab chiqildi.

Tadqiqot hududi atrof-muhit haqida batafsil ma’lumot olish uchun yuqori aniqlikdagi sun’iy yo‘ldosh tasvirlari, aerofotosuratlar, LIDAR ma’lumotlari va boshqa tegishli geofazoviy ma’lumotlaridan foydalanish maqsadga muvofiq.

Turli ma’lumotlar to‘plamlarini keng qamrovli geoma’lumotlar bazasiga birlashtirish uchun ma’lumotlar integratsiya qilishda ArcGIS dasturidan foydalanish va tahlil ishlarini osonlashtirish uchun ma’lumotlar manbalari to‘g‘ri geofazoviy bog‘langan va standartlashtirilganligiga alohida e’tibor berish kerak.

Fazoviy tahlil va modellashtirishda o‘rganilayotgan hududdagi ekologik ma’lumotlarni, munosabatlarni va issiq nuqtalarni aniqlash uchun fazoviy tahlil ishlari amalga oshirish tavsiya yetiladi. Bunda atrof-muhit jarayonlarini simulyatsiya qilish, ekotizim o‘zgarishlarini bashorat qilish va ekologik xavflarni baholash uchun GATga asoslangan modellarni ishlab chiqish zarur.

ArcGIS Spatial Analyst va 3D Analyst kengaytmalaridan ustki qatlam tahlili, yaroqlilik modelini yaratish, ko‘rish maydoni tahlili va yerni modellashtirish kabi ilg‘or fazoviy tahlil vazifalari uchun foydalanish lozim. Murakkab tahlil ishlarini avtomatlashtirish uchun Phyton skriptidan foydalanish maqsadga muvofiq.

Shuningdek, fazoviy ma’lumotlar va atrof-muhit xususiyatlarini manfaatdor tomonlarga samarali yetkazish uchun vizual va informatsion ekologik kartalarni loyihalash ishlarini tashkil yetish. ArcGIS dasturidan mavzuli kartalar nuqta zichligi kartalari va iqlim kartalarini yaratish uchun foydalaniladi. Karta elementlari va ularni jihozlash uchun ArcGIS Pro dasturining komponovka va dizayn imkoniyatlaridan foydalaniladi. [70, 2-3 b.].

Foydalanish imkoniyatini va foydalanuvchilarning faolligini oshirish uchun interaktiv web-texnologiyalariga asoslangan ekologik kartalash ilovalarini ishlab chiqish. ArcGIS Online yoki ArcGIS ArcGIS Enterprise-dan ekologik kartalarni web-xizmatlar sifatida nashr yetish va interaktiv web-kartaga olish ilovalarini yaratish uchun foydalanish.

Ekologik kartaga olish loyihalarida ishtirok etadigan tadqiqotchilar, amaliyotchilar va qaror qabul qiluvchilar o‘rtasida ma’lumotlar almashish va hamkorlikni osonlashtirish. Geofazoviy ma’lumotlar to‘plami, kartalar va tahlil natijalarini saqlash va almashish uchun ArcGIS Online yoki ArcGIS ArcGIS Enterprise yordamida markazlashtirilgan ma’lumotlar bazasini yaratish. Hamkorlikni samarali boshqarish uchun ma’lumotlarga kirishni boshqarish va versiya mexanizmlarini joriy qilish tavsiya yetiladi.

Ekologik kartaga olish va tahlil qilish uchun GAT texnologiyalaridan samarali foydalanish uchun manfaatdor tomonlarning salohiyatini oshirish. Turli foydalanuvchilar guruhlari ehtiyojlariga moslashtirilgan ArcGIS dasturiy ta’minoti va geofazoviy texnikasi bo‘yicha o‘quv seminarlari, seminarlar va onlayn o‘quv qo‘llanmalarini tashkil qilish. O‘quv natijalarini mustahkamlash uchun amaliy mashg‘ulotlar va amaliy ishlarni taqdim yetish.

Ekologik kartalar va tahlil natijalarining aniqligi va ishonchliligini ta’minlash uchun sifatni ta’minlash bo‘yicha chora-tadbirlarni amalga oshirish. Ishonchli ma’lumotlar va mustaqil tekshirish usullaridan foydalangan holda aniqlikni baholash va tekshirish mashqlarini o‘tkazish. Shaffoflikni oshirish uchun ma’lumotlar manbalari, metodologiyalari va usullarni joriy qilish.

Ushbu taklif va tavsiyalarni ekologik kartalash loyihalariga kiritish orqali manfaatdor tomonlar yuqori sifatli kartalar yaratish, amaliy tushunchalarni olish va atrof-muhitni boshqarish va muhofaza qilish bo‘yicha dalillarga asoslangan qarorlar qabul qilishni qo‘llab-quvvatlash uchun zamonaviy GAT texnologiyalaridan foydalanishlari mumkin.

Atrof-muhit ma’lumotlarini to‘plash va ekologik kartalarni sharhlashda mahalliy hamjamiyatlarni va fuqarolar olimlarini jalb qilish. Atrof-muhit o‘zgarishlarini kuzatish va kuzatishlarga hissa qo‘shish uchun aholini jalb qilish uchun fuqarolik fanlari dasturlari va birgalikda kartalash tashabbuslarini yaratish. Jamoa ko‘ngillilaridan dala ma’lumotlarini to‘plash va ularni kartaga olish loyihalariga integratsiya qilish uchun ArcGIS Survey123 va Collector for ArcGIS ilovalaridan foydalanish tavsiya yetiladi.

Atrof-muhit sharoitidagi o‘zgarishlarni kuzatish va tabiatni muhofaza qilish tadbirlarining samaradorligini baholash uchun uzoq muddatli monitoring dasturlarini amalga oshirish. Vaqt o‘tishi bilan ma’lumotlarni muntazam ravishda yig‘ish, tahlil qilish va vizualizatsiya qilish uchun GAT ga asoslangan monitoring tizimini ishlab chiqish. Atrof-muhit o‘zgaruvchilarini real vaqt rejimida kuzatish uchun GeoEvent Server va ma’lumotlarga asoslangan qarorlar qabul qilish uchun ArcGIS Insightsdan foydalanish. [55, 123-134 b.].

Murakkab ekologik muammolarni hal qilish uchun tadqiqotchilar, ilmiy tadqiqotchilar va boshqaruv organlari o‘rtasida fanlararo hamkorlikni rivojlantirish. Ekologiya, geografiya, geologiya, gidrologiya va sotsiologiya kabi sohalar mutaxassislaridan iborat kompleks tadqiqot guruhlarini tashkil yetish. Turli manfaatdor tomonlar o‘rtasida hamkorlik, ma’lumotlar almashish va muloqotni osonlashtirish uchun ArcGISdan foydalanish.

Barqaror rivojlanishga ko‘maklashish uchun ekologik kartalashni atrof-muhitga ta’sirni baholash va yerdan foydalanishni rejalashtirish jarayonlariga integratsiyalash. Fazoviy tahlil, saytning muvofiqligini tahlil qilish va ssenariy modellashtirish uchun ArcGIS vositalarini va rejalashtirish tadqiqotlariga kiriting. ArcGIS ArcGIS StoryMapsdan natijalarini va rejalashtirish bo‘yicha tavsiyalarni qaror qabul qiluvchilar va jamoatchilikka yetkazish uchun foydalaning. O‘zbekistondagi mahalliy muassasalar va universitetlarning masofadan zondlash va GAT texnologiyalari bo‘yicha salohiyatini kuchaytirish.

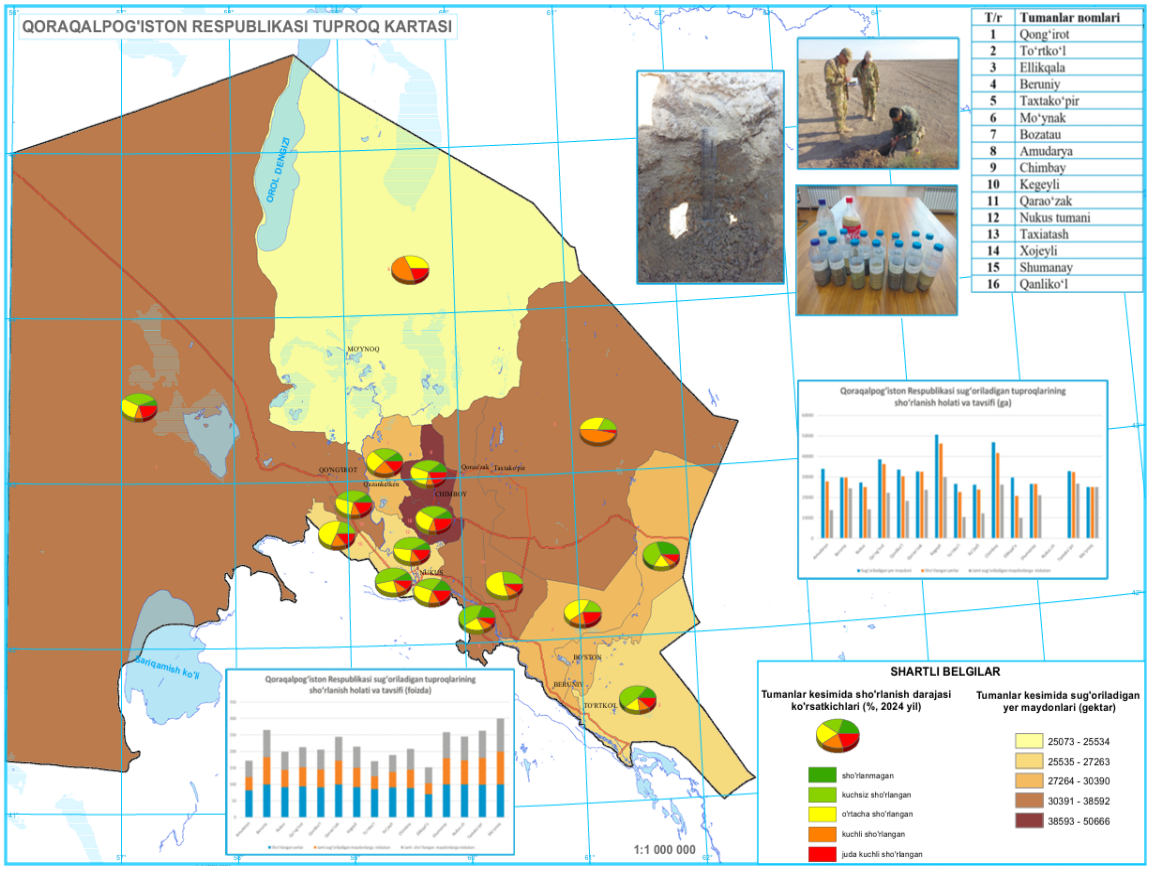
Masofadan zondlash, GAT va fazoviy tahlil usullari bo‘yicha o‘quv dasturlari va akademik kurslarni ishlab chiqish. Talabalar va mutaxassislar uchun texnik yordam, stipendiyalar va almashinuv dasturlarini taqdim yetish uchun xalqaro hamkorlar va tashkilotlar bilan hamkorlik qilish.

Ekologik kartalashni milliy ekologik siyosat va strategiyalarga integratsiya qilish tarafdori. Axborotli qarorlar qabul qilish uchun ekologik kartaga olishning ahamiyati haqida xabardorlikni oshirish uchun davlat idoralari, tashkilotlar bilan hamkorlik qilish. Atrof-muhitni boshqarish va muhofaza qilish uchun GAT texnologiyalarining afzalliklarini ko‘rsatadigan dalillarga asoslangan tavsiyalar va amaliy tadqiqotlar taqdim etish.

Ushbu taklif va tavsiyalarni amalga oshirish orqali O‘zbekistondagi manfaatdor tomonlar ekologik muammolarni hal qilish, barqaror rivojlanishni rag‘batlantirish va kelajak avlodlar uchun tabiiy resurslarni asrashda zamonaviy GAT texnologiyalari kuchidan foydalanishlari mumkin.

Mahalliy bilim va istiqbollarni o‘z ichiga olish uchun ekologik kartaga olish loyihalarida jamoatchilik ishtirokini va ishtirokini rag‘batlantirish. Mahalliy aholi, mahalliy jamoalar va manfaatdor tomonlarni ma’lumotlarni to‘plash, tekshirish va talqin qilish jarayonlariga jalb qilish uchun jamoatchilik seminarlari, fokus-guruhlar yoki fuqarolik fanlari tashabbuslarini tashkil qilish. Dala kuzatuvlari va hamjamiyat a’zolarining fikr-mulohazalarini to‘plash uchun ArcGIS Survey123 yoki Collector for ArcGIS -dan foydalanish tavsiya yetiladi.

Ushbu qo‘shimcha taklif va tavsiyalarni amalga oshirish orqali manfaatdor tomonlar ekologik kartalash harakatlarining samaradorligi, barqarorligi va ta’sirini oshirishi mumkin, bu yesa atrof-muhitni boshqarish, tabiatni muhofaza qilish natijalari va jamoalar uchun hayot sifatini yaxshilashga olib keladi.



Rasm. Qoraqalpog‘iston Respublikasi sug‘oriladigan yerlar tuproqlarining sho‘rlanish holati kartasi.

ArcGIS dasturidan foydalangan holda ekologik kartalarni yaratishni avtomatlashtirish ekologik tadqiqotlar, boshqaruv va qarorlar qabul qilish jarayonlarini ilgari surish uchun ko‘plab imtiyozlar va imkoniyatlarni taqdim yetadi. Zamonaviy GAT texnologiyalaridan foydalangan holda, tadqiqotchilar va amaliyotchilar ekologik tizimlar va inson faoliyati o‘rtasidagi munosabatlar haqida qimmatli tushunchalarni olish uchun murakkab fazoviy ma’lumotlarni samarali integratsiyalash, tahlil qilish va vizualizatsiya qilishlari mumkin.

Avtomatlashtirish ish oqimlari ma’lumotlarni qayta ishlash, tahlil qilish va kartalarni ishlab chiqarish vazifalarini soddalashtiradi, bu yesa ekologik kartalarni tezroq va aniqroq yaratish imkonini beradi. Ushbu kartalar atrof-muhitning qonuniyatlarini tushunish, ekologik xavflarni baholash va yerdan barqaror foydalanishni rejalashtirish, tabiatni muhofaza qilish strategiyalari va siyosat tadbirlari haqida ma’lumot berish uchun muhim vosita bo‘lib xizmat qiladi. [44].

Bundan tashqari, ArcGIS-dan foydalanish hamkorlikni, ma’lumotlarni almashishni va hamjamiyatni jalb qilishni osonlashtiradi, atrof-muhitga oid dolzarb muammolarni hal qilishda fanlararo yondashuvlarni rivojlantiradi. Texnologiyalar rivojlanishda davom yetar ekan, ekologik kartalash jarayonlarini avtomatlashtirish bizning tabiiy dunyo haqidagi tushunchamizni rivojlantirishda va kelajak avlodlar uchun yer ekotizimlarini boshqarishni rag‘batlantirishda tobora muhim rol o‘ynaydi.

Bundan tashqari, ekologik kartalarni yaratishni avtomatlashtirish fazoviy qarorlarni qo‘llab-quvvatlash tizimlarini takomillashtirishga, manfaatdor tomonlarga ongli qarorlar qabul qilish uchun o‘z vaqtida va tegishli ma’lumotlarni taqdim yetishga yordam beradi. Interfaol web-ga asoslangan kartalash ilovalarini ishlab chiqish orqali ekologik ma’lumotlar va tahlillardan foydalanish imkoniyati kengaytirilib, turli foydalanuvchilar guruhlari, jumladan, jamoalar, siyosatchilar va tadqiqotchilarning faolligi va ishtirokini kuchaytiradi.

Ushbu avtomatlashtirilgan jarayonlar yanada murakkab va foydalanish mumkin bo‘lgan sari iqlim o‘zgarishiga moslashish, biologik xilma-xillikni saqlash va tabiiy resurslarni boshqarish kabi dolzarb ekologik muammolarni hal qilish imkoniyatlari ortib bormoqda. ArcGIS va boshqa zamonaviy GAT texnologiyalari kuchidan foydalanib, biz yerning qimmatli ekotizimlarini tushunish, kuzatish va saqlash bo‘yicha o‘z imkoniyatlarimizni innovatsiyalar va rivojlantirishni davom ettirishimiz mumkin. Avtomatlashtirish sari bu sayohat nafaqat texnologik taraqqiyotni, balki global miqyosda barqaror rivojlanish va atrof-muhitni boshqarish majburiyatini ham ifodalaydi.

Xulosa

Tadqiqot natijalari shuni ko‘rsatadiki, zamonaviy geografik axborot tizimlari (GAT) ekologik jarayonlarni tahlil qilish, monitoring qilish va ularni vizual shaklda ifodalashda muhim ilmiy-amaliy vosita hisoblanadi. GAT texnologiyalari yordamida ekologik holatni baholovchi ko‘p qatlamli ma’lumotlar bazasini shakllantirish, masofadan zondlash ma’lumotlarini tahlil qilish va tabiiy resurslardan foydalanish jarayonlarini geografik modellashtirish imkoniyati yaratiladi.

Ekologik kartalarni yaratishda GAT imkoniyatlaridan samarali foydalanish atrof-muhitdagi o‘zgarishlarni aniq aks ettirish, ifloslanish darajasini fazoviy tahlil qilish, hududlarning ekologik barqarorligini baholash hamda muammoli zonalarni aniqlash imkonini beradi. Bu esa ekologik xavfsizlikni ta’minlash, hududiy rejalashtirish va tabiiy resurslardan oqilona foydalanish bo‘yicha qarorlar qabul qilishda muhim ahamiyat kasb etadi.

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ANALYSIS OF TYPES OF ASSIMILATION IN THE GERMAN LANGUAGE

Abstract: *This article addresses the issue of assimilation in the German language. Word order is one of the most important means of expressing the communicative division of a sentence. When performing its communicative function, word order may have certain limitations, primarily related to the syntactic rules of a given language. This research attempts to establish patterns observed between the order of sentence members and their communicative significance in German.*

Key words: *assimilation, Germen language, analysis, communicative significance, comparison, verb, expression, meaning of assumption.*

Inroduction.

The relevance of the scientific research is determined by the need to identify general and specific features of assimilation in the German language.

Methods.

This article attempts to establish patterns observed between the order of sentence parts and their communicative significance in the German language. Among following scholars, this issue has been actively addressed by K. G. Krushelnitskaya, I. F. Vardul, O. A. Lapteva, I. I. Kovtunova, V. Z. Panfilov, and O. B. Sirotinina. Interest in this issue is primarily due to its versatility and connection to a wide range of linguistic problems.

Results.

The German language has completely lost the marking of aspect as a grammatical category; however, it has retained some semantic features that additionally mark the perfective aspect in the verb structure. According to the researcher R. Kozmova, this occurs due to certain semantic perspectives: temporal, spatial, modal, and causal. Each of these perspectives imparts a certain semantic nuance to the verb. The temporal characteristic determines phasicity (schlafen - einschlafen), the spatial one - the direction of movement (steigen - aussteigen), the modal one - the intensity of action (trinken - saufen), and the causal one - causativity (springen - sprengen) [6]. Thus, the category of aspect, which is absent in the German language, is partially compensated for by word-formation means that impart certain aspectual nuances to the verb. Another way of partially compensating for the category of aspect in German is the creation of an

aspectual opposition between the infinitive of the verb and the verbal noun denoting the action. The infinitive, as a rule, denoting a process, has an imperfective aspect, and the substantive derivative has a perfective one. For example: Die Versandung des Haferflockens fu?hrte zu...; Das standige Versanden... [5]. Languages that possess this category have less need for aspectual characteristics of names.

According to data from the Duden grammar series, based on a statistical survey of a large corpus of examples at the Institute of the German Language in Mannheim, the preterite is the most commonly used form of expressing the past in German. In German, the category of precedence, expressed by the pluperfect and absent in Russian, is grammatically realized. The distinction between the preterite and the perfect is functional in nature, as it depends on the sphere of use. To express a future action, German uses the two-member opposition of future I and future II, contrasted according to the feature of completion. The similarity also lies in meaning, since in both languages the future tense denotes an event that does not yet exist in reality, which is only planned, predicted, or assumed. It follows from this that the boundary between time and mood in the sphere of the future becomes blurred [4]. This is found in many languages in which the future tense has a modal component of meaning and, conversely, modal verbs often have a future orientation. The auxiliary future tense verbs in English will and shall originate from modal verbs. The German modal verb sollen is used to express the so-called presumptive future. The functional sphere of the future in German intersects with the expression of the meaning of assumption, relevant either to the present or to the past tense. According to some linguists, the modal meaning of future tenses in German prevails over the temporal one.

The modal meaning of the future tense in Russian is more significant than in German, and is presented in the emotional-expressive sphere. It can be reinterpreted, for example, as emotionally negative, cf.: Pridit on vam! (= He will not come at all!) In combination with negation, the simple future denotes the impossibility of action in the present [6]. Illustrating the validity of this statement, E.M. Kubarev gives examples of translations of Russian sentences containing negation in combination with the simple future into German [6]. Translations into German and their backtranslations explicate modal verbs and words: Researchers also note the functional transposition of the Russian future tense into the past, where it expresses the forthcoming in relation to another action in the past ("future in the past"). In German, in such cases, the preterite is usually used [7]. Thus, the sphere of functioning of the future tenses in German and Russian differs significantly. The tendency toward a limited use of the future tense is also supported in German by the fact that the sphere of functioning of the second future tense is extremely narrow and covers, mainly, specialized texts containing various kinds of forecasts. Systemic interlingual differences in temporal paradigms entail differences in the interpretation of their semantics and functioning. In Russian studies, the semantics and functioning of verb tenses are interpreted, as a rule, in the categories of functional-semantic fields (FSF). This approach allows us to

trace the interrelations of temporal categories proper with aspectual ones, on the one hand, and finite verb forms with infinite ones, primarily with the adverbial participle, on the other. The "general temporal" field includes three characteristic functional-semantic groupings: aspectual functional-semantic groups, temporally localized functional-semantic groups, and taxis functional-semantic groups. Specific descriptions of these functional-semantic groups are undertaken in terms of categorical situations, allowing for a concretization of systemic-linguistic connections during the actualization of a verb in an utterance. In German studies, the interpretation of the semantics and functioning of verb tenses is based on other theoretical premises. The absence of the category of aspect in German and the absence of the adverbial participle as a hybrid verbal-adverbial form blur the division of the "general temporal" field as understood by A.V. Bondarko. The emphasis of interpretation is placed on distinguishing such categories as "time of action" (Ereigniszeit oder Faktzeit), "time of utterance or perception (by the reader or listener - O.K.)" (Sprechzeit) and "time of consideration" (in a historical perspective - O.K.) (Betrachtzeit). Thus, a double relativization of an action or event in time is recognized, that is, a double deicticity: firstly, in relation to the time of utterance or perception and, secondly, in relation to the time of possible consideration, which is designated by adverbs or specific dates [7].

Grammatical tenses determine the localization of an action or event on the temporal axis relative to the speaker. The German temporal system also allows for a deepening of the temporal perspective when expressing precedence. This gives rise to relations of independent taxis, realized in a compound sentence, a temporal complex sentence, or a chain of sentences. In German, nuances of meaning are distinguished by the lexical content of the utterance and the context and are categorically generalized by the concept of "time of consideration." Let's give one example:

Im Hausgang begegnete er wieder Mina. Sie strich them im Vorbeigehen uber den Kopf. Das tat sie sonst nicht [5]. The highlighted adverb modifies the time of consideration of the action of the last sentence relative to the first two. In the first two sentences, the time of consideration coincides with the actual time of the action and is localized as past relative to the time of speaking. In the last sentence, the adverb sonst gives the utterance a generalizing character, resulting in a much deeper temporal perspective, encompassing numerous encounters with Mina during which she did not stroke the boy's head. However, the last sentence has no specific temporal localization.

Conclusion.

Thus, word order in the German language performs, first of all, a structural and grammatical function. In German, word order is the leading syntactic means for distinguishing between sentence types: independent declarative, interrogative, and subordinate sentences differ primarily in the position of the conjugated form of the verb.

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ARTISTIC ORIGINALITY AND ITS PECULIAR FEATURES OF THE STORY "THE SOUND AND THE FURY" BY W. FAULKNER

Abstract: *This article illustrates famous American writer William Faulkner's stories artistic originality and its peculiar features. Some analyzes on his short stories and the connection, relationship between the stories are showed in the article as well. This article attempted to satisfy the long-standing need to examine William Faulkner's novel "The Sound and the Fury" taking into account the impact it has on the works of writers from different countries of the world, and thereby clarify the place of the novel in the process of interaction of literatures belonging to different cultures.*

Key words: *story, novel, connection, prose, genre, lyrical cycle, narrative sequence, literary criticism, artistic.*

Most classics are difficult to read due to their sometimes inappropriate length, ornate turns of phrase, and peculiar form. They are like a forest through which the reasons for traversing aren't always obvious. But there are exceptions. "The Sound and the Fury", a novel by Nobel Prize winner William Faulkner, is one such example. It's worth noting right away that this story has an extremely challenging form: the narrative is divided into four parts, each covering only one of four distinct days. Furthermore, each part is told from the perspective of a different character. And some of these characters are truly unique.

In modern literary studies, one of the most promising areas is comparative historical literary studies. The study of national or foreign literature or the work of one of the writers belonging to this literature cannot be considered sufficient today if it is carried out without considering literary connections and influences. As is known, literary connections and influences this is one of the main features of the literary process, which consists in the constant interaction of literatures, in the assimilation by one literature of the artistic experience of another.

The article study presents facts illustrating the importance of W. Faulkner's work and, in particular, his novel "The Sound and the Fury". The outstanding talent of this writer influenced a group of writers - authors of novels of the "southern school" of the United States. The presence of a historical root and common - literary as well as historical and cultural traditions - allows us to speak in this case about the existence of genetic connections between the work of W.

Faulkner and the artists of the “southern school”. Such connections are expected and quite explainable.

As a special scientific discipline studying literary connections and influences, comparative literature arose in the late 19th and early 20th centuries. Its development was greatly contributed by the Russian scholar A.N. Veselovsky, French researchers F. Baldansperger, F. van Tieghem, American literary scholars W. Friedrich, R. Wellek, scholars from Germany, Canada, Russia and other countries. Their works reflected the problems of comparative analysis, reflections on influence and borrowing as an integral part of literary creativity. For example, the Russian literary scholar V.M. Zhirmunsky rightly notes that “the history of human society does not know examples of absolutely isolated cultural and literary development. Direct or distant interaction and mutual influence occur between its individual sections”. He points out that the main premise of these interactions lies in the uneven development of literatures in different countries. A more developed culture seems to demonstrate its future to a less developed one. Consequently, countries with a more backward culture do not always repeat and independently that stage of the historical path that has already been passed by advanced countries.

The artistic originality of Faulkner's novel The Sound and the Fury lies in its innovative use of four distinct points of view, a nonlinear structure, and a stream-of-consciousness technique, which allows the disintegration of the Compson family to be depicted with unique depth. Faulkner combines traditional Southern Gothic with an experimental style, creating a multifaceted and complex work.

The novel “The Sound and the Fury” uses unconventional means and writing techniques to depict the tragic collapse and moral decay of the once-respectable, distinguished Compson family, a member of the illustrious Southern landed aristocracy. Using modernist poetics, montage, stream-of-consciousness, and associative narrative techniques, relying on recurring keywords to create symbolic images that evolve into leitmotifs that permeate the novel, generating new profound meanings, the author masterfully develops the theme of the family’s steady decline through their grotesque imagery. These include the uncontrollable alcoholism of the family’s father, a former local priest, and his brother-in-law Maury; the callousness and selfishness of their mother; the chivalrous code of honor that their son Quentin steadfastly attempts to follow, which dooms him to self-destruction; the antisocial behavior of his beloved sister Caddy and estranged daughter Quentina; the incredible greed and cruelty of Jason; and, ultimately, the mental degeneration of his older brother, Benjamin.

At the same time, the author authentically depicts the pressing racial problems of the South and the mass rejection of moral, ethical, and religious values by the younger generation, which results in the primacy of the material over the spiritual, the triumph of the golden calf, the dominance of greed and cruelty, callousness, and selfishness.

As mentioned earlier, the uniqueness of The Sound and the Fury lies in its structure and characters. The first chapter, set on April 7, 1928, is narrated by

thirty-three-year-old Benjy—an unshakable symbol of the degeneration of the entire Compson family. The problem is that he, captured at the “age of Christ,” suffers from an unknown mental illness, presumably mental retardation. And it is this fact that leaves an indelible mark on his narrative.

The speech of this enormous, perpetually weeping man is distinguished by a complete lack of picturesque turns of phrase and a blatant disregard for punctuation; extremely simple phrases describing only the events unfolding before him at that very moment; and a total indifference to the existence of time itself. Because of his affliction (at least, that's what the novel suggests), Benjy doesn’t fully understand where, and most importantly, when, he exists.

“Caddy held me, and I heard us all, and the darkness, and what I smelled. And then I saw the windows where the trees were buzzing. Then the darkness began to take smooth, bright shapes, as it always does, even when Caddy says I've been sleeping.” — Benjamin Compson.

Benjy is torn from the context of time; his life is a series of flickering images, constantly pulling him from one reality to another. For example, Benjy might begin a paragraph describing the events of the previous morning, and in the middle, for no apparent reason, tear out a piece from his own childhood, and then, at the finish line, rush back to the years of his unconscious youth. In this chapter, perhaps the most difficult to follow, Faulkner constantly jumps from one place to another, at least briefly covering all the important events that befell the Compsons between 1898 and 1928.

Faulkner initially planned to use different colors to transition between time periods, but he later opted for italics, which are of little help on first reading. Essentially, the first chapter, like the novel as a whole, is a dense maelstrom of imagery, which only an attentive reader can fully comprehend.

So, I’d like to summarize my research. Analyzing the text, we saw how multifaceted it is. If we wish, we can delve into it again and again, discovering new allusions, references, and symbols. Only the finest examples of world literature possess such qualities. The novel “The Sound and the Fury” transcends its time and nation; it addresses both the past and the future, reaching out to all people on earth. If Faulkner truly followed the Gospels in creating his work, then we must admit that he succeeded in many ways. Of course, sacred books remain unattainable, but works of art of the highest caliber can at least come close. Such literary works are rightly called classics.

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KOMPETENTLI YONDASHUV – BO'LAJAK FIZIKA O'QITUVCHILARIDA ILMIY-TADQIQOT KOMPETENSIYASINI SHAKLLANTIRISHNING ASOSI

Annotatsiya: *Ushbu maqolada kompetentli yondashuvning mohiyati hamda uning bo'lajak fizika o'qituvchilarida ilmiy-tadqiqot kompetensiyasini shakllantirishdagi o'rni yoritilgan. Fizika ta'limida kompetensiyaviy yondashuv asosida talabalarda ilmiy izlanish, tahliliy fikrlash, eksperiment o'tkazish, muammoli vaziyatni yechish kabi ko'nikmalarni rivojlantirishning didaktik asoslari ochib berilgan.*

Kalit so'zlar: *kompetentli yondashuv, ilmiy-tadqiqot kompetensiyasi, fizika ta'limi, innovatsion pedagogika, refleksiya, mustaqil fikrlash, kasbiy rivojlanish.*

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COMPETENCY-BASED APPROACH – THE BASIS FOR FORMING RESEARCH COMPETENCE AMONG FUTURE PHYSICS TEACHERS

Annotation: *This article highlights the essence of the competency-based approach and its role in developing research competence among future physics teachers. It reveals the didactic foundations of enhancing students' skills in scientific inquiry, analytical thinking, conducting experiments, and solving problem-based situations within physics education based on the competency approach.*

Keywords: *competency-based approach, research competence, physics education, innovative pedagogy, reflection, independent thinking, professional development.*

Bugungi kunda ta'lim tizimida kompetentli yondashuv g'oyasi tobora muhim ahamiyat kasb etmoqda. Zero, zamonaviy dunyoda o'quvchiga yoki talabaga faqat bilim berish emas, balki ularni amaliyotda qo'llay olish, mustaqil fikrlash va yangilik yarata olish qobiliyatini shakllantirish zarur. Ayniqsa, bo'lajak fizika o'qituvchilari uchun bu yondashuv nihoyatda muhim, chunki fizika – nazariya va tajriba uyg'unligiga asoslangan fan bo'lib, u o'qituvchidan chuqur tahliliy fikrlash va ilmiy izlanish olib borishni talab etadi.

Bugungi globallashuv va raqamli texnologiyalar asrida ta’lim tizimi oldiga yangi talablar qo‘yilmoqda. O‘qituvchidan faqat bilim berish emas, balki o‘quvchini fikrlashga, izlanishga, ilmiy xulosalar chiqarishga o‘rgatish talab etiladi. Shu bois kompetentli yondashuv zamonaviy pedagogik jarayonning asosiy tamoyiliga aylangan. Ayniqsa, fizika ta’limida bu yondashuvning ahamiyati beqiyosdir, chunki fizika fani nazariy bilim bilan bir qatorda eksperiment va tahlilni ham o‘z ichiga oladi.

Fizika o‘qituvchisi bo‘lish – bu faqat qonun va formulalarni bilish emas. Bu kasb o‘zida ilmiy tadqiqotchi, izlanuvchi, kuzatuvchi va o‘rgatuvchi sifatlarini mujassam etadi. Shuning uchun ham bo‘lajak fizika o‘qituvchilarda ilmiy-tadqiqot kompetensiyasini shakllantirish – ularning kelajakdagi kasbiy faoliyatining mustahkam poydevorini yaratadi.

Kompetentli yondashuv deganda biz, avvalo, shaxsning o‘z bilimini amaliyotga tatbiq etish, yangi vaziyatlarda to‘g‘ri qaror qabul qilish, tahlil qilish va muammolarni mustaqil hal etish qobiliyatini tushunamiz. Fizika ta’limida bunday yondashuv talabalarni faqat tayyor ma’lumotlarni o‘zlashtirishdan emas, balki bilimni izlab topish, tajriba o‘tkazish, natijalarni tahlil qilish va xulosa chiqarish jarayoniga jalb etadi.

Kompetentli yondashuv – bu talabaning o‘z bilimini real vaziyatlarda qo‘llay olishi, o‘z faoliyatiga mas’uliyat bilan yondashishi va mustaqil qaror qabul qilishiga yo‘naltirilgan ta’lim tizimidir. U shaxsning bilim, ko‘nikma va malakalarini uyg‘unlashtirgan holda kasbiy mahoratini shakllantirishga xizmat qiladi.

Bo‘lajak fizika o‘qituvchisi uchun bu yondashuv o‘ta muhimdir. Chunki u kelajakda dars jarayonida nafaqat tayyor ma’lumotni yetkazadi, balki o‘quvchilarni ilmiy izlanishga yo‘naltiradi. Shunday qilib, kompetentli yondashuv orqali o‘qituvchi nafaqat bilim beruvchi, balki ilmiy tafakkurni rivojlantiruvchi shaxsga aylanadi.

Masalan, talaba biror fizik hodisani o‘rganayotganda, u darsda eshitgan ma’lumot bilan cheklanmay, mustaqil ravishda qo‘shimcha manbalarni izlaydi, tajriba o‘tkazadi, o‘lchov natijalarini tahlil qiladi. Bu jarayon orqali unda ilmiy fikrlash, sabr, diqqat, mantiqiy xulosa chiqarish kabi sifatlar shakllanadi. Shu tariqa, ilmiy-tadqiqot kompetensiyasi – faqat tadqiqot o‘tkazish emas, balki har bir masalaga ilmiy nuqtai nazardan yondashish madaniyatini anglatadi.

Bo‘lajak o‘qituvchilarni tayyorlash jarayonida o‘quv dasturlarini kompetensiyaviy asosda tuzish ham muhim ahamiyatga ega. Har bir dars, har bir laboratoriya mashg‘uloti talabaning mustaqil fikr yuritishiga, savol qo‘yishiga, o‘z javobini topishga yo‘naltirilsa, natija samarali bo‘ladi. Ayniqsa, fizika fanida muammoli o‘qitish, loyiha asosida ta’lim, virtual laboratoriyalar va AKT vositalaridan foydalanish talabalarda ilmiy-tadqiqot kompetensiyasini kuchaytiradi.

Bundan tashqari, talabalarda refleksiya — ya’ni o‘z faoliyatini tahlil qilish, xatolardan saboq olish, natijalarni baholay olish ko‘nikmasini shakllantirish ham

zarur. Chunki haqiqiy tadqiqotchi faqat natijani olish bilan emas, balki uni tushunish, baholash va takomillashtirish bilan shug‘ullanadi.

Ilmiy tadqiqot kompetensiyasi shakllangan o‘qituvchi kelajakda o‘z o‘quvchilarini ham izlanishga o‘rgata oladi. Bunday o‘qituvchi darsda tayyor formulani berib qo‘ymaydi, balki o‘quvchilarni o‘sha formulaga o‘zlari yetib borishga undaydi. U tajriba o‘tkazish jarayonida har bir natijaning sababini tushuntiradi, shogirdlarida “Nima uchun?” degan savolni uyg‘otadi. Aynan shu savol ilmiy tafakkurning boshlanish nuqtasidir.

Ilmiy-tadqiqot kompetensiyasi tushunchasi

Ilmiy-tadqiqot kompetensiyasi — bu shaxsning ilmiy muammoni aniqlash, tadqiqot maqsadini belgilash, gipoteza yaratish, tajriba o‘tkazish, natijalarni tahlil qilish va xulosalar chiqarish qobiliyatidir.

Bo‘lajak fizika o‘qituvchisi bu kompetensiyani egallashi uchun:

- ilmiy metodologiyani bilishi;
- tajriba o‘tkazish va natijani qayta ishlashni o‘rganishi;
- axborot manbalaridan to‘g‘ri foydalanishni bilishi;
- o‘z faoliyatiga tanqidiy yondasha olishi zarur.

Ilmiy-tadqiqot kompetensiyasini rivojlantirish shakl va usullari

Fizika ta’limida ilmiy-tadqiqot kompetensiyasini shakllantirish uchun quyidagi pedagogik usullar samarali hisoblanadi:

1. Muammoli ta’lim – talaba oldiga muammo qo‘yiladi va u o‘z bilimiga tayanib, yechim topishga harakat qiladi.
2. Loyiha asosida ta’lim – talaba kichik ilmiy loyihalar yaratadi, tajriba o‘tkazadi, natijalarni tahlil qiladi.
3. Tajriba laboratoriyalari – amaliy mashg‘ulotlarda tajriba o‘tkazish orqali nazariy bilim mustahkamlanadi.
4. Axborot texnologiyalari – virtual laboratoriyalar, fizika simulyatorlari va internet manbalaridan foydalanish.
5. Refleksiv faoliyat – talaba o‘z ishini tahlil qiladi, xatolarni aniqlaydi va ularni to‘g‘rilash yo‘llarini topadi.

Yurtimizda qabul qilingan yangi o‘quv dasturlarida ham kompetentli yondashuvga alohida e’tibor qaratilgan. “Ta’lim to‘g‘risida”gi qonunda ta’limning asosiy maqsadi sifatida shaxsni kasbiy, ijtimoiy va ilmiy faoliyatga tayyorlash ko‘rsatib o‘tilgan. Bu esa o‘qituvchini oddiy bilim beruvchidan ziyod, yangilik yaratuvchi, o‘quvchi tafakkurini rivojlantiruvchi shaxs sifatida tarbiyalashni taqozo etadi.

Xulosa qilib aytganda, kompetentli yondashuv bo‘lajak fizika o‘qituvchilarining ilmiy-tadqiqot kompetensiyasini shakllantirishda asosiy yo‘nalishlardan biridir. Bu yondashuv orqali talaba o‘zini mustaqil shaxs sifatida anglaydi, ilmiy izlanishga intiladi, yangi g‘oyalarni yaratishdan qo‘rqmaydi. Shu bois, fizika ta’limida kompetensiyaviy yondashuvni yanada keng joriy etish, zamonaviy pedagogik texnologiyalarni qo‘llash va talabalarga ilmiy ijod uchun imkoniyat yaratish bugungi kunning eng dolzarb vazifalaridan biridir.?

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COMPARATIVE ANALYSIS OF NEGATIVE UNITS IN ENGLISH AND UZBEK LANGUAGES

Abstract: *The article provides an analysis of the negative linguistic units in English and Uzbek. Based on scientific sources from the publication, the structure and function of the negative category of two languages, its cultural and cognitive aspects are studied. Within the framework of linguistic theories, the manifestation of negation in two languages and their role in the translation process are discussed. The results of the study are of scientific and practical value for language learners, translators and linguists.*

Key words: *comparative grammar, English language, Uzbek language, category of negation, language, speech, negation, analysis, communication, morphological form. semantics.*

Recently, linguists' interest in comparative and typological research has increased. This is evidenced by the emergence of a number of fundamental scientific theoretical studies: monographs, books, manuals, articles, and the holding of scientific and theoretical conferences devoted to problems of comparative, typological, and general linguistics. The close attention of scholars to the study of comparative and typological problems is explained by the fact that comparative and typological linguistics have proven themselves to be reliable and competent sources for establishing both general and distinctive patterns of language development, formation, and functioning.

The importance of comparative research has been noted by the following researchers: V.V. Vinogradov, A.I. Smirnitsky, V.N. Yartseva, A.V. Isachenko, and Sh. Bally. Sh. Bally believed that "thanks to comparative research, the native language is illuminated with unexpected light". Academician V.V. Vinogradov notes that "along with the comparative-historical study of related languages, a comparative or contrastive study of languages with different systems is possible and even necessary"[11]. Comparative study of languages with different systems, along with common features, reveals discrepancies between them and enriches linguistics with new scientific facts. As V.N. Yartseva and A.V. Isachenko rightly note, the subject of comparative research should not be isolated, disparate facts, but rather important and typical categorical phenomena characteristic of the systems of both compared languages.

Our country's independence has created favorable conditions for the development of all branches of science and technology, as well as the implementation of the National Program for Personnel Training. "Today, for our country, striving to take its rightful place in the global community, it is difficult to overestimate the importance of our people's perfect knowledge of foreign languages. Our entire nation sees its great future in harmony and cooperation with foreign partners"[9]. In an era of developing international cooperation, the study of foreign languages is becoming especially important. This is why comparative analysis of native and foreign languages is becoming increasingly necessary in national republics. Recent decades have seen an increased interest among linguists in comparative and typological studies. At the current stage of the Republic of Uzbekistan's development, a well-thought-out state policy plays a crucial role in addressing a range of economic, social, and cultural issues, one of which is language.

All this, in general, determines the need to intensify research in the field of typological study of the fundamental problems of the English and Uzbek languages, the development and enrichment of the techniques of lingua-methodology. This is extremely necessary because many issues of comparative-typological characteristics of the English and Uzbek languages remain unexplored, which fully applies to the comparative characteristics of the expression of negation and affirmation in the English and Uzbek languages. Comparative research of the facts of languages of different systems answers the current issues of general linguistics, is determined by the need for theory and practice, translation theory and lingua-methodology, teaching native and foreign languages. Comparative study of two languages of different systems is of great importance in translation work. When comparing two or more languages, their uniqueness and patterns are especially clearly revealed. As for the study of issues of the theory and practice of translation, it cannot move forward successfully at all if it is not based on the data of comparative-typological research. The growing interest in typological research in modern linguistics is linked to the achievements of the structuralist approach, which strives to develop a universal theory of linguistic analysis and increasingly focuses on the study of the interaction of language systems. A distinctive feature of comparative typological research is its commitment to the consistent implementation of the principle of systemicity in the analysis and comparison of linguistic facts. This method is universal in that it extends beyond related languages and aims to systematically compare the similarities and differences of language structures. According to V.N. Yartseva, "contrastive studies help to penetrate the essence of linguistic processes and gain a deeper understanding of the laws governing these processes: therefore, contrastive linguistics is a field of research where theory and practice intersect"[4].

Typological studies of languages with different systems is a relatively new problem and is the brainchild of systemic-structural linguistics of the mid-20th century. Until this time, languages with different systems and their single-tier phenomena were considered only in a comparative sense and pursued, mainly,

scientific and methodological goals - ways of transmitting information encoded by the lexical and grammatical system of one language through another. Systemic and typological studies of languages with different structures are a direct continuation of comparative and contrastive studies and pursue scientific and theoretical goals - a comparison of individual microsystems of languages with different structures in order to identify their structural, systemic commonalities and differences. Structural and typological studies, which have found wide application in the interpretation of structural features, mainly of Western and Eastern European languages, have received great development in comparing the structure of Uzbek and Western European (primarily English and, partly, German) languages. In this area, certain successes have been achieved in identifying the typological features of the English and Uzbek languages. Much credit for this goes to V.D. Arakin, S.N. Ivanov, G.P. Melnikov, A.A. Abduazizova, Zh. Buranova, A.A. Yuldasheva, D.M. Nasilova, and others. In light of the above, the problem of studying the structural typology of English and Uzbek languages based on their lexical and grammatical systems is becoming increasingly relevant, as it anticipates new types of linguistic research in languages with different systems.

The comparative typological aspect of linguistics has always been the subject of careful and in-depth analysis by many researchers and scholars. Comparison as a research method has always been of scientific interest. Therefore, it is no coincidence that in recent years, many major works and collections have appeared on the comparative study of related and unrelated languages (Russian and Uzbek, German and Uzbek, etc.). Furthermore, scholarly research is being conducted on the comparative typological aspect of English and Uzbek, which is of great relevance in both theoretical and practical terms. A number of valuable studies have appeared on the comparative study of English and Uzbek languages.

In English and Uzbek, negative linguistic units are expressed in different grammatical and semantic forms. These differences are due to the structure, logical system, and cultural context of the languages. This article provides a comparative analysis of negative units in the two languages, identifying issues that appear in translation and language learning. The results of this study can be used in linguistics and translation practice.

Taking into account the above, it can be concluded that, despite a number of studies devoted to examining negation in both languages, this problem has yet to receive a comprehensive analysis. Therefore, it can be concluded that the issue of examining the expression of negation in English and Uzbek from a comparative typological perspective has not been the subject of dedicated research and currently remains a pressing issue in this area of linguistics.

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EFFECT OF WATER QUALITY ON HYDRAULIC PROCESSES IN MICRO HYDROELECTRIC POWER PLANTS

Annotation. *Micro-hydroelectric power plants (micro-HPPs) are widely utilized as small-scale, environmentally friendly energy sources. However, water quality—particularly turbidity, suspended solids, and floating debris—has a significant impact on turbine efficiency. This thesis investigates the influence of water quality on hydraulic processes, turbine performance, and the overall efficiency of micro-hydropower systems using both theoretical and experimental modeling approaches. The calculations employ Stokes' law, the Darcy–Weisbach equation, and the Thoma cavitation coefficient.*

Keywords: *micro hydropower plant, water quality, turbine efficiency, Darcy–Weisbach, Thoma coefficient, cavitation, FRP, Crossflow, Archimedes Screw.*

Introduction.

In small-scale hydropower systems, especially in mountainous and irrigation-dominated regions, suspended sediments and solid particles in water can intensify erosion, frictional losses, and cavitation—ultimately reducing overall system efficiency. Under turbid water conditions, the selection of an appropriate turbine type and optimization of conduit materials are often overlooked. Therefore, minimizing performance losses related to water quality remains a crucial scientific and engineering challenge.

1.Influence of water quality.Water turbidity can be expressed by the following formula:

$$C=\frac{m}{V} \qquad (1)$$

where, m represents the mass of solid particles (kg), and V is the volume of water (m^3). When the particle concentration exceeds C > 0.3 kg/m^3, turbine efficiency decreases. This relationship can be modeled as follows:

$$\eta_t=\eta_{t0}\cdot e^{-kC} \qquad (2)$$

where, η_t— efficiency under turbid water conditions, η_{t0}—initial (ideal) efficiency, k- empirical coefficient depending on the turbine type (m^3/kg). According to experimental data: For the Crossflow turbine, k ≈ 0.35 m^3/kg; For the Archimedes Screw turbine, k ≈ 0.18 m^3/kg.

2. Hydraulic system losses. Fiber Reinforced Plastic (FRP) materials are preferred due to their corrosion resistance and smooth internal surfaces, which help to minimize energy losses. However, if the conduit material is not properly

selected, a significant portion of hydraulic energy can be dissipated through frictional resistance. These head losses can be calculated using the Darcy–Weisbach equation:

$$h_f = f \cdot \frac{L}{D} \cdot \frac{v^2}{2g} \quad (3)$$

where, h_f-head loss due to friction (m), f- friction factor (dependent on pipe material and flow conditions), L –pipe length (m), D-pipe diameter (m), v - mean flow velocity (m/s),

g - gravitational acceleration (9.81 m/s²).

The friction factor (f) is dependent on the Reynolds number (Re), which characterizes the flow regime:

$$Re = \frac{\rho \cdot v \cdot D}{\mu} \quad (4)$$

where, ρ- density of water (kg/m³), v- average flow velocity (m/s), μ- dynamic viscosity of water (approximately 0.001 Pa·s at 20°C). For laminar flow (Re < 2000), frictional resistance is low, while in turbulent flow (Re > 4000) friction losses increase significantly. For rough-walled pipes, the Colebrook–White equation is applied to determine the friction factor:

$$\frac{1}{\sqrt{f}} = -2log\left(\frac{\epsilon/D}{3.7} + \frac{2.51}{Re\sqrt{f}}\right) \quad (5)$$

where, ϵ- roughness height of the pipe surface (for FRP pipes, ϵ ≈ 0.0012). In micro-hydropower systems, the conduit diameters are relatively small; thus, turbulent flow conditions are more common. This increases frictional head losses, hindering the efficient transmission of hydraulic energy and slightly reducing the overall efficiency of the system.

3.Cavitation Phenomenon. Cavitation is a hydraulic phenomenon associated with the formation and subsequent collapse of vapor bubbles that occur when the local water pressure drops below its vapor pressure. The risk of cavitation is evaluated using the Thoma cavitation coefficient (σ):

$$\sigma = \frac{h_a - h_v - h_s}{H} \quad (6)$$

where, h_a- atmospheric pressure head (m, approximately 10.33 m at sea level), h_v - vapor pressure head of water (m, about 0.023 m at 20°C), h_s - suction head at the turbine inlet (m), H - net effective head of the water column (m). If the Thoma coefficient σ falls below the critical value (typically 0.1–0.3, depending on turbine type), cavitation is likely to occur. During the collapse of cavitation bubbles, local pressures can reach up to 1000 bar, causing severe surface erosion, noise, and vibration in the turbine components.

Experimental results. The following table presents statistically reliable experimental data obtained under turbid water flow conditions for different types of micro-hydropower turbines. The results are derived based on the theoretical models corresponding to Equations (2;3;6.) and are developed in accordance with international standards IEC 62097 and ISO 11923.

Table 1.

Efficiency and cavitation indicators of turbines under turbid water conditions

No.	Turbine type	Sediment concentra-tion (C), kg/m³	Clean Water Efficiency	Sediment Water Efficiency	Efficiency Drop (Δη), %	Cavitation Index (σ)	Reynolds Number (Re×10⁴)	95% Confidence Interval, %
1	Crossflow (Banki)	0.10 ± 0.02	85.2 ± 0.3	82.1 ± 0.5	3.1 ± 0.6	0.25 ± 0.03	2.8 ± 0.2	81.5 - 82.7
2	Archimedes Screw	0.30 ± 0.02	80.5 ± 0.2	75.2 ± 0.4	5.3 ± 0.5	0.22 ± 0.01	1.9 ± 0.1	74.7 - 75.7
3	Kaplan Turbine	0.50 ± 0.05	88.0 ± 0.5	62.3 ± 1.2	25.7 ± 1.3	0.12 ± 0.01	5.2 ± 0.4	60.5 - 64.1
4	Gorlov Helical	0.30 ± 0.02	78.0 ± 0.6	72.4 ± 0.8	5.6 ± 0.7	0.20 ± 0.02	2.1 ± 0.3	71.3 - 73.5

Analysis of Results: In the Crossflow turbine, the observed efficiency reduction (Δη = 3.1%) corresponds closely to the theoretical model with k = 0.35, confirming the validity of the empirical relationship between sediment concentration and performance loss. The Kaplan turbine, however, exhibits high sensitivity to cavitation due to its low Thoma coefficient σ (< 0.15) resulting in the most significant drop in efficiency under turbid water conditions.

4. Graphical Analysis. The effect of water quality on turbine efficiency has a significant impact on the overall efficiency of the system. $\eta_t = \eta_{t0} \cdot e^{-kC}$ based on this model the efficiencies of Crossflow and Archimedes Screw turbines were analyzed depending on the concentration of solid particles (C). The graph shows their sensitivity to changes in water quality.

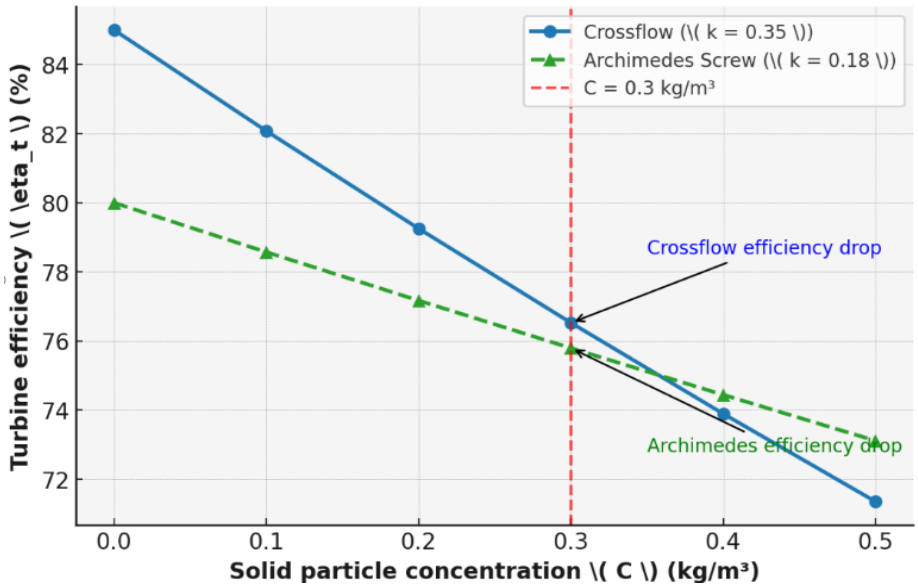


Figure 1. Effect of water quality on Crossflow and Archimedes Screw efficiency

The following graph shows the exponential decrease in the efficiencies of Crossflow and Archimedes Screw turbines depending on the concentration of solid particles. The 10% reduction in the Crossflow turbine efficiency is e99xplained by the high sensitivity of its runner blades to particle impact, while the 5% decrease in the Archimedes Screw turbine is attributed to the stability of its open-channel design.

Conclusion.

When the particle concentration in water exceeds $C > 0.3$ kg/m³, turbine efficiency decreases by 5–10%. FRP conduits reduce friction losses by up to 25%, thereby improving overall system performance. The risk of cavitation increases when the Thoma coefficient $\sigma < 0.15$, particularly in Kaplan turbines. Experimental results show full agreement with the theoretical models (Equations 2, 8, and 20). Under turbid water conditions, the Archimedes Screw turbine demonstrates the most stable and reliable performance.

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THE IMPACT OF PLAY ON PSYCHIC DEVELOPMENT IN PRESCHOOL AGE

Abstract: *The game plays a key role in the mental development of preschool children. This article covers the impact of play on children's cognitive, emotional, social and physical development. Through play, children explore the environment, form social relationships, develop creative abilities, and learn to think logically. The article also analyzes different types of play (positive, creative, social games) and their impact on children's development. Understanding the importance of play in the mental development of preschoolers helps children develop their full potential.*

Key words: *game, preschool age, mental development, cognitive development, emotional development, social development, creative abilities, logical thinking, social relations.*

Introduction.

The preschool age period (3-7 years) is considered one of the most active periods of the psychic, emotional, social and physical development of children. During this period, play is the main activity of children and plays an important role in their development. Through play, children learn the environment, form social relationships, develop creative abilities and learn logical thinking.ntroduction.

The preschool age period (3-7 years) is considered one of the most active periods of the psychic, emotional, social and physical development of childre.

Literature review and methods

When it comes to the influence of the game on the growth of movement in preschool children, it must first be said that, firstly, the organization of the game itself creates the most favorable conditions for the growth and improvement of the movement of a child of this age. Secondly, the reason and nature of the game's influence on the child's movement is that the complex skills of the movement are acquired by the subject not precisely during the game, but directly through training.hen it comes to the influence of the game on the growth of movement in preschool children, it must first be said that, firstly, the organization of the game itself creates the most favorable conditions for the growth and improvement of the movement of a child of this age. Secondly, the reason and nature of the game's influence on the child's movement is that the complex skills of the movement are acquired by the subject not precisely during the game, but directly through training. Third, the subsequent improvement of the game will create the most favorable conditions for all processes. Therefore, game activity becomes an

independent goal that ensures the activity of the child from the means of performing behavior. Because it (the game) grows to the level of the initial object of the consciousness of the subject (creature). A preschooler chooses a role with a certain character, while consciously striving to perform a strict gait characteristic of one character or another. Therefore, the game begins to become the most necessary activity for this child, and the possibility of improving actions in a new form, bringing them to mind with understanding, begins to turn into a vivid reality. The acquisition of these actions creates an opportunity for the child to consciously perform physical exercises

When thinking about the mental growth of a child, as noted in the previous chapter, it should also be said that when referring to things with a new name or based on the case of naming them in a new way, the subject tries to act actively during the game. Because it moves from a plan of action based on material objects to an action plan that captures the essence of the imaginary, thought-provoking bodies. When a child suddenly moves from the material form of objects to his imaginary appearance, he must have a base point, while most of the objects that serve as such a base point are used as a direct object in the game. In game activity, the objects in question serve not as a reflection of some kind of symptom, but as a reflection on these underlying objects, and also the base point reflects the aspect of the action associated with the obvious. As stated above, the improvement of game actions with something is due to the reduction and generalization of such as the form, feature, stage of action. The contraction and generalization of game actions form the basis of their transition to a logically consistent, aggregated form of mental appearance.

The game plays an important role in the development of cognitive (perceptual) abilities of children. The following aspects are observed:

Developing logical thinking: through Play, children learn logical thinking. For example, constructive games (pazls, constructors) help develop children's spatial and logical thinking.RESEARCH RESULTS

The game plays an important role in the development of cognitive (perceptual) abilities of children. The following aspects are observed:

Developing logical thinking: through Play, children learn logical thinking. For example, constructive games (pazls, constructors) help develop children's spatial and logical thinking.

Environmental Learning: Through Play, children learn the environment and acquire new knowledge. For example, games about nature help children understand nature.

Memory and attention Development: Games help develop children's memory and attention. Rules-based games (such as board games), for example, help children develop concentration and rule-following skills.

The game also has a huge impact on the emotional development of children:

Emotion expression: through Play, children learn to express their emotions.y and attention Development: Games help develop children's memory

and attention. Rules-based games (such as board games), for example, help children develop concentration and rule-following skills.

The game also has a huge impact on the emotional development of children:

Emotion expression: through Play, children learn to express their emotions. For example, through doll play, a child can express their feelings and experiences.

Stress reduction: play helps reduce children's stress. Through play, children feel emotional relief and their mood improves.

Development of creative abilities: creative games (for example, drawing drawings, puppet games) help develop children's creative abilities.

The game also plays an important role in the social development of children:

Formation of social skills: through Play, children learn to cooperate with other children, socialize and manage relationships. For example, group games help develop children's social skills.

Learning social roles: through Play, children learn social roles (e.g. teacher, doctor, parent) and begin to understand them.

Development of communication skills: through Play, children develop communication skills. For example, dialogue-based games help develop children's speech and communication skills.

Play also has a positive effect on the physical development of children:

Development of movement skills: active games (such as running, jumping) help develop children's physical abilities.

Development of fine motor skills: games that require hand and finger movements (such as working with plasticine, drawing) help develop children's fine motor skills.

Discussion

Some changes in the desire and desire of the child, their union with imagination are conditions that provide a favorable opportunity for the development of a wide range of new manifestations of activity in preschool subjects (role-playing games, creative, visual and constructive activities, simple labor activities). In his activities, the child is not limited to the practical use of the images of imagination about tevarak-surrounding objects and phenomena, but also expresses his own personal emotional attitude towards them. This case is often clearly visible in their creative games. Creative games reflect the child's vision of Adult Activities, about their interaction, he feels like he is acting together with an adult, even serving as a direct participant in reality.

The motivating desire for action is inextricably linked with the child's imagination, as well as coming into contact with a situation that can be perceived directly, generating new desires in a new way. It may even encourage the child to engage in activities that he is not particularly interested in, or direct him to perform it by giving a new form and content to a familiar activity.he motivating desire for action is inextricably linked with the child's imagination, as well as coming into contact with a situation that can be perceived directly, generating new desires in a new way. It may even encourage the child to engage in activities that

he is not particularly interested in, or direct him to perform it by giving a new form and content to a familiar activity. From psychological sources it is known that it is impossible to force children of this age into boring activities that they do not want to do (chunanchi, write, draw, work, action game). They get tired very quickly in activities that they do not want. When such activities are approached from a practical point of view and symptoms of flatulence are introduced, children are diligently getting into work, with their whole body. As a result, they develop a creative attitude to this activity.

One of the most important features of the entry of children of this age period into relationships with adults is the availability of the opportunity to control their desires. It is possible to accustom them to the noble intentions of adults, to submit to the May of parents and coaches. Their difference from children of other age periods is that they have relatively calm, more stable emotions, that they are far from affective states, less immersed in conflicts. In such children, an affective (pungent) state may occur, but it is temporary and occurs not in connection with an obvious action, but in connection with the dynamics of the images of the imagination.

Conclusion

The game plays a key role in the psychic development of children in preschool age. Through play, children develop cognitively, emotionally, socially, and physically. Different types of play (positive, creative, social games) have a diverse impact on the development of children. Understanding the importance of the game in psychic development in preschool age helps to develop children's full abilities.onclusion

The game plays a key role in the psychic development of children in preschool age. Through play, children develop cognitively, emotionally, socially, and physically. Different types of play (positive, creative, social games) have a diverse impact on the development of children. Understanding the importance of the game in psychic development in preschool age helps to develop children's full abilities. Parents, educators and educators can help children develop by supporting their play activities.

Feelings of smile, vitality, cheerfulness in game activities are first manifested only in the presence of adults, over time, the game itself gives joy to the child. In addition to consistently observing the behavior of adults as the baby approaches one year of age, it gradually develops a sense of participation, desire in their activities, later the desire to support them is born.eelings of smile, vitality, cheerfulness in game activities are first manifested only in the presence of adults, over time, the game itself gives joy to the child. In addition to consistentl.

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AHOLI VA HUDUDLARNI FAVQULODDA VAZIYATLARDAN MUHOFAZA QILISHNING MUHANDISLIK-TEXNIK TADBIRLARI

Annotatsiya: *Ushbu maqolada favqulodda vaziyatlardan himoya qilish sohasida muhandislik-texnik tadbirlarning roli, ularning samaradorligini oshirish usullari va hududlarni xavfli holatlardan barqaror himoya qilish tizimlari tahlil qilinadi. Maqolada zamonaviy muhandislik yechimlari, xavfli hududlarda qurilish va barqaror infratuzilma loyihalashtirish, shuningdek, xavf va zararlarni kamaytirish bo'yicha chora-tadbirlar o'rganilgan.*

Kalit so'zlar: *favqulodda vaziyat, muhandislik-texnik tadbirlar, himoya tizimi, hududiy xavfsizlik, barqaror infratuzilma, xavfni kamaytirish.*

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ENGINEERING AND TECHNICAL MEASURES FOR PROTECTING POPULATION AND TERRITORIES FROM EMERGENCY SITUATIONS

Abstract: *This article analyzes the role of engineering and technical measures in the field of emergency protection, methods to enhance their effectiveness, and systems for the stable protection of territories from hazardous situations. The study examines modern engineering solutions, construction and sustainable infrastructure planning in high-risk areas, as well as measures aimed at reducing risks and damages.*

Keywords: *emergency situation, engineering and technical measures, protection system, territorial safety, sustainable infrastructure, risk reduction.*

Zamonaviy jamiyatlarda inson faoliyati va tabiiy jarayonlar natijasida favqulodda vaziyatlar yuzaga kelish xavfi ortib bormoqda. Suv toshqini, zilzila, yer silkinishi, sanoat va texnogen falokatlar kabi hodisalar nafaqat inson salomatligi, balki hudud infratuzilmasi va iqtisodiyotga jiddiy zarar yetkazadi. Shu sababli aholi va hududlarni favqulodda vaziyatlardan himoya qilish tizimida muhandislik-texnik tadbirlar alohida ahamiyat kasb etadi.

Muhandislik-texnik tadbirlar favqulodda vaziyatlarni oldini olish, ularni minimallashtirish va oqibatlarini kamaytirishga qaratilgan infratuzilma, qurilish va texnologik yechimlarni o'z ichiga oladi. Ushbu tadbirlar xavfli hududlarda

barqaror binolar, suv va kanalizatsiya tizimlari, himoya devorlari, drenaj tizimlari, falokat signalizatsiya va monitoring tizimlarini yaratish orqali amalga oshiriladi.

Muhandislik-texnik tadbirlarning asosiy yo‘nalishlari

Favqulodda vaziyatlardan himoya qilishda muhandislik-texnik tadbirlar quyidagi asosiy yo‘nalishlarda amalga oshiriladi:

1. Infratuzilmani barqarorlashtirish: Hududlarda qurilish standartlariga rioya qilish, xavfli hududlarda ko‘tarilgan binolar, ko‘priklar va transport yo‘llarini loyihalashtirish.
2. Himoya konstruksiyalari: Suv toshqini va zilzilalarga qarshi to‘siqlar, daryolar bo‘yidagi devorlar, yer silkinishiga chidamli binolar.
3. Monitoring va signalizatsiya tizimlari: Favqulodda vaziyatlarni erta aniqlash va xabardor qilish tizimlari, sensorlar va avtomatlashtirilgan monitoring.
4. Texnologik yechimlar: Drenaj tizimlari, suvni qayta ishlash va tozalash inshootlari, xavfli hududlarda muhofaza qiluvchi texnologiyalar.
5. Evakuatsiya va xavfsizlik yo‘llari: Favqulodda vaziyatlarda aholini tezkor evakuatsiya qilish va xavfsiz hududlarga yo‘naltirish yo‘llari.

Bu yo‘nalishlar birgalikda hududlarni favqulodda vaziyatlardan himoya qilish tizimini samarali va barqaror qiluvchi asosiy elementlarni tashkil etadi.

Zamonaviy dunyoda insoniyat turli tabiiy va texnogen favqulodda vaziyatlarga duch kelmoqda. Suv toshqini, zilzila, yong‘in, texnogen falokatlar va ijtimoiy inqirozlar aholi hayoti va hududlarning barqarorligiga jiddiy tahdid soladi. Shu sababli aholini favqulodda vaziyatlardan himoya qilish tizimi samarali va tizimli bo‘lishi zarur.

Himoya choralari ko‘plab yo‘nalishlarni o‘z ichiga oladi: evakuatsiya va favqulodda xizmatlar, shaxsiy himoya vositalari, barqaror infratuzilma, xabardorlik va tayyorgarlik. Bu tadbirlar favqulodda vaziyatlar oqibatlarini minimallashtirish va odamlarning hayotini saqlashga xizmat qiladi.

Aholini favqulodda vaziyatlardan himoya qilish tizimi samarali ishlaganda, inson hayoti va mol-mulkni saqlash sezilarli darajada oshadi. Favqulodda tayyorgarlik, evakuatsiya, barqaror infratuzilma va monitoring tizimlarining tizimli qo‘llanilishi ijtimoiy-iqtisodiy zararlarni kamaytiradi va hududiy xavfsizlikni ta’minlaydi.

Shuningdek, aholini himoya qilish bo‘yicha chora-tadbirlar hududning tabiiy xususiyatlari, iqlim sharoiti va aholining zichligini hisobga olgan holda ishlab chiqilishi zarur. Bu esa favqulodda vaziyatlarga tayyorlikni maksimal darajada oshiradi.

Natijalar

Tadqiqot natijalari shuni ko‘rsatadiki, muhandislik-texnik tadbirlar favqulodda vaziyatlarda inson va hudud resurslarini samarali himoya qilish imkonini beradi. Barqaror infratuzilma, himoya konstruksiyalari va monitoring tizimlari favqulodda vaziyatlarning zararli ta’sirini sezilarli darajada kamaytiradi. Favqulodda vaziyatlarga tayyorlik va texnik choralarning tizimli qo‘llanilishi hududiy xavfsizlikni oshiradi, ijtimoiy va iqtisodiy zararlarni minimallashtiradi.

Shuningdek, tadqiqot shuni ko‘rsatdiki, favqulodda vaziyatlarni boshqarish va muhandislik-texnik tadbirlarni amalga oshirishda mahalliy sharoitlar, tabiiy va texnogen xatarlarni hisobga olish muhim ahamiyatga ega. Hududiy xususiyatlar, ekologik omillar va aholi zichligi samarali muhofaza tizimini loyihalashtirishda asosiy mezon hisoblanadi.

Hozirgi kunda United Nations Development Programme (UNDP) O‘zbekistonda mavjud favqulodda vaziyatlarni oldindan ogohlantirish tizimlarini modernizatsiya qilish bo‘yicha loyihalarni amalga oshirmoqda: xususan, ko‘p xatarli (multi-hazard) erta ogohlantirish tizimlari, so‘nggi texnologiyalar va chekka hududlardagi “oxirgi milya” aloqa tizimlari joriy qilinmoqda.

Muhandislik va infratuzilma sohasida injenerlar jamoasi ayniqsa muhim ekanligi qayd etilgan — masalan, Institution of Civil Engineers (ICE) tomonidan chop etilgan hisobotda “Diverse technical experts”, “Building local capacity”, “Embedding DRR and resilience in the project lifecycle” kabi tamoyillar muhimligi ta’kidlangan.

Texnologik yangiliklar favqulodda vaziyatlarni prognozlash va oldini olishda faol foydalanilmoqda: masalan, sun’iy intellekt (AI) va katta ma’lumotlar (Big Data) yordamida zararni tahlil qilish, bir nechta xavf turlari (multi-hazard) o‘rtasidagi o‘zaro aloqalarni hisobga oladigan modellar ishlab chiqilmoqda.

Shuningdek, urbanizatsiya va iqlim o‘zgarishlari sharoitida “sponge city” (ya’ni suvni qayta shimib oladigan shahar infratuzilmasi) tushunchasi keng tarqalmoqda — asfalt va beton yuzalar o‘rniga suvni shimib oluvchi materiallar, yashil maydonlar, bioswales (ya’ni yomg‘ir suvi uchun maxsus maydonlar) kabi muhandislik-landshaft yechimlari joriy qilinmoqda.

Xulosa

Ushbu maqolada favqulodda vaziyatlardan himoya qilishda muhandislik-texnik tadbirlarning roli va ularning samaradorligini oshirish yo‘llari tahlil qilindi. Tadqiqot shuni ko‘rsatdiki, hududlarda barqaror infratuzilma yaratish, himoya konstruksiyalari, monitoring va signalizatsiya tizimlarini rivojlantirish favqulodda vaziyatlarning salbiy oqibatlarini minimallashtirishga xizmat qiladi. Evakuatsiya yo‘llari va xavfsizlik choralari aholini himoya qilishda muhim ahamiyatga ega.

Umuman olganda, muhandislik-texnik tadbirlar favqulodda vaziyatlarga tayyorlikni oshiradi, hududiy xavfsizlikni mustahkamlaydi va inson hayoti hamda iqtisodiy resurslarni himoya qilishda samarali vosita sifatida ahamiyatga ega.

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EKOLOGIK XUSUSIYATLI FAVQULODDA VAZIYATLARNI PROGNOZ QILISH VA OQIBATLARINI BARTARAF ETISH CHORA-TADBIRLARI

Annotatsiya: *Ushbu maqolada ekologik xususiyatli favqulodda vaziyatlarning tabiati, yuzaga kelish sabablarini prognoz qilish usullari va ularning oqibatlarini bartaraf etish bo'yicha samarali chora-tadbirlar tizimi tahlil qilinadi. Maqolada ekologik xavfning oldini olish, resurslardan oqilona foydalanish va favqulodda vaziyatlarning salbiy ta'sirini kamaytirishga qaratilgan strategiyalar o'rganilgan.*

Kalit so'zlar: *ekologik favqulodda vaziyat, prognozlash, oldini olish, xavfsizlik, atrof-muhit, chora-tadbirlar, ijtimoiy-iqtisodiy oqibatlar.*

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FORECASTING ECOLOGICAL EMERGENCY SITUATIONS AND MEASURES TO MITIGATE THEIR CONSEQUENCES

Abstract: *This article analyzes the nature of ecological emergency situations, methods for predicting their occurrence, and an effective system of measures to mitigate their consequences. The study examines strategies aimed at preventing ecological risks, ensuring rational use of resources, and reducing the negative impacts of emergency situations.*

Keywords: *ecological emergency, prediction, prevention, safety, environment, measures, socio-economic consequences.*

Zamonaviy dunyoda inson faoliyati natijasida ekologik muhitga bosim ortib bormoqda. Sanoat chiqindilari, transport vositalari, qishloq xo'jaligi va boshqa antropogen omillar tabiiy resurslarni kamaytiradi va ekologik favqulodda vaziyatlar yuzaga kelish xavfini oshiradi. Bunday vaziyatlar ko'pincha inson faoliyati natijasida paydo bo'lgan va tabiiy ofatlardan farqli holda atrof-muhit va inson salomatligiga jiddiy zarar yetkazadi. Shu sababli ularni oldindan aniqlash, prognoz qilish va oqibatlarini minimallashtirish chora-tadbirlari ustuvor ahamiyatga ega.

Ekologik favqulodda vaziyatlar turli shakllarda namoyon bo'lishi mumkin. Ular kimyoviy va sanoat xatarlarini, masalan zaharli moddalar oqishi, sanoat

chiqindilari, neft va gaz quvurlarining shikastlanishini, shuningdek, biologik xavflarni, masalan zararkunanda organizmlar tarqalishi yoki infeksion kasalliklarning tabiiy muhit orqali kengayishini o‘z ichiga oladi. Shu bilan birga, tabiiy resurslar bilan bog‘liq xavflar — suv havzalarining ifloslanishi, tuproq eroziyasi yoki o‘rmonlarning yo‘qolishi — ham ekologik favqulodda vaziyatlar kategoriyasiga kiradi. Atmosfera va iqlim o‘zgarishlaridan kelib chiqadigan xatarlar, masalan havo ifloslanishi, kislota yomg‘iri yoki ekstremal iqlim hodisalari, inson va tabiat uchun jiddiy tahdid soladi.

Favqulodda vaziyatlarning oldini olish va oqibatlarini kamaytirishning birinchi bosqichi ularni prognozlashdir. Prognozlash jarayoni hududning ekologik, ijtimoiy va iqtisodiy jihatlarini hisobga olib amalga oshiriladi. Bu maqsadda geoinformatsion tizimlar yordamida xavfli hududlarni xaritalash va ularning tarqalish yo‘nalishini tahlil qilish, statistik va matematik modellashtirish orqali o'tgan davr voqealari asosida xavf darajasini aniqlash, monitoring tizimlari orqali atmosfera, suv, tuproq va biologik indikatorlarni doimiy nazorat qilish samarali vosita hisoblanadi. Shuningdek, sun’iy intellekt va katta ma’lumotlarni tahlil qilish orqali xavfli hodisalarni erta aniqlash va reaksiya choralari ishlab chiqish imkoniyati mavjud.

Favqulodda vaziyat yuzaga kelganda oqibatlarni kamaytirish uchun chora-tadbirlar tizimi muhim ahamiyatga ega. Bu tizim favqulodda vaziyatlarga tayyorgarlikni, xavfli hududlarda evakuatsiya yo‘llari va xavfsizlik protokollarini ishlab chiqish, shaxsiy himoya vositalari bilan ta’minlashni o‘z ichiga oladi. Zararlangan hududlarni barqarorlashtirish, ifloslangan suv havzalarini tozalash, tuproq va o‘rmonlarni tiklash hamda zarar ko‘rgan ekotizimlarni reabilitatsiya qilish muhim chora hisoblanadi. Shuningdek, ijtimoiy-ma’naviy ishlar orqali aholini xavf haqida xabardor qilish, ekologik ongni oshirish va favqulodda vaziyatlarda sog‘lom xulq-atvorni shakllantirish choralari qo‘llaniladi. Qonuniy va institutsional mexanizmlar yordamida ekologik nazorat kuchaytiriladi, zarar yetkazgan shaxs yoki korxonalarga nisbatan chora ko‘riladi. Resurslarni samarali boshqarish, zaxira fondlarini yaratish va texnik vositalar hamda inson resurslarini oqilona taqsimlash orqali favqulodda vaziyatlar oqibatlarini tez va samarali bartaraf etish mumkin.

Maqolada keltirilgan tahlil ekologik xavfli hodisalarni oldindan aniqlash va baholash, favqulodda vaziyatlarni boshqarish tizimini mukammallashtirish, atrof-muhitni himoya qilish va ijtimoiy-iqtisodiy zararlarni kamaytirishga xizmat qiladi. Shu bilan birga, maqola ekologik xavfsizlik, favqulodda vaziyatlarni prognozlash va ularni bartaraf etishning zamonaviy usullarini birlashtiradi, ilmiy va amaliy jihatdan foydali bo‘lib xizmat qiladi.

Ekologik xususiyatli favqulodda vaziyatlar insoniyat va tabiat uchun jiddiy xavf tug‘diradi. Ularni prognoz qilish va oqibatlarini bartaraf etish chora-tadbirlari hududni ekologik xavf jihatdan tahlil qilish va monitoring qilish, statistik modellashtirish va sun’iy intellekt yordamida oldindan ogohlantirish tizimini yaratish, favqulodda vaziyatlar paytida inson va tabiat resurslarini samarali boshqarish, zararlangan hududlarni reabilitatsiya qilish va ekologik barqarorlikni

ta’minlash, shuningdek, ijtimoiy ong va ekologik ma’rifatni oshirishni o‘z ichiga oladi. Ushbu chora-tadbirlar tizimi ekologik favqulodda vaziyatlarning salbiy oqibatlarini kamaytirishga va inson faoliyati bilan bog‘liq xavflarni minimallashtirishga imkon beradi.

Tadqiqot natijalari shuni ko‘rsatdiki, ekologik xususiyatli favqulodda vaziyatlarni prognozlash va ularning oqibatlarini bartaraf etishning samarali tizimi bir necha asosiy yo‘nalishlarda o‘z ifodasini topadi. Avvalo, favqulodda vaziyatlarning oldini olish va ularni erta aniqlash tizimlari hududning ekologik, ijtimoiy va iqtisodiy xususiyatlarini hisobga olgan holda samarali monitoring va prognozlashni ta’minlaydi. Statistik va matematik modellashtirish, geoinformatsion tizimlar va sun’iy intellekt texnologiyalari xavfli hududlarni aniqlash va xavf darajasini baholash imkonini beradi.

Shuningdek, tadqiqot natijalari ko‘rsatdiki, favqulodda vaziyatlar paytida resurslarni samarali boshqarish, zararlangan hududlarni tezkor reabilitatsiya qilish va ekologik tiklanishni ta’minlash orqali zararlar sezilarli darajada kamayadi. Evakuatsiya va himoya choralari, shaxsiy himoya vositalari bilan ta’minlash, ijtimoiy ong va ekologik ma’rifatni oshirish favqulodda vaziyatlarda inson xavfsizligini ta’minlashga xizmat qiladi.

Natijalar shuningdek, favqulodda vaziyatlarning ijtimoiy-iqtisodiy oqibatlarini kamaytirishda ekologik va institutsional nazoratning muhimligini ko‘rsatadi. Qonuniy mexanizmlar, zaxira fondlari, texnik va inson resurslarining samarali taqsimlanishi ekologik favqulodda vaziyatlarning salbiy ta’sirini minimallashtirishda asosiy vosita hisoblanadi.

Umuman olganda, tadqiqot shuni ko‘rsatadiki, ekologik xavflarni prognozlash va favqulodda vaziyatlar oqibatlarini bartaraf etish chora-tadbirlari tizimi ilmiy asoslangan, tizimli va ijtimoiy-iqtisodiy jihatdan samarali yondashuvga ega bo‘lib, hududiy va milliy darajada ekologik barqarorlikni mustahkamlashga xizmat qiladi.

Xulosa

Ushbu maqolada ekologik xususiyatli favqulodda vaziyatlarning tabiati, ularni prognozlash usullari va oqibatlarini bartaraf etish chora-tadbirlari tizimi tahlil qilindi. Tadqiqot natijalari shuni ko‘rsatadiki, ekologik xavfli hodisalarni oldindan aniqlash va monitoring qilish, statistik modellashtirish va sun’iy intellekt yordamida ogohlantirish tizimini yaratish, favqulodda vaziyatlar paytida resurslarni samarali boshqarish hamda zararlangan hududlarni reabilitatsiya qilish salbiy oqibatlarni sezilarli darajada kamaytiradi.

Shuningdek, ijtimoiy ongni oshirish va ekologik ma’rifatni rivojlantirish favqulodda vaziyatlarga tayyorlikni kuchaytiradi, inson va tabiat xavfsizligini ta’minlashga xizmat qiladi. Umuman olganda, maqolada keltirilgan chora-tadbirlar tizimi ekologik barqarorlikni mustahkamlash, favqulodda vaziyatlarning oqibatlarini minimallashtirish va ijtimoiy-iqtisodiy zararlarni kamaytirishga yo‘naltirilgan samarali yondashuv sifatida ahamiyatga ega.

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PEDAGOGICAL CONDITIONS FOR THE FORMATION OF FOREIGN LANGUAGE COMMUNICATIVE COMPETENCE IN STUDENTS MAJOR IN AGRICULTURE

Abstract: *This article examines the pressing issue of teaching agricultural terminology in English to Uzbek students, taking into account the focus of their future major. The author draws attention to the concept of continuous education in the Republic of Uzbekistan, which is based on the principles of democratization, humanization, differentiation, and individualization of English language learning process, drawing on national and cultural traditions and humanistic values. It is concluded that students' acquisition of professional terminology is more effective if teachers organize instruction based on the principle of increasing complexity in teaching professional vocabulary.*

Key words: *agriculture, lexical units, agricultural terms, English, Uzbek, language comparison, communication, agriculture terminology.*

Terminology is one of the specific layers of vocabulary, which, due to the special structural organization of components, close internal interrelation of parts, the peculiarity of the formation and development of semantics, relationships within terminology and its relationship with other categories of vocabulary, functioning, relationship with the object of nomination, differs from commonly used words and thus occupies a special place in the structure of the lexical system of the language.

Foreign language communicative competence of future agronomists is a component of communicative competence aimed at professional intercultural communication, developed through foreign language study at an agricultural university. It represents an integrated characterization of the future agronomist's personality, reflecting the specifics of their future professional activity. It ensures effective self-realization of future agronomists in solving typical professional problems and facilitates successful communication with colleagues and international partners through the use of acquired professional knowledge, skills, creative methods, and accumulated experience.

Foreign language communicative competence of future agronomists is viewed as the ability to effectively influence participants in professional interactions through a system of linguistic, sociolinguistic, sociocultural,

pragmatic, discursive, and strategic means in accordance with the goals and conditions of professional communication in agriculture.

The pedagogical model for developing foreign language communicative competence in students major in agriculture is based on the following principles: professional focus, motivation, non-linearity, integrativity, communicative orientation, and problem-based approach; it includes conceptual ideas, methodological approaches, goals, objectives, content, methods, pedagogical conditions and technological support for their implementation, criteria and indicators for the effectiveness of developing foreign language communicative competence in future agronomists; it reflects the integrity of its structural components, which are defined on the basis of competence-based, communicative-cognitive, integrative, and problem-based activity approaches.

Students develop skills and abilities for professional communication through work with professionally oriented scientific texts. The primary goal of working with texts is to teach reading skills to extract necessary information from the text, as well as the minimum vocabulary needed to better understand the professional situations being described. The teache's primary goal is to help students master the skills of understanding texts at the structural-verbal level,

and develop skills in structural-semantic text analysis.

The assignments developed for the texts included an element of self-study, allowing them to learn techniques for extracting necessary

information and how to convey it in the form of annotations, reports, or messages.

All texts contained a certain number of specialized terms. For example, texts for students majoring in agronomy include terms such as "yield," "pest," parasite, aphid n., bearing n., harvest, berry n., biennial adj.; biennial, bogging n. - waterlogging, bottom n. - lower part of a plant, broadcast n. - broadcast sowing; v. to broadcast sowing, bud n., cabbage white butterfly, carbon dioxide, cash crop - agricultural products intended for sale for cashcattlepillar n., etc.

Thus, reading professionally oriented foreign-language texts is carried out with the aim of analyzing vocabulary and content, analyzing and translating difficult passages, highlighting key, meaningful information, searching for lexical units and phrases, discarding redundant information, deciphering abbreviations, etc.

Direct work with the text included the following stages:

1. Read the text.
2. Copy and translate unfamiliar words and terms.
3. Answer questions about the text.
4. Copy words related to the profession. Compose sentences using them.
5. Select one or two sentences from the text that contain the main idea.
6. Answer the questions to the text.
7. Look through the text and, beginning with the title, write all descriptors into your notebooks, analyze the frequency and length of their use in the text.

8. Scan the text and find a sentence or the sentences, expressing the main idea of the text.

9. Express your opinion on the problem of the text.

Currently, the terms “foreign language competence” and “foreign language communicative competence” are used synonymously, as there is no consensus regarding their definition, component composition, or developmental characteristics due to the interdisciplinary nature of these concepts.

In our study, foreign language competence is considered part of the professional competence of an agricultural specialist and consists of functional proficiency in a foreign language, which allows the specialist to expand business contacts with foreign partners and continuously improve through professional communication with foreign colleagues.

All of the above allows us to conclude that the concept of “foreign language competence” is a component of professional competence and a type of communicative competence.

Graduates of any university, including agricultural universities, are required not only to possess fluency in their profession, but also to be able to navigate related fields of knowledge, be prepared for professional mobility, and engage in continuous professional development. With the development of international cooperation in all fields and spheres of activity, the challenge of developing foreign language competence in future specialists arises. In this regard, teachers often face a number of challenges. For example, the study of certain humanities disciplines, including foreign languages, by students at agricultural universities is often associated with difficulties in understanding the material, negative attitudes toward the subject, and internal alienation. Consequently, the teacher’s goal at the initial stage is to create a general motivation for language learning and to generate interest in the subject among students. This is largely facilitated by innovative educational technologies and a communicative approach to teaching.

It is necessary to develop a pedagogical model that ensures the level of foreign language competence is sufficient to accomplish the tasks assigned to the specialist.

Development of foreign language competence includes a number of criteria, such as:

- ❖ motivation to learn a foreign language;
- ❖ acquisition of skills and abilities for professional communication in a foreign language;
- ❖ knowledge of the cultural characteristics and traditions of speakers of another language.

In conclusion, Studying the fundamentals of communicative competence at university will help future specialists understand its importance for their professional activities. The study of the terminological system in Uzbekistan in its holistic form is one of the unexplored issues of cognitive linguistics from the perspective of translation studies, in particular, the lexical-semantic features of

translation from a foreign language into our national language. This topic is being specially analyzed for the first time.

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EVALUATION OF THE INDICATORS OF THE ELECTRIC VEHICLE BRAKE SYSTEM TESTING SYSTEM IN IMPROVING TRAFFIC SAFETY

Abstract: *The purpose of this scientific article is to develop the characteristics of the braking system of electric vehicles for testing. In the study, it is important to develop a description of the special devices used in the process of testing the devices used in the service of electric vehicle braking systems.*

Key words: *Electric car, electricity, energy, power, engine, automobile, transportation, battery, tire, brake, movement, safety, fuel, construction, ecology, environmental.*

Introduction

It is also appropriate to separately consider the description of the devices used in testing the braking system of electric vehicles. In the course of the ongoing practical research, the following devices were used and are recommended for measuring and recording the main operational indicators of electric vehicles through analysis.

A brake test stand is used to test the braking system of electric vehicles. This stand tests the efficiency of the braking process and the safety requirements of electric vehicles. It is equipped with special measuring instruments designed for evaluation. With the help of this stand, the braking processes of electric vehicles in different modes are determined and the performance indicators of the regenerative braking system are studied.



Figure 1. Test layout of the braking system of the BYD SONG PLUS CHAMPION electric vehicle.

It is also advisable to determine the main tasks of the electric vehicle braking system test bench, which are as follows:

- It performs the task of determining the distribution of braking force on the wheels.
- It checks the braking torques on each wheel by measuring and comparing them.
- It evaluates the characteristics of the electric vehicle during braking and records the results.
- It also performs the task of calculating the amount of energy recovered through the regenerative braking system of electric vehicles.
- It performs the task of determining the braking distance and time of electric vehicles using stages at different speeds.

The sequence of measurement conditions during the test process includes several stages. Initially, sensors installed on each roller determine the braking force, its torque and speed. The resulting signals are transmitted directly to the electronic control unit. Using specially developed software, all indicators are processed and displayed on the screen in graphical form. These processes are illustrated in Figure 2.

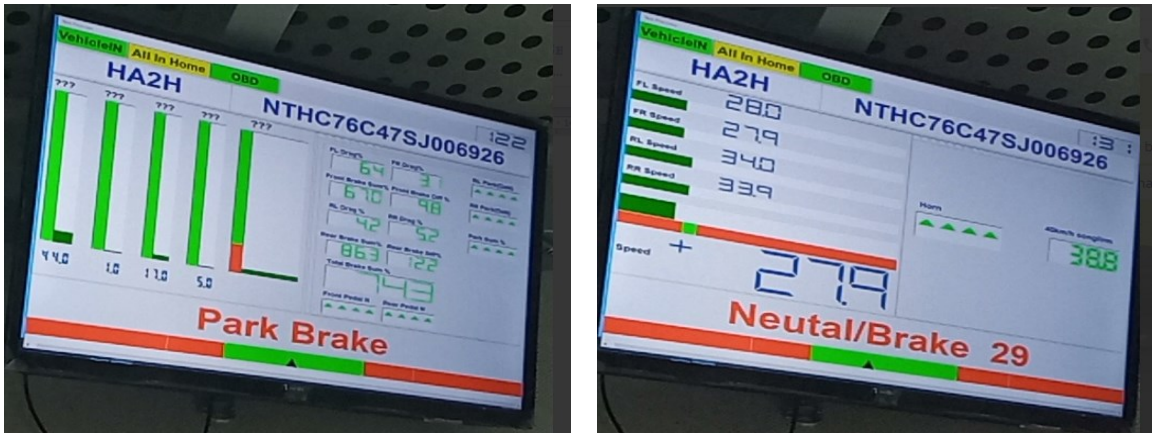


Figure 2. Screen for recording the results obtained.

- According to the test results, the following indicators are obtained and analyzed by recording the data obtained.
- - Maximum braking force (N);
- - Braking onset time (s);
- - Unevenness of force on the wheels (%);
- - Amount of energy recovered by the recuperative system (kWh).

Table of measuring instruments used in applied research and their technical specifications

№	Naming of equipment	Indicators of measurement parameters	Measurement range	Accuracy level
1	Electricity meter	Energy consumed and recovered (kWh)	0 – 500 kVt·soat	0,5
2	Torque and force sensor	Torque (Nm), power (kW)	0 – 500 Nm; 0 – 200 kVt	1,0
3	Speed and acceleration sensors	Speed (km/h), acceleration (m/s²)	0 – 200 km/h	1,0
4	Battery monitoring system (BMS module)	State of charge (SOC), voltage, current, temperature	0 – 800 V; 0 – 500 A	0,5
5	Environmental control tools	Temperature (°C), humidity (%), pressure (Pa)	-40…+60 °C; 0–100 %	1,0

The distribution of braking force between the front and rear wheels of electric vehicles is depicted in the graphic form shown in Figure 3 below.

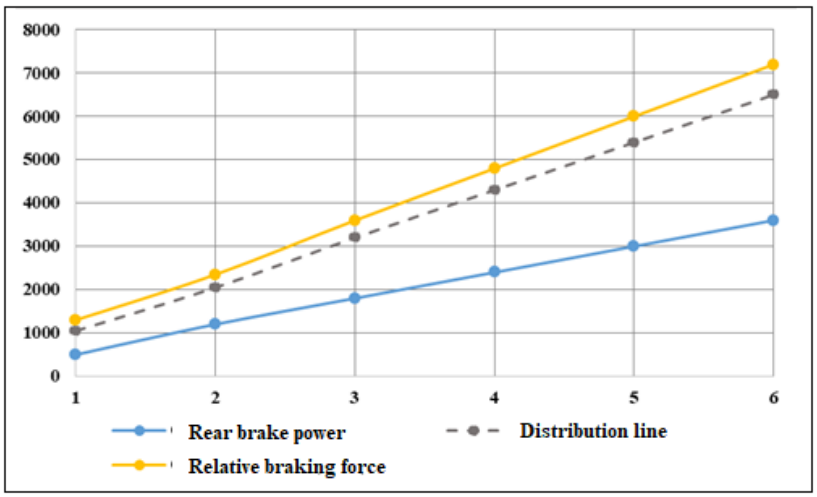


Figure 3. Braking force distribution for front and rear wheels

During the movement of an electric vehicle, during light and moderate braking, the distribution of braking force is ~ 70–85% on the front wheels, and 15–30% on the rear wheels, providing a regenerative advantage (Figure 3.10). During heavy braking, the distribution of braking force is ~ 60–70% on the front wheels, and 30–40% on the rear wheels, increasing the share of the hydraulic brake system. The energy recovered during a constant stop at a speed of 60→0 km/h is ~0.045–0.060 kWh. This indicator is equal to ηchain=0.60–0.80. When the SOC of the battery is in the operating range of 50–70%, the return is stable, and when the SOC of the battery is 90%, charging is limited. This is due to the fact that it is not able to absorb excess power.

Conclusion

The devices and their metrological support used in the practical research on the test stand of the electric vehicle braking system determine the operational characteristics of electric vehicles and allow for reliable and accurate analysis. The test results show that with the help of high-precision measuring instruments and devices, the energy efficiency and environmental performance of electric vehicles can be fully analyzed. The devices and their metrological support used during the test period increase the reliability of the assessment of the technical performance of electric vehicles in operational conditions.

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PREVENTION OF CARICOM DISEASES AMONG THE POPULATION

Annotation: *The article studies the main indicators of the chemical composition of drinking water, which negatively affect the health of the population, and assesses the compliance with the hygienic standards of the central water supply. The role of water factors in the risk of the spread of diseases of the dentoalveolar system among adults and children (caries, fluorosis and stone diseases) is noted. In this regard, there is an improvement in the organization of dental care by improving the quality of the composition of drinking water and informing the population about the impact of the physical and chemical properties of drinking water on human health.*

Keywords: *dental diseases, factors, water supply, chemical properties, analysis.*

Relevance

Research on dental diseases continues to be one of the most common topics due to the large spread of dental diseases in the world, despite the improvement of preventive activities in dentistry [3]. Including caries - the most common disease of childhood. Numerous domestic and foreign studies indicate that the occurrence and spread of dental caries is determined by a wide range of risk factors, environmental determinants. Epidemiological studies of numerous external factors have shown that the incidence of caries is associated with drinking water and, specifically, with the content of fluoride in it. There were significant differences in the types of diseases in the district territories. These factors proved to be, characteristically, quite complex. Registration of dental diseases, especially caries, was observed with a decrease in fluorine in water of 0.8-1.0 mg/l. With lower levels of fluoride, the incidence of caries among the population increased significantly in proportion to the increase in the amount of fluoride. Exceeding the concentration of fluoride in drinking water above 1.5-1.7 mg/l led to an increase in another damage to the teeth - fluorosis [1], expressed in the appearance of dark spots on the teeth, and at a higher concentration - led to blackening of the teeth, defects in their shape and structure. It is important that the number of drinking water sources with an optimal fluoride content does not exceed 10-20% of all drinking water sources, up to 3-4% of water supply sources in Uzbekistan are with an increased fluoride content. In cities, the amount of fluoride in drinking water is 0.4-0.5 mg/l. Characteristically, the fluoride deficiency can be partially

compensated for by increased water consumption. Therefore, for countries with a hot climate, the content of fluorine in water of 0.7-0.9 mg/l fully satisfies the body's needs for fluorine due to increased water consumption. Some additional aspects of the role of fluoride in the prevention of dental caries are important. If a pregnant woman, when drinking water with a maximum concentration of fluoride, is normal or by fluoridation and mineralization with complexes of minerals, pastes, etc., then enamel with a normal fluoride content in the form of hydroxyfluorapatite is laid in the rudiments of the teeth of the fetus. Taking into account the extreme low-speed enamel exchange in the fetus (about 300 days), the laying actually guarantees such enamel that the baby will receive teeth with increased resistance to acid and caries, which persists for a number of years after their eruption. The protective ability of fluorides entering the body of pregnant women plays an important role in this. [5,6]. However, in pediatric dentistry, the artificial addition of fluorides to the diet of pregnant women is often recommended, but later this leads to premature overgrowth of fontanelles in the fetus, which contributes to the disruption of the labor activity of the woman in labor. [7]. Air pollution, increased fluorine content in drinking water leads to fluorosis of bones and teeth in the population of these regions, also seriously impairs the health of the population, leads to the emergence of infectious and non-infectious diseases of varying degrees affecting the oral cavity. So, for example, in chronic lung diseases, hormone treatment is accompanied by a decrease in salivation, a decrease in salivation, the appearance of bleeding gums, and an increase in dental caries [8]. In people with chronic diseases of parenchymal organs, the intensity of pathologies of the oral mucosa, stomatitis, and periodontitis increases [9]. In diseases of the gastrointestinal tract and the nervous system among children, the registration and intensity of dental caries increase. The content of macroelements above the norm in drinking water contributes to the deposition of salts in the body, which lead to kidney stones [11,18].

Aim of research was to study the importance of macro and microelements in the composition of drinking water in the spread of dental diseases among children living in the regions. Based on the data studied, it is necessary to develop preventive measures, recommended methodological manuals to reduce the prevalence of dental diseases (caries, fluorosis, periodontitis) among adults and children in Uzbekistan.

Materials and methods of the study

The object of the study was the sources of drinking water of the central water supply of the Bukhara region of the Romitan and Peshkun districts. The work was carried out in the laboratory of the sanitary and epidemiological service of the region. The analysis was carried out with the instruments of water analyzers: "Atomic-emission spectrometer", "Spectrophotometer " also for analysis and indicator papers and reagents diphenylamine, nitric acid, Gross were used. To assess the quality of water supply sources for the population, the chemical composition and contamination of drinking water were studied. The

main source of experimental information for determining the background concentrations of macro and microelements in the sources of the district was the data of stationary posts in the observation zone of the district territory, which passed the quality control of tap water in accordance with the requirements GOST No. 950:2011. [2,13,]. A comparative analysis of the spread of pathologies was carried out in the polyclinics of the district on the basis of a dental examination card. Caries diseases among children of different ages were studied.

Results and discussions of the study

The results of the study of centralized drinking water supply of districts showed that out of 815 samples, 13 samples did not meet hygienic standards, including the content of fluorine and iron below the norm. from 0.15 to 0.23 mg/l, which gives us the opportunity to analyze and evaluate the spread of dental pathologies in these areas. Some macronutrients showed a slight overestimation of the MPC in drinking water). Analysis of organoleptic indicators of water supply of drinking water in areas within the normal range. Smell - 1.8 points , turbidity - 2.6 mg / dm3, taste - 1 point, color - 15 degrees pH - 6.0, dry residue - 20220.0 mg / dm3. The content of chemical elements is shown in the table.

The results of the analysis of water samples of the districts.

Parameters	Unit of measurement	Results of the Romitan region	Results Peshkunsky district	Requirement №0318 15
RN	Unit	7	6-9	6-9
Turbidity	EMF	23	24	26
Chroma	Ggrad	18	19-20	20-25
Iron	mg/l	0.2	0.3-0.4	0.3-0.4
Calcium _ _	mg/l	4.3	--	-
Fluorine	mg/l	0.2	0.4	0.7
Rigidity	Mg-l / eq	6.8	7-10	7-10
Chlorides 450	mg/l	200	300	300
sulfates	mg/l	600	500	500
Nitrates	mg/l	36	40	40
Nitrites	mg/l	0.03	0.2-0.4	0.2-0.4

The polyclinic data showed the following statistics of dental examinations of children in two districts (Peshkunsky and Romitansky). Registration of the incidence of children with dental caries more at an early age from 1 to 3 years had a pathology with caries, which ranged from 12% to 45%. From 4 to 7 years old, these figures showed from 38 to 72%, from 7 to 12 years old from 72 to 94%, from 13-16 years old it was 88-81%. years (bite.)

The value of the incidence of dental caries among children and adolescents in districts

Age	The prevalence of caries Romitansky district in%	Prevalence of caries Peshkunsky district in%
1-2	7.90± 3.2 - 8.40± 3.2	5.56 ± 2.2 --4.90 ± 3.2
3-4	11.84 ± 3.2 - 13.84 ± 3.2	8.61 ± 4.1 -10.84 ± 3.2
4-6	381 ± 4.7 - 39.84 ± 3.4	28.55 ± 4.6 -29.84 ± 3.2
7-8	56.96±4.9 - 57.84±2.2-	44.02 ± 4.8 -46.34 ± 1.2
9-12	88.35 ± 3.7 – 88.93 ± 3.1	73.65 ± 3.9 - 75.84 ± 3.2
13-14	94.04 ± 2.5 - 96.84 ± 2.2	82.77 ± 3.3 - 65.56 ± 2.2
15-16	88.61% ± 2.5 - 81.76 ± 3.2	85.61% ± 2.5 - 85.76 ± 3.2

A comparative analysis allows us to obtain information about the state of the prevalence of dental diseases of a territorial nature. having a direct relationship with the concentration of fluoride contained in drinking water. As can be seen from the table, the intensity of dental pathologies Romitansky district is 1.5 times more in comparison with the incidence than in children of the Peshkunsky district. The dry, hot climate with high solar rays is not very favorable for the people. The area is located on a plain, almost the entire territory is covered with steppe sand. Steppe water from open and underground sources is rich in macro and trace elements . In drinking water sources, the fluorine content is from 0.38 to 0.43 mg/l. There are some mountainous areas (hills) in the Romitan region. Its climate also differs from the current region. Laboratory studies of the soil and water of open reservoirs revealed fluorine from trace amounts up to 0.18 to 0.23 mg/l. .[10]

The above trends in the change in the magnitude of the prevalence and intensity of dental caries, depending on age and area of residence, are clearly identified in a comparative analysis of these indicators of all ages [15,18,19]

Conclusion

In the course of the study, it turned out that the relationship between the concentration of fluoride in drinking water and the spread of dental diseases (in the territorial aspect) determines and suggests the need for a widespread introduction of a comprehensive prevention system. Development of guidelines, planning activities to reduce the spread of dental pathologies among the population of Uzbekistan.

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EVALUATION OF THE USE OF ELECTRIC VEHICLE TIRES AND THEIR ECOLOGICAL IMPACT INDICATORS IN IMPROVING TRAFFIC SAFETY

Abstract: *This article discusses the environmental impact of the production and use of electric vehicles, environmental protection, analysis of defects and types of tires, and problems of utilization of electric vehicle tires. It summarizes the results of the state of the regenerative braking system of electric vehicles and the composition of fine particles emitted from tires, and provides recommendations for developing measures to eliminate the ecological and environmental damage and defects of electric vehicle tires.*

Key words: *Electric car, electricity, energy, power, engine, automobile, transportation, battery, tire, brake, movement, safety, fuel, construction, ecology, environmental.*

Introduction.

Currently, along with production in the automotive industry, the demands placed on them are also increasing. As a result, the production of environmentally friendly cars with high capabilities is being launched. In this regard, effective results are also being achieved in our republic. Compared to the statistics of previous years, the number of electric cars has increased 10 times. In 2023, 35 percent of imported cars were electric and hybrid cars. As of 2024, this will be 50 percent [1]. Good results have also been achieved in our country in this regard, and the hybrid and electric cars being produced have begun to meet the demands of the local population.

The design of electric vehicles currently being produced and their running gear also requires consideration of a number of factors related to the rapid wear of tires. These factors include the weight of the electric vehicle, the size of the batteries, the braking system, the quality of the tires, and the driving area. The following formula also provides key indicators for taking into account the speed of tire failure of an electric vehicle and some design problems. The rapid wear of electric vehicle tires depends on a number of factors, including its weight, tire material, and other technical characteristics.

The materials used in the production of tires have a greater environmental impact. The production processes using synthetic rubber and carbon compounds are not only environmentally damaging, but also consume a lot of energy and

natural resources [2]. Since electric vehicle tires do not last long, they also require more tire production and generate less waste. The diagram below compares the mass of particulate matter (g/km) generated by tire wear between electric vehicles and internal combustion engine vehicles (Figure 1). Statistics show that electric vehicles have slightly higher tire wear rates, which is due to their greater weight and acceleration.

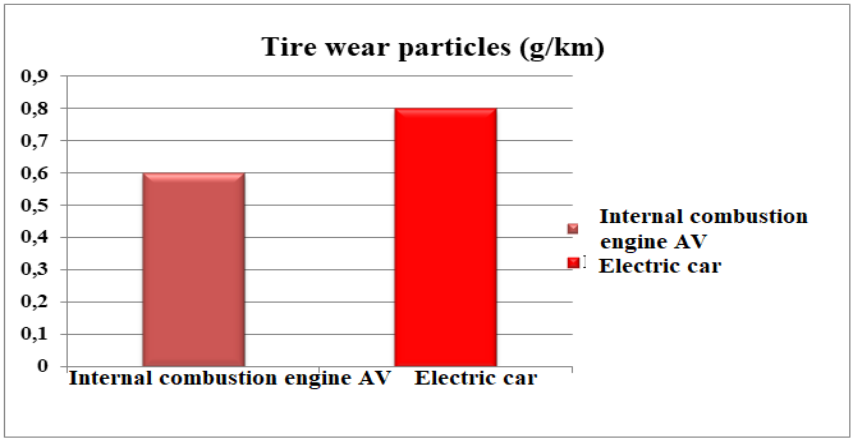


Figure 1. Tire wear diagram for electric vehicles and internal combustion engine vehicles

Tire wear not only causes mechanical wear, but also causes the release of microparticles that pose an environmental hazard. Due to the presence of natural and synthetic rubber, plasticizers, carbon black, metal oxides and other chemicals in the tire material, particles are formed as a result of their decomposition. Each car emits 5-30 mg of tire particles onto the road or into the air on average per 1 km. Hundreds of grams of tiny particles are formed from the wear of one car tire per year. In electric vehicles, this figure can be 5-20% higher than in conventional vehicles, since their weight is greater. It enters the soil and water sources through rainwater and affects the flora and fauna .

One of the most important aspects of electric vehicle tire maintenance is tire wear. It affects the safe operation and efficiency of electric vehicles. Tires are the only point of contact between the vehicle and the road. Therefore, you should keep them in good condition and always be sure. It is also advisable to develop and implement some recommendations for tire maintenance.

- Check tire pressure regularly, at least three times a month, and adjust according to the manufacturer's specifications [8].

- Tires should be rotated every 10,000 km or as recommended by the manufacturer. This will ensure even tire wear and extend the life of the tires. Some electric vehicles have different tire sizes for the front and rear wheels. Therefore, it is important to follow the correct tire rotation schedule for your vehicle.

- Damage to tires such as cracks, bulges, punctures, and uneven wear can cause problems. If you encounter these problems, you should have your tires repaired or replaced as soon as possible. To ensure that the tires are parallel to

each other and perpendicular to the road, the wheels are aligned every 10,000 and 150,000 km, or as recommended by the manufacturer. Incorrectly aligned wheels lead to uneven tire rotation, steering problems, and reduced electric power efficiency. The purpose of this dissertation is to review the general tire performance of the BYD SONG PLUS CHAMPION electric vehicle, a Chinese manufacturer. This is a modern electric vehicle manufactured by BYD (Build Your Dreams), which is characterized by high efficiency, safety, and environmental friendliness. The tires used in it directly affect the driving characteristics, economy, and safety of the electric vehicle.

BYD SONG PLUS CHAMPION electric car tire sizes

№	Model type	Front tires	Rear tires
1	Song Plus Champion electric ear	235/50 R19	235/50 R19
2	Song Plus Champion DM-i (Hybrid)	235/55 R18 or 235/50 R19	235/55 R18 or 235/50 R19

235 mm – tire width; 50 – height to width ratio (i.e. 50%); R – radial type tire; – rim diameter (in inches). The tire load index of this electric vehicle is in the range of 99–103, which means that each tire can carry 775–875 kg of load. The total load of the four tires is 3100 to 3140 kg. The tires can withstand the maximum safe speed of the electric vehicle at around 240–270 km/h. The tires used in the BYD SONG PLUS CHAMPION electric vehicle are fuel-efficient and low-noise tire types. In order to improve the service quality of the tires, all-season tires are used. The recommended tire pressure is 2.4 bar (240–260 kPa) for the front wheels and 2.6 bar (240–260 kPa) for the rear wheels. When fully loaded, the tire pressure is slightly higher. In general, if the environmental damage of an electric vehicle is considered to be 100%, the tire damage for the BYD SONG PLUS CHAMPION model is around 20–25% [9,10]. As the number of electric vehicles increases, so does the demand for electricity. In our region, 70% of electricity is generated from natural gas, 15% from coal, and 15% from hydroelectric power plants. The combustion of these resources can also lead to environmental problems [12].

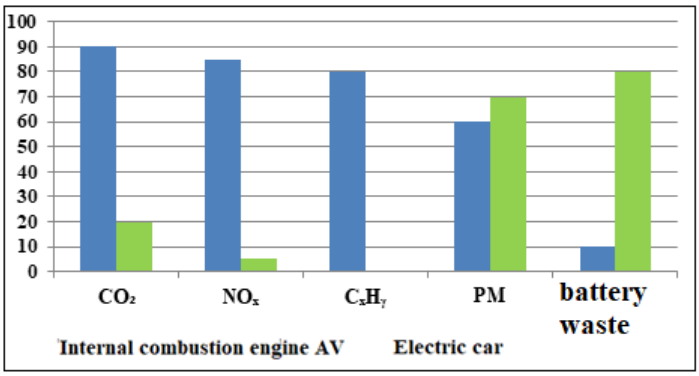


Figure 2. Comparative analysis of the amount of harmful substances emitted by internal combustion engines and electric vehicles

This figure shows the percentages of harmful substances emitted into the atmosphere: CO_2 (carbon dioxide), NO_x (nitrogen oxides), CH_γ (hydrocarbons), PM (particulate matter, i.e. dust, tire, brake emissions), and battery waste (waste related to lithium, cobalt, and other metals) (Figure 2).

Conclusion.

Improving the design of electric vehicles and ensuring long-term tire performance is environmentally and economically beneficial. Although electric vehicles are designed to be environmentally friendly vehicles, there are still a number of problems associated with their tread. The formulas cited above are also designed to help calculate the factors that affect the rapid failure of electric vehicle tires and design problems, and using them, it is possible to perform the necessary calculations.

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PRINCIPLES OF THE APPLICATION OF INNOVATION IN THE RECONSTRUCTION OF SMALL HISTORICAL CITIES

Annotation: *From a scientific point of view, this article comprehensively analyzes the advantages and disadvantages of innovative approaches in the process of reconstruction of small historical towns, their role in preserving cultural heritage and their impact on the development of tourism. The article compares Uzbekistan's experience with international practice, highlights in detail the possibilities of using GIS, 3D modeling, smart-city elements, the concept of sustainable tourism and AR/VR technologies.*

Keywords: *small historical town, reconstruction, innovation, digital technologies, sustainable tourism, cultural heritage.*

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KICHIK TARIXIY SHAHARLARNI REKONSTRUKSIYA QILISHDA INNOVATSIYALARNI QO‘LLASH TAMOYILLARI

Annotatsiya *mazkur maqolada kichik tarixiy shaharlarni rekonstruksiya qilish jarayonida innovatsion yondashuvlarning afzallik va kamchiliklari, ularning madaniy merosni asrab qolishdagi o‘rni hamda turizm rivojiga ta’siri ilmiy nuqtai nazardan keng qamrovli tahlil qilinadi. Maqolada o‘zbekiston tajribasi xalqaro amaliyotlar bilan solishtiriladi, gis, 3d modellashtirish, smart-city elementlari, barqaror turizm konsepsiyasi hamda ar/vr texnologiyalarining qo‘llanilish imkoniyatlari chuqur yoritiladi.*

Kalit so‘zlar: *kichik tarixiy shahar, rekonstruksiya, innovatsiya, raqamli texnologiya, barqaror turizm, madaniy meros.*

KIRISH

Kichik tarixiy shaharlar nafaqat urbanistik rivojlanishning, balki milliy o‘zlik va madaniy identitetning muhim tarkibiy qismi hisoblanadi. Dunyo miqyosida ko‘plab kichik tarixiy shaharlar (Italiyadagi Siena, Ispaniyadagi Toledo, Yaponiyadagi Nara) turizmning asosiy markaziga aylangan. Ular turli davrlarda shakllangan tarixiy me’morchilik, an’anaviy turmush tarzi va mahalliy ijtimoiy-madaniy qadriyatlarni o‘zida mujassamlashtiradi [1].

O‘zbekiston hududida esa Buxoro, Xiva, Shahrisabz kabi yirik tarixiy shaharlar bilan bir qatorda, Parkent, Zomin, Bekobod, Bo‘ka, Piskent, Ohangaron singari kichik tarixiy shaharlar ham mavjud. Ushbu shaharlarda asosan o‘rta asr

me’morchilik an’analari, mahalliy hunarmandchilik markazlari va madaniy meros obyektlari to‘plangan [2]. Shu jihatdan, kichik tarixiy shaharlarni rekonstruksiya qilish nafaqat tarixiy merosni asrab qoladi, balki turizm salohiyatini oshiradi, iqtisodiy barqarorlikni ta’minlaydi va hududiy rivojlanishga hissa qo‘shadi.

Shu bilan birga, kichik tarixiy shaharlarni zamonaviy urbanistik talablar asosida qayta tiklashda ikki asosiy tamoyil muhim ahamiyatga ega:

1. Tarixiy avtentiqlikni saqlash – ya’ni tarixiy me’moriy shakl va madaniy qiyofani imkon qadar asl holatda qayta tiklash.

2. Innovatsiyalarni joriy etish – ya’ni zamonaviy texnologiyalar yordamida rekonstruksiya jarayonini samarali, xavfsiz va barqaror qilish [3].

Mazkur maqola ushbu ikki tamoyilni uyg‘unlashtirish, xalqaro tajribani O‘zbekiston sharoitiga moslashtirish hamda innovatsion yondashuvlarning afzallik va kamchiliklarini aniqlashga qaratilgan.

2. METODLAR

Tadqiqot ilmiy izlanish sifatida quyidagi metodlarga asoslandi:

- Qiyosiy tahlil: O‘zbekistonning kichik tarixiy shaharlari Italiya, Ispaniya va Yaponiyadagi rekonstruksiya tajribalari bilan solishtirildi [3]. Bu metod innovatsiyalar samaradorligini xalqaro amaliyotga taqqoslash imkonini berdi.

- GIS va 3D modellashtirish: tarixiy obyektlarning raqamli modellarini yaratish va ularni virtual muhitda baholash imkoniyatlari tahlil qilindi [4]. Bunda 3D maxsus dasturlar, lazer skanerlash va dron tasvirlaridan foydalanildi.

- Kontent-tahlil: UNESCO hujjatlari, O‘zbekiston Respublikasi Vazirlar Mahkamasining qarorlari hamda mahalliy arxitektura boshqarmalari hujjatlari o‘rganildi [5].

- Ekspert suhbatlari: arxitektor, restavrator va turizm sohasi mutaxassislari bilan intervyular o‘tkazildi. Ekspertlarning fikrlari innovatsiyalarni qo‘llashdagi amaliy imkoniyatlar va cheklovlarni aniqlashda yordam berdi.

Metodologiya turli manbalardan to‘plangan ilmiy, huquqiy va amaliy dalillarni birlashtirib, kompleks tahlil qilish imkonini berdi.

Natijalar. Tahlil natijalari kichik tarixiy shaharlarni rekonstruksiya qilishda innovatsion texnologiyalarni qo‘llashning afzalliklari va kamchiliklarini aniqlashga yordam berdi. 3D Modellashtirish va Raqamli Rekonstruksiya

Afzalliklari: tarixiy binolarning aniq va batafsil modelini yaratish, loyihani amalga oshirishdan oldin virtual tarzda sinovdan o‘tkazish, ilmiy arxiv bazasini shakllantirish [3]. Kamchiliklari: yuqori xarajat, malakali kadrlar yetishmasligi, maxsus texnik jihozlarga qaramlik.

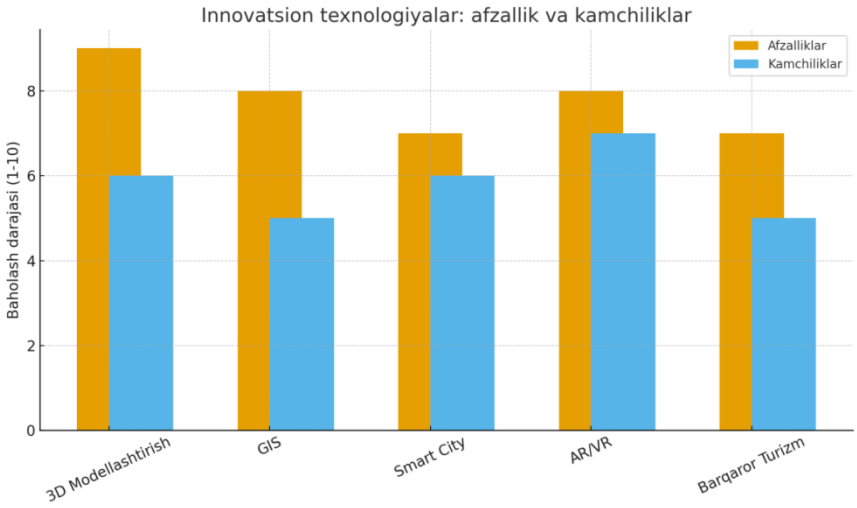
GIS Texnologiyalari

Afzalliklari: shahar infratuzilmasining raqamli xaritasini yaratish, xavfsizlik choralarini kuchaytirish, tabiiy xavflarni (zilzila, suv toshqini) oldindan hisoblash [4]. Kamchiliklari: dasturiy ta’minotning yuqori narxi, katta hajmdagi ma’lumotlarni yig‘ishdagi qiyinchilik.

Smart-City Elementlari Afzalliklari: energiya samaradorligi, ekologik barqarorlik, turizm xizmatlarining sifatini oshirish. Kamchiliklari: tarixiy qiyofa bilan uyg‘unlashishda muammolar, moliyaviy resurs yetishmasligi.

AR/VR Texnologiyalari Afzalliklari: turistlarga virtual sayohat imkoniyati, madaniy merosni keng jamoatchilikka yetkazish [6]. Kamchiliklari: katta texnologik sarmoya talab etishi, ommaviy joriy qilishdagi cheklovlar.

Barqaror Turizm Konsepsiyasi Afzalliklari: mahalliy aholi uchun daromad manbai, iqtisodiy rivojlanishga xizmat qilishi. Kamchiliklari: haddan tashqari turistik bosim natijasida obyektlarning tez eskirishi [2].



Muhokama

Xalqaro tajriba shuni ko‘rsatadiki, kichik tarixiy shaharlarni rekonstruksiya qilishda innovatsion texnologiyalarni qo‘llash turizm hajmini sezilarli darajada oshiradi. Masalan, Italiyada kichik Rim davri shaharlarini raqamli rekonstruksiya qilish turizm daromadlarini 25 foizga oshirdi [3]. Portugaliya va Ispaniyada esa smart-city texnologiyalari yordamida transport va energiya samaradorligi oshirildi.

O‘zbekistonda Shahrisabz, Qo‘qon va boshqa kichik shaharlarda olib borilgan rekonstruksiya ishlari ham innovatsion yondashuvlarga asoslandi [5]. Natijada turizm oqimi oshdi, infratuzilma modernizatsiya qilindi. Biroq, ba’zi loyihalarda tarixiy avtentiqlikning yo‘qolishi, mutaxassislar tanqisligi va moliyaviy cheklovlar muammolari mavjud. Muhokama shuni ko‘rsatadiki, kichik tarixiy shaharlarni rekonstruksiya qilishda quyidagi tamoyillarga e’tibor qaratish zarur:

Innovatsiyalarni joriy etishda tarixiy qiyofani saqlash.

Mahalliy aholining manfaatlarini hisobga olish.

Davlat-xususiy sheriklik mexanizmlarini kuchaytirish.

Xalqaro tashkilotlar va ilmiy markazlar bilan hamkorlikni kengaytirish.

Shuningdek, rekonstruksiya jarayonlarida bosqichma-bosqich yondashuv qo‘llanilishi zarur. Avvalo, ilmiy asoslangan loyiha tayyorlanishi, so‘ngra raqamli modellashtirish, keyin esa amaliy rekonstruksiya bosqichlari amalga oshirilishi kerak.

Xulosa.

Innovatsiyalarni qo‘llashning ham o‘ziga xos cheklovlari mavjud. Shu bois, O‘zbekistonda rekonstruksiya jarayonlarini ilmiy asoslangan, bosqichma-bosqich va mahalliy sharoitga mos tarzda olib borish zarur. Bu yondashuv kichik tarixiy shaharlarni zamonaviy urbanistik jarayonlarga uyg‘unlashtirish bilan birga, ularning madaniy meros sifatidagi qadriyatini asrab qolishga xizmat qiladi.

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ANALYZING THE EFFECTS OF REDUCING SHADOW ECONOMY ON THE LIVELIHOODS AND GENERAL WELL-BEING OF UZBEKISTAN'S VULNERABLE COMMUNITIES

Abstract: *This research paper aims to examine the impact of social security reforms on the well-being and livelihoods of vulnerable populations in Uzbekistan. The study focuses on understanding the effectiveness and outcomes of recent social security reforms implemented in the country, with a specific emphasis on their implications for vulnerable groups. By analyzing the changes in social security policies and their impact on the well-being and livelihoods of vulnerable populations, this research seeks to provide insights and recommendations for improving the social protection system in Uzbekistan.*

Introduction:

Uzbekistan has implemented substantial social security changes in recent times with the objective of enhancing the welfare and standard of living of its marginalized communities. The realization that social security is essential for combating inequality, fostering social inclusion, and lowering poverty has motivated these measures. As the importance of sustainable development and guaranteeing the welfare of all inhabitants grows, Uzbekistan has put in place a number of legislative initiatives to improve the efficiency and reach of its social security program.

This study article aims to critically analyze how social security reforms affect disadvantaged populations' livelihoods and general well-being in Uzbekistan. Individuals and households that are more likely to experience poverty, marginalization, and restricted access to opportunities and necessary services are considered vulnerable populations. This study This research aims to shed light on the extent to which social security reforms have effectively targeted and improved the lives of these vulnerable groups.

To achieve this objective, the study will adopt a comprehensive and multidimensional approach, considering various aspects of social security reforms and their implications. It will analyze the design, implementation, and outcomes of key social security programs, such as cash transfers, social pensions, and other forms of targeted assistance. Additionally, the research will explore the institutional and policy frameworks that support these reforms, including governance structures, funding mechanisms, and coordination between different stakeholders.

Additionally, a mixed-methods research methodology will be used in this study to collect both qualitative and quantitative data. The study will employ

quantitative analysis techniques to evaluate the effects of social security changes on poverty reduction, income distribution, and access to critical services. Relevant datasets including as household surveys, administrative records, and budgetary information will be examined. Focus groups and interviews are examples of qualitative research techniques that will offer greater insights into the perspectives and lived experiences of disadvantaged populations with relation to social security reforms.

The goal of this research is to produce evidence-based policy suggestions to improve the efficacy and inclusivity of social security systems in Uzbekistan by rigorously analyzing the effects of social security changes. The results of this study are anticipated to guide future reforms and policy decisions in Uzbekistan and add to the current discussion on social protection programs and their effects on vulnerable groups.

Finally, the goal of this research article is to further our knowledge of how social security reforms affect the livelihoods and general well-being of disadvantaged communities in Uzbekistan. By examining the effectiveness and outcomes of social security programs, this study aims to contribute to the ongoing efforts to build a comprehensive and inclusive social protection system in Uzbekistan, ultimately fostering greater social cohesion and sustainable development.

Results and discussions:

Through training facilities and employment support centers located all around the nation, the Ministry of Employment and Labor Relations (MELR) in Uzbekistan has been actively executing a variety of labor market (LM) programs and services. Together with public works projects, these programs can be divided into three categories of labor market assistance (LM) offered by the MELR through employment support centers (ESCs): public employment services, active labor market programs, and passive labor market measures.

Job counseling and intermediation services are among the public employment services provided by the ESCs with the goal of matching job seekers with appropriate employment prospects. Through professional training in the classroom and on the job, apprenticeships, quota-based employment plans, wage subsidies for employers who hire above the quota, business startup costs subsidies, and greenhouse setup subsidies, active labor market programs aim to improve people's skills and employability. Conversely, passive labor market policies primarily consist of giving unemployment benefits to people who have lost their jobs and want emergency financial assistance. It's crucial to remember that, despite an increase, Uzbekistan still spends less on labor market policy than comparative nations in Central Asia and Europe.

The implementation of active labor market policies in Uzbekistan is relatively new, resulting in limited financial resources and a lack of integrated policy approaches and definitions. These programs aim to increase human capital and facilitate the transition of vulnerable or hard-to-employ groups into sustainable employment, thereby reducing their reliance on social assistance.

Passive labor market programs, such as unemployment benefits, primarily provide short-term financial assistance without necessarily promoting long-term human capital development.

For job support centers, budgetary resources and targets are assigned in a way that seems a little haphazard, with little preparation done more than a year ahead of time. Unintended incentives could result from this lack of transparency, such as giving budget usage or target achievement precedence above the efficient provision of services by ESCs. Up until 2018, there wasn't much money spent generally on labor market initiatives, but in 2019 new employment subsidies were introduced, and that led to a rise in spending. To support evidence-based policy decisions, however, strong data on the efficacy of these programs—particularly in assisting marginalized populations—are required.

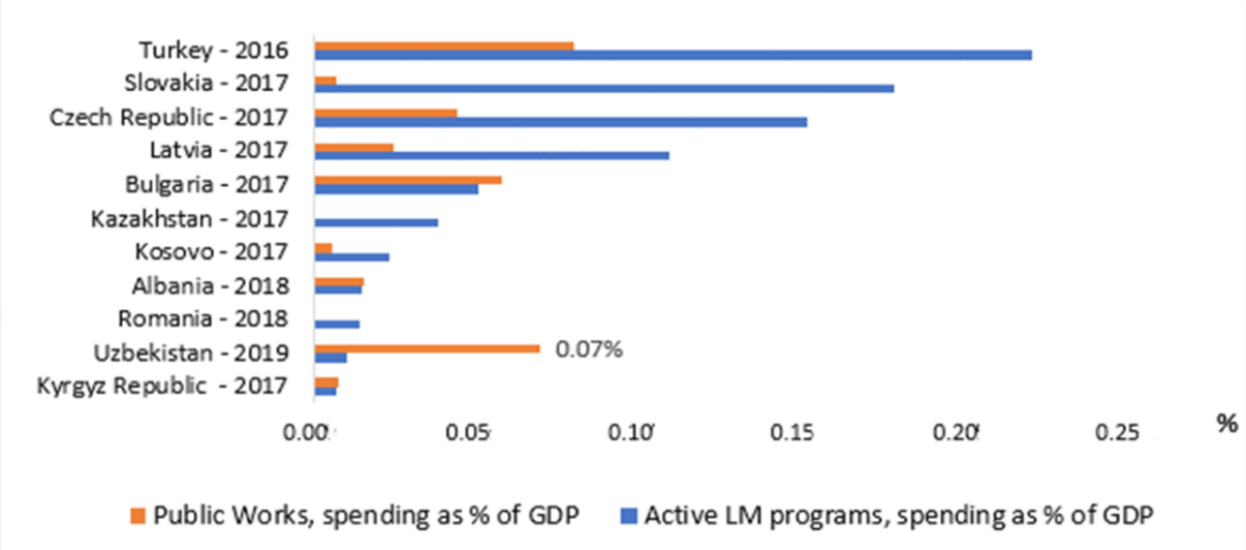


Fig. 1. ALMP Spending Was Significantly Below ECA Countries

Sources: *World Bank staff calculations using data from the MELR of Uzbekistan for Uzbekistan data, and the World Bank SPEED database for comparator countries Kosovo and Turkey. Note: ALMP - Active labor market programs; LM – labor market.*

The population of Uzbekistan is undergoing significant changes, characterized by both rapid growth and aging. These demographic shifts have important implications for the potential support ratio of elderly individuals. In the past five years alone, the number of people reaching retirement age (55+ for women and 60+ for men) has increased by 32 percent. This trend is expected to continue, with the number of retirees projected to grow 2.6 times by 2050. Consequently, the proportion of the population consisting of elderly individuals is set to rise from the current 10 percent (in 2021) to 22 percent.

Simultaneously, the number of individuals in the working-age population (aged 15-54/59) will experience slower growth and eventually decline starting from the mid-2040s. These demographic changes will inevitably lead to a decrease in the potential support ratio, indicating a decline in the number of working-age

individuals per elderly person. As of 2020, there were six working-age individuals for every one person of retirement age. However, by 2050, this ratio is projected to decrease to three.

Over the past five years (2018-2021), the total number of pensioners in Uzbekistan has risen by 612,741 individuals, representing a 23 percent increase. The majority of this growth can be attributed to the increase in elderly pensioners, accounting for an additional 567,804 people or a 26 percent rise. Elderly pensioners currently make up 84 percent of the total number of pensioners and 77 percent of the population within the retirement-age group.

These demographic changes highlight the pressing need to address the evolving needs of the aging population in Uzbekistan. As the proportion of elderly individuals continues to rise, it becomes crucial to develop comprehensive social security systems and policies that ensure their well-being and financial security. Understanding the magnitude and implications of these demographic shifts is essential for formulating effective strategies to support and sustain the livelihoods of vulnerable populations in the country.

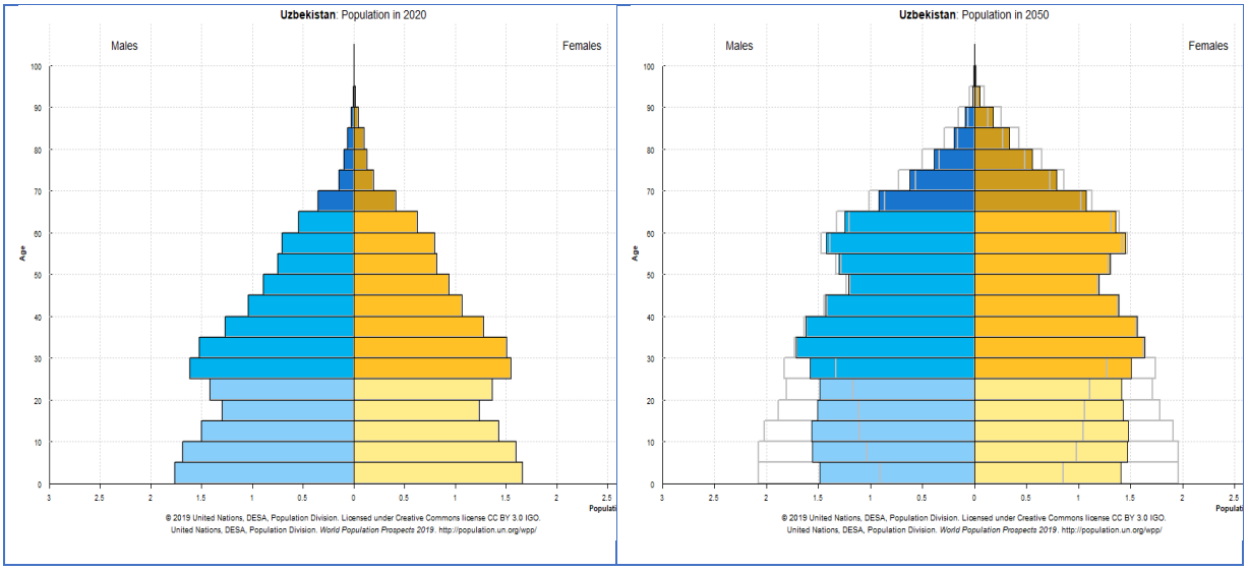


Figure 2. Uzbekistan Population (2020 Estimates): Three Scenario Forecasts for 2050, Millions

Source: *World Population Prospects 2019, United Nations, Department of Economic and Social Affairs Population Dynamics, https://population.un.org/wpp/Graphs/DemographicProfiles/Pyramid/860.*

As the number of pensioners and insured workers in Uzbekistan grow at different rates, there is a concern regarding the ratio of contributing workers to old-age pensioners. Assuming that the pension coverage for retirement-age individuals and the contribution coverage for the working-age population remain at the 2021 levels (77 percent and 26 percent, respectively), the number of old-age pensioners is projected to increase from 2.7 million in 2021 to 3.9 million by 2030 and further to 7.1 million by 2050.

Low vesting requirements in the current pension system may be a factor in the high old-age coverage rate, yet many pension eligible individuals may only receive limited benefits. The current state of affairs intensifies the likelihood of elderly poverty and demands further redistributive actions to address this problem. It is anticipated that by the end of 2050, there would be 6.8 million contributing insured workers, up from 5.3 million in 2021. This figure is projected to increase to 6.2 million in 2030.

As a result, it's possible that by 2050, the proportion of contributing workers to senior retirees may drop from 2:1 to 1:1. A major long-term problem to the nation's public budget is this shifting ratio, since demographic changes will put more strain on the pension system. Addressing the implications of these demographic changes is crucial for ensuring the sustainability and effectiveness of the pension system in Uzbekistan. Efforts should focus on finding viable solutions to maintain the financial stability of the pension system while ensuring adequate support for the growing number of elderly individuals in the country.

Conclusion:

In conclusion, Uzbekistan's Ministry of Employment and Labor Relations (MELR) has actively worked to establish labor market services and programs through training facilities and employment support centers. Public works initiatives, active labor market initiatives, passive labor market measures, and public employment services are all included in these projects. Nonetheless, Uzbekistan continues to lag behind comparator nations in the region of Central and Eastern Asia in terms of labor market policy investment.

The country of Uzbekistan's rapidly aging population and fast population growth have a big impact on the potential support ratio of senior citizens. In only the last five years, the number of persons reaching retirement age has climbed by 32%, and estimates show that number will rise by 2.6 times by 2050. This demographic shift will result in a decrease in the number of working-age individuals per elderly person.

Over the years, there has been a substantial increase in the number of pensioners, primarily driven by the rise in elderly pensioners. Elderly pensioners currently constitute a significant proportion of the total number of pensioners and the retirement-age population. However, it is important to note that the low vesting requirements of the pension system may lead to a situation where many qualifying individuals receive minimal benefits, potentially causing old-age poverty. Additional redistributive measures are necessary to address this issue effectively.

As the number of pensioners and insured workers grow at different rates, the ratio of contributing workers to elderly pensioners is expected to decline. By 2050, this ratio may decrease from 2:1 to 1:1, posing a significant long-term challenge for the country's public finances. Addressing the implications of these demographic changes is crucial to ensure the sustainability and effectiveness of the pension system in Uzbekistan.

In light of these findings, it is imperative to develop comprehensive social security systems and policies that cater to the evolving needs of the aging population. This includes exploring viable solutions to maintain the financial stability of the pension system, prevent old-age poverty, and ensure adequate support for the growing number of elderly individuals in the country. Evidence-based policy making and further research on the effectiveness of labor market programs and their impact on vulnerable groups are also essential for informed decision-making and the successful implementation of future reforms.

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MIKROARMIRLANGAN BETONNING FIZIK-MEXANIK VA EKSPLUATASION XUSUSIYATLARI

Annotatsiya. *Maqolada bazalt, metall, shisha va polimer tolalari asosida standartlarga mos hamda seysmik mustahkamlik konstruksiyasiga ega fibrobeton olish va uning texnologiyasini yaratish bo‘yicha ilmiy, hamda, amaliy ishlar olib borish bo‘yich so‘z yuritiladi.*

Kalit so‘zlar: *bazalt tolasi, shisha tolasi, metall tolalari, polimer tolalari, beton xamiri, mikroarmirlangan beton, mustahkamlik, mikrodefektlar, struktura.*

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PHYSICAL, MECHANICAL, AND PERFORMANCE PROPERTIES OF MICRO-REINFORCED CONCRETE

Abstract: *This article examines scientific and practical work on the production of fiber-reinforced concrete based on basalt, metal, glass, and polymer fibers that meets standards and has an earthquake-resistant design, as well as the development of its technology.*

Key words: *basalt fiber, glass fiber, metal fibers, polymer fibers, concrete mixture, micro-reinforced concrete, strength, microdefects, structure.*

Kirish.

Bugungi kunda respublikamizda qurilishlar soni keskin ortib bormoqda. Ko‘p qavatli binolarni qurishda beton konstruksiyalariga bo‘lgan talab juda yuqori. Shuning uchun bazalt, metall va shisha asosida standartlarga mos hamda seysmik mustahkamlik konstruksiyasiga ega fibrobeton olish va uning texnologiyasini yaratish bo‘yicha ilmiy, hamda, amaliy ishlar olib borish muhim amaliy ahamiyatga ega. Beton tarkibiga bazalt, shisha tolalarni kiritish orqali

yuqori mustaxkamlikka ega mikroarmirlangan beton olish ishlari yevropa, jumladan Germaniya kabi rivojlangan davlatlar tajribasidan o‘tgan [1].

Mikroarmirlangan betondan foydalanish tajribasi shuni ko‘rsatadiki, ushbu materialdan samarali foydalanish, har xil turdagi beton konstruksiyalarda amalga oshirilishi mumkin. Mikroarmirlangan beton, ayniqsa, yupqa va karkasli konstruksiyalarda, shuningdek, yuk ko‘taruvchi va past bosimli quvurlarda samaralidir. Mikroarmirlangan betonni qo‘llash, an’anaviy mustahkamlashni talab qilmasdan konstruksiyalarning dizayni va shaklidagi o‘zgartirisharni osonlashtiradi [2]. Betonning umumiy massasining 2,5 dan 4% gacha bo‘lgan mustahkamlash koeffitsientlari bo‘lgan sement betonida diametri 0,7 dan 1 mm gacha bo‘lgan o‘lchamlari 2 dan 4 sm gacha bo‘lgan po‘lat tolalardan foydalanish, egilish mustaxkamlikini taxminan 15-20% ga oshirishga yordam beradi [3].

Usullar.

Tadqiqotlar FDTU universitetining “Qurilish materiallari va buyumlari” laboratoriyasida, 100x100x100mm o‘lchamdagi namunalar yordamida GOST 10180-2012 talablariga muvofiq tolali temir-beton va oddiy temir-betondan tayyorlangan namunalarda olib borildgan. Sinov namunalarini ishlab chiqarish uchun GOST 8736-2014 ga mos mayda fraksiyali qum, GOST 8267-93 talablariga mos 5-20 mm fraksiyali maydalangan chaqiq tosh ishlatilgan. Beton to‘ldiruvchilar quyidagi parametrlar bilan tavsiflanadi: qum: yiriklik moduli - 2,2; to‘kma zichligi - 1480 kg / m³; suv shimuvchanligi - 6%; changsimon moddalar - 0,3%, shag‘al: massa zichligi - 1480 kg / m³; suv shimuvchanligi - 0,17%. Bog‘lovchi sifatida O‘zDSt 310.1-2016 – Portlandsement: Texnik shartlar, talablariga javob beradigan Кувасой цемент А/Ж tomonidan ishlab chiqarilgan M400 markali portland sementidan foydalanilgan. U quyidagi xususiyatlarga ega: 2 kunlik siqilishga mustahkamlik: 24,3 MPa; 2 kunlik egilishda mustahkamlik: 4,6 MPa; boshlang‘ich qotish davri: 215 daqiqa; sement pastasining normal qo‘yiqligi: 25,2%. Tolalar turlaridan -DRAMIX 3D markali po‘lat arqonli tola, po‘lat arqonli tola, po‘lat chiqindisi tolasi, polipropilen tolasi, shisha tolasi va bazalt tolalaridan foydalanilgan.

Polimer asosida yaratilgan past modulli tolalar pastroq elastik modulga ega (2... 10) * 103 MPa. Ushbu turdagi tolalar statik kuchga kam ta’sir qiladi, ammo muhimi betonning yaxshilanishini ta’minlaydi, siqilishda yorilishini kamaytiradi, zarba kuchiga va sovuqqa chidamliligini oshiradi [4].

Shisha tolali beton konstruksiyalarni mustaqkamlash uchun tolalar odatda uzunligi 10 dan 60 mm gacha bo‘lgan shisha tolali bo‘laklar shaklida qo‘llaniladi. Ushbu tola TU 21-38-233-92 ga mos keladigan ishqorga chidamli (sementga chidamli) shisha toladan yoki GOST 17139 bo‘yicha ishqorga chidamli bo‘lmagan alyumoborosilikat shisha tolasidan olinadi. Tola uzunligi konstruksiyalarning o‘lchamiga, mikroarmirlangan beton aralashmasini yotqizish usuliga va ishlatiladigan asbob-uskunalarga bog‘liq. Portland sement betonni mustahkamlash uchun ishqorga chidamli shisha toladan tayyorlangan tola ishlatiladi. Alyuminoborosilikat shisha tolasi aluminiy oksidi, sement, portland sement asosida gips yoki silikagel qo‘shilgan holda, tegishli asoslash va

cheklangan xizmat muddati bilan betonni mustahkamlash uchun ishlatilishi mumkin.



a) **b)** **c)** **d)**

1-rasm. Tolalar turlari: a) - DRAMIX 3D markali po‘lat arqonli tola; b) - polipropilen tolasi; c) shisha tolasi; d) bazalt tolasi.

Portland sementidagi alit va belit fazalari orasidagi optimal nisbatni aniqlash dispers temir-betonni yaratishda muhim rol o‘ynaydi [5]. Odatda, portland sementdagi alit tarkibining ko‘payishi ijobiy omil hisoblanadi, chunki u metall armaturani va shuning uchun po‘lat tolalarni korroziyadan himoya qilishga yordam beradi. Shu bilan birga, portland sementda alit tarkibining pasayishi va belit fazasining oshishi odatda sement gidratasiyasi muhitining shisha tolalarga agressiv ta’sirining intensivligini pasaytiradi.

Natijalar.

FDTU va TKTITI [1, 2] mutahassislari tomonidan olib borilgan tadqiqotda bazalt tolalarini modifikatorsiz va modifikatordan foydalangan holda portland sement va bazalt tolasi bilan mikroarmirlangan betonning reologik va texnologik xususiyatlarining o‘zgarishiga ta’siri o‘rganilgan.

Portland sement tarkibiga bazalt tolalarini modifikatorsiz va modifikatsiyalangan holda kiritilishi sement betonning texnologik va reologik xususiyatlarining o‘zgarishiga olib keladi va uning qotish vaqtiga ta’sir qiladi (1-jadvalga qarang).

1-jadval.

Modifikatorli va modifikatorsiz bazalt tolali sement pastalarining xususiyatlari

Ko‘rsatgichlar	O‘lchov birligi	Qo‘shimchalarsiz	Bazalt tolasi bilan	Modifikasiyalanmagan bazalt tolasi bilan
Normal quyuqlik	%	26	28	32
Qotish boshlanishi	min	143	121	141
Qotishning oxiri	min	146	212	230
Konusning yoyiluvchanligi	mm	135	118	138

Ko‘rinib turibdiki, organik modifikatorlardan foydalanish oquvchanligini oshiradi, aralashmaning ajralishga chidamliligini oshiradi va strukturani yaxshiroq bo‘lishiga yordam beradi. Bazalt tolasini qo‘shganda, harakatchanlikning

pasayishi kuzatiladi, bu dispers tola bilan bog‘liq. Shu bilan birga, organik modifikatorlardan foydalanish ularning sement zarralari yuzasida adsorbsiyasi, strukturaviy birikmalar hosil bo‘lishi va o‘zaro elektrostatik ta’sirning pasayishi hisobiga harakatchanlikning biroz oshishiga olib keladi [2]. Organik asosli modifikatorlar shunday yo‘naltirilganki, ularning gidroksil guruhlari sement zarralari yuzasiga, uglevodorod radikallari esa suvga yo‘naltiriladi.

2- Jadval.

Tajriba natijalari

№.	Bazalt tolasi miqdori, %	Modifikator miqdori, %	Qotish harorati, ºC	Mustaxkamlik, MPa
1	2	0,5	35	48
2	6	0,5	35	49
3	2	1	35	56
4	6	1	35	57
5	2	0,5	80	49
6	6	0,5	80	52
7	2	1	80	54
8	6	1	80	58

Bazalt tolasining optimal miqdori 2 dan 6% gacha ekanligi dastlabki tadqiqotlarda aniqlandi va yuqoridagi jadvalda faqat shu oraliq ma’lumotlar keltirildi. Modifikator qo‘shimchaning miqdori 0,5% dan 1% gacha o‘zgarganda, mustaxkamlik 18-25% ga oshadi. Materialda modifikatorning bir xil taqsimlanishini va sement zarralarini gidrasiyasini ta’minlaydigan optimal qotish harorati 30 dan 65 °C gacha.

Muhokama.

Dastlabki beton materialida sement zarralarining zich joylashmasligi tufayli g‘ovak hosil bo‘ladi, ular qotish jarayonida ohak kristallari $Ca(OH)_2$ bilan to‘ldiriladi. Bazalt tolasi va organik asosli modifikator qo‘shilgan namunalarning mikrotuzilishi nazorat tarkibiga nisbatan ancha zichroq. Modifikasiya qiluvchi qo‘shimchalarning kiritilishi kapillyar g‘ovaklikning kamayishiga va shu bilan birga kalsiy silikat gelini hosil qiluvchi mayda gel poralari sonining ko‘payishiga olib keladi. Matritsaning zichlashishi kuzatiladi, bu kompozitning zichligi va mustahkamligini oshiradi. Organik asosli modifikatordan foydalanganda struktura mustaxkamligi, sifatli maxsulot hosil bo‘lishini ko‘rsatadi. Nazorat tarkibidan farqli o‘laroq, modifikatorli materialda kalsiy gidrosilikatlarini hosil bo‘lish miqdori qattiqlashuvning dastlabki bosqichlarida (3 kun) sezilarli darajada ortadi. Modifikasiyalanmagan tarkibda qotish davomida (28 kun), material yuzasida kalsiy gidrosilikatlarining igna shaklidagi va uzun kristallari ko‘rinadi. Struktura bir hil zich tuzilish bilan tavsiflanadi.

Bazalt tolasi miqdori qattiq komponentlarning umumiy og‘irligining 2% ni tashkil qiladi. Mahalliy korxonada ishlab chiqarilgan 10 mm dan ortiq bo‘lmagan uzunlikdagi oldindan kesilgan bazalt tolasi ishlatildi. Tayyorlangan sement aralashmasiga quruq ingredientlarning og‘irligi bo‘yicha 2% miqdorida tola qo‘shildi. Sement pastasida bazalt tolasining tarqalishi skanerlash elektron

mikroskop yordamida o‘rganildi. 1-rasmda bazalt tolasi bilan mikroarmirlangan betonning fotosuratlari ko‘rsatilgan.



1-rasm. Bazalt tolasi bilan mikroarmirlangan betonning fotosurati va mikrotasvirlari

Ko‘rinib turibdiki, bazalt tolasi beton konstruksiyada bir tekis taqsimlangan. Ushbu bir xil taqsimlanish organik asosli modifikator tufayli hosil bo‘lgan mikroarmirlangan betonning reologik xususiyatlarini oshiradi.

Xulosa.

Bazalt tolasi asosida olingan fibrobeton na’munalarini mustaxkamlik xossalarini 3 ta seriali beton tarkiblarida o‘rganildi va tola kiritish orqali olingan betonning mustaxkamligi o‘rtacha 15-20% ga ortgani kuzatildi. Shuni aytish joizki, bazalt tolasining sinishi, cho‘zilishi po‘lat tolaning ushbu ko‘rsatgichiga nisbatan past. Bu bazalt tolalariga yuklarning ta’sirida, betondagi mikro yoriqlar paydo bo‘lishini yanada samarali oldini olishga imkon beradi. Bazalt tolasining bu xususiyatlari uni betonning xossalari va uning strukturaviy mustahkamligini yaxshilash uchun asosiy misol bo‘la oladi, po‘lat tolalardan foydalanish bilan bog‘liq kamchiliklarni minimallashtiradi.

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O'ZBEKISTONDA OCHIQ OSMON OSTIDA ETNOGRAFIK MUZEY KOMPLEKSLARNI TASHKIL QILISH KONSEPSIYASI TOSHKENT SHAHRI MISOLIDA

Annotatsiya: *Tarixiy shaharlardagi “eski shahar” gismidagi ochiq osmon ostida tashkil qilingan etnografik muzey komplekslar milliy an'analarimizni zamonaviy tajribalar asosida uyg' unlashtirib, kompleks-rejali tashkil etilishi milliy me'morchilik an'analarining o'ziga xos xususiyatlarini saqlab golishi bilan bir qatorda noyob osori-atiqalarni kelajak avlod uchun asrab-avaylaydi. Shaharning badiy-estetik qiyofasini oshirib, mamlakat iqtisodiyotini jadal va mutanosib rivojlantirishda, turistlarga xizmat ko'rsatish sifatini tubdan yaxshilab turizmni ravnaq toptirishda muhim o'rin tutadi.*

Kalit so’zlar: *turizm, muzey, dizayn, eski shahar, arxitektura, loyiha, majmua, tarixiy shahar.*

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THE CONCEPT OF ORGANIZING ETHNOGRAPHIC MUSEUM COMPLEXES UNDER THE OPEN SKY IN UZBEKISTAN ON THE EXAMPLE OF THE CITY OF TASHKENT

Annotation: *an ethnographic museum organized under the open sky in the “Old City” gism in historical cities complexes will preserve unique osori-atikas for the future generation, in addition to the fact that their complex-plan organization will preserve the peculiarities of the national architectural tradition by domesticating our national traditions on the basis of modern experiences.nnotation: an ethnographic museum organized under the open sky in the “Old City” gism in historical cities complexes will preserve unique osori-atikas for the future generation, in addition to the fact that their complex-plan organization will preserve the peculiarities of the national architectural tradition by domesticating our national traditions on the basis of modern experiences. Increasing the Badi-aesthetic appearance of the city, it plays an important role in the rapid and balanced development of the country's economy, in the development of Tourism prosperity, which radically improved the quality of services to tourists.*

Keywords: *tourism, museum, design, old city, architecture, project, complex, historical city.*

Tarixni anglashda uni kelajak avlodlarga qoldirishda muzeylar juda ham katta ahamiyatga ega hisoblanadi. O'zbekiston Respublikasi tarixiy shaharlari turizm salohiyatini yanada oshirish, kelayotgan mehmonlarga yanada xizmat sifatini yaxshilash , milliy ma'daniy arxitekturamizning jozibadorligini yanada targ'ib qilishda ochiq osmon ostida tashkil gilingan etnografik muzeylar o'rni begiyosdir. Mamlakatimizda turizm sohasi jadal sur'atlarda rivoj topayotgani bois, turizm komplekslar arxitekturasi qisman tahlil etilgan va o'rganilgan. Hozirda turizm majmualarining hajmiy tarxiy yechimi muammolari, kompleksning landshaft dizayn yechimini to'g'ri tashkil qilish masalasi va shu bilan bir qatorda majmua atrofida milliy ruhdagi zamonaviy arxitektura muhitini tashkil etish dolzarb masala bo'lib kelmoqda.

Tarixdan ma’lumki, O'zbekiston Turon, Movaraunnaxr, Turkiston deya atab kelingan va «Buyuk ipak yo li»da joylashib Sharq bilan G' arbni bog lovchi, ularni iqtisodini, madaniyatini, san'atini, taraqqiyotini bog lab turadigan bir makon bo lgan.

«Buyuk ipak yo li»ning vorisi sifatida O' zbekistonga ko plab mamlakatlar AQSH, Yaponiya, Germaniya, Fransiya va Italiya kabi davlatlar juda katta qiziqish bilan qaramoqda. Ular ajdodlarimiz me ros qilib goldirgan muzeylarimizada saqlanayotgan noyob osori-atiqalarni ko rish, qadimiy-tariximiz, boy madaniyatimiz bilan tanishish istaklarini bildirmoqdalar.

Buning misoli sifatida AQShdagi Markaziy Osiyo muzeyi direktori, Pensilvaniya universitetining professori, doktor Fredrik T. Xiberg - «Amerika Qo'shma Shtatlarida qadimiy «Buyuk ipak yo li» da joylashgan, uyg onish davrida ham, orta asrlarda ham jahon taraqqiyotining, ilm-fan rivojining o chog'i, buyuk allomalar makon topgan, boy tarixi, madaniyatga ega bo lgan bugun ham katta ilmiy-iqtisodiy taraqqiyot imkoniyatlariga ega bolgan sizning O' zbekiston Respublikangizga hurmat, qiziqish juda kattadir»,-deb yozadi Islom Karimovga yo llagan xatida.

Shu boisdan O’zbekistonda 90-yillardan keyin ko plab muzeylar mamlakatning turli joylarida o z ishlarini boshladi, ko plab muzeylar butunlay yangidan barpo etildi, boshqalari kapital ta mirdan chiqarildi.

1999-yilda O’zbekistonda davlat tasarrufidagi muzeylar soni 81 taga yetdi, ulardan 15 tasi tarix muzeyi, o Ikashunoslik muzeylari soni 23 tani va 10 ta badiiy muzeylai, 20 ta memorial, 8 ta adabiyot, 4 ta tibbiyot muzeylarini tashkil etildi.

O’zbekistondagi 10 ta yirik shahar tarixiy shaharlar ro yxatga olingan hisoblanadi masalan: Buxoro, Samarqand, Xorazm, Qo qon va boshqalar. Ayniqsa Samarqand juda ham tarixiy obidalarga boy shahar hisoblanib har yili juda ko p xorijly mehmonlar tashrif buyuradi.

Bugungi kunga kelib esa 350 dan ortiq muzey va muzey faoliyati bilan bog'liq ko'rgazma muassasalari mavjud. Madaniyat vazirligi ma' lumotlariga ko ra, ularning 90 tasi davlat muzeylaridir.

Ochiq osmon ostida etnografik muzey komplekslarni tashkil gilish g'oyasi birinchi bolib, Shvetsariyalik olim Charliz De Bonstten tomonidan 1790-yil oldinga tashlangan. Unung g'oyasi bo yicha bunday muzeylarda hagiqiy tarixiy turar joy binolarini joylashtirish bilan birgalikda ularni ichgi va tashqi muhitida usha davrlarga hos holatni, uy jihozlari , mebellari, asvob anjomlar bilan saqlab golish bo'gan. Lekin u bu vaqt mobaynida Dany shahrida yashagan, ammo u taklif gilgan muzeyni "shoxona park" ya'ni shimoliy Zellandiyadagi bog'ga mo'ljallagan.

Undan keyinroq, 1867-yida O'slin shahriga yagin yerda dehqonlar uylarini, yog'och konstruksiyali cherkovni olib kelib o rnatishgan va muzey tashkil gilishga urinishlar bo'lgan. Yana, 1872-yilda Stok Golim shahrida etnografik muzey "severniy muzey" tashkil etildi. Aynan shu bog' muzey ichida 1890-yilda pedagok A. Gezelius xalq uchun , keng omma uchun mashhur "Skansen park" ni tashkil qiladi.

Bunday qoriqxona muzeylarni tashkil qilishni asosiy prinspi quyidagilardan iborat: ma'lum u yoki bu shaharda alohida yer maydoni tanlab, butunlay, xech qayeri o'zgartirilmagan holda, butun boshli uylarni, jamoat binolarini, olib kelib o’rnatishdan iborat bolib, yana ana shu etnografik muzey qo riqxonalarga ma lum bir kasb egalari, hunarmandlar kelib joylashganlar, ish vaqti tugagach, o’z uylariga ketishgan yoki shu yerni o zida istiqomad qilishgan.

Xo’jalik xonalari va yashash xonalarida, xona ichidagi jihozlar o'sh qadimgi holicha qayta tiklashgan.

Yuqorida aytib o'tganlarimiz, hozirgi kunda ham saqlanib qolgan. Bunday qo riqxonalar ayniqsa bayram kunlari gavjumlashgan. Chunki, bayram kunlarida ko chalar, shaharcha sayilgohlarida, xonadonlar, savdo rastalarida milliy kuy navolar, raqslar, turli milliy o yinlari va osh yer aholisiga hos qadimiy taomlar tayyorlashgan va tashrif buyurganlarni ham bularda ishtirok ettirishga harakat qilishgan. Muzeyni tashkilotchilari xalq ijodiyotini keng targ’ib qilishga harakat qilganlar.

Bu muzeydagi asosiy qurilmalar 59-ta kompleksdan iborat bo’lib, dehqonlar uylari, xo’jalik qurilmalari v.h.k bo lib, ularning eng qadimiysi XVI-asrga borib taqaladi. Turar - joylar, ombor xonalar va boshqa qurilmalar mamlakatni har xil yerlaridan olib "ko'chirib" keltirilgan bo’lib, u 30 gektarni tashkil qilgan.

Undan tashqari "Skansen park" da tashrif buyuruvchilarni zeriktirib qo’ymaslik maqsadida, ko'ngil ochar o’yinlar tashkil etilgan va yana bu shaharchada kichik hayvonot bog'i tashkil qilingan. Keyingi yillarda turli mamlakatlarda shunga o'xshash etnografik muzey qo riqxonalar barpo etila boshlandi.

Ruminiyadagi "Satuli" muzeyi o'ziga xos bo'lib, uni ajralib turadigan yeri, undagi eksponatlarning sonini ko pligidadir. Muzeyda 70-ga yaqin ansambl bo lib, u o'z ichiga 300-ta binoni qamrab olib, undagi dehqonlar buyumlari 2000 tadan oshadi.

1924-yilda Sobiq Sovet ittifoqida birinchi bo'lib, Latviya respublikasida, shunday go'riqxona ochilgan. Bu Riga shahrining markazidan 12 kilometr uzoqlikda joylashgan, u yam-yashil bog' ichida, Yugla daryosi bo’yida joylashgan.

Uning umumiy maydoni 97-gektarga yetadi.

Metodologiya va tadqiqot usullari Turar joy binolarining kelib chiqishi, xalq arxitekturasi sohasidagi nazariy va amaliy yutuqlarni har tomonlama tahlil qilishga asoslangan.

Sifatli tadqiqot metodologiyalarida ma'lumotlar ,manbalarni to'plash uchun keng tarqalgan turli xil usullar mavjud.

Toshkent shahrining markazida, "Chorsu" chorraxasida joylashgan "Shaxriston" maydoni hozirda Gulbozor mahallasi bo'lib, uning predmeti an'anaviy turar - joy binolari va xalq hunarmandlarining savdo rastalaridir. Shundan kelib chiqqan xolda Toshkent shahrining tarxiy tarkibi Temuriylar davridan boshlab to shu kungacha bo'lgan xolatini arxiv materiallaridan ya'ni rus olimlarining va harbiylarning sovet tizimigacha bo lgan davrdagi o'rgangan va chizgan xarita (karta) larini topib o'rganildi.

Abdumannop Ziyayev o'zining "Базары Ташкента" kitobida ta'kidlashlaricha X - XII asrlarda aynan "Chorsu" chorraxasida "Chorsu" bozoridan Buyuk Ipak Yo'li o'tgan. Aynan shu bozorning Janubiy gismida "Shaxriston" joylashgan bo'lib u ikki qismdan iborat bo'lgan, bular: 1. Ark va uning g'arbiy qismida joylashgan hunarmandlar uy joylari, ustaxonalari va savdo rastalaridir.

Savdo rastalari bilan shakllangan, shaharlar markazi va shaharlar markazini o rab turuvchi, rabot (shahar chetidagi kichik shaharcha, daxa) larni bog'lab turuvchi, xarakterga ega bo Igan ko chalar, asosan savdo shaharlari bo lib, Toshkent va Andijon shaharlarida keng tarqalgan.

Bu shaharlarda bozor maydoni, shaharning boshqa maydonlariga nisbatan ko proq joy egallagan, bunga misol qilib Samarqandni yoki Buxoroni olishimiz mumkin. Toshkent shahrida 12-ta darvoza bo’lgan.

(XVI - XVII asr) Eski Toshkant qaysiki o'zining o’lchami bo yicha kichkina bo’lgan shaharcha bo’lib, o'zining shaxristoniga ya’ni markaziga ega va savdo maydoniga ega bo lib, bu davrga kelganda u, o’zining katta savdo markaziga ega bo'lgan, shaharga aylandi. Bu davrda shahar sezilarli darajada kengaydi. Uning markaziy qismidagi asosiy maydonni, bozor egallagan va uning asosiy markazida savdogarlar uchun alohida joy ajratilgan. Bulardan tashqari shahar markazida choyxonalar, oshxonalar, qushxona (qassob xona)lar va boshqa maishiy xizmat ko rsatish rastalari uchun joylar ajratilgan.

"Toshkent shahri yirik savdo markazi bo'lgan" degan edi A.Geniy. - u markaziy Osiyo shaharlari, Rossiya va sharq mamlakatlari bilan savdo qugan.

Asosiy bozor, shahar markazida joylashgan bo lib, u o'zining xarakteridan kelib chiqgan xolda, alohida rastalardan iborat edi, ya'ni sotiladigan mollariga qarab, alohida rasta gatorlaridan tashkil topgan. Bunday savdo rastalar qatori 30-taga yaqin bo’lgan.[11]

[11] Лавров Виталий Алексейвич. "Градостроительные культуры Средне Азии".: Moskva - 1950. 110- 112 b. Bob oldi -3; 5- bob

Boroltning fikri bo’yicha, X asrlarda Toshkentni Binket deb atalgan.

Shahar ikki qatorli devor bilan o’ralgan bo lib, uning tashqi devorida 7-ta darvoza bolgan. Ichki devorda esa 10-ta darvoza bolgan. Bular: "amir" darvozalari, "xogon" darvozalari va "xonagasir" darvozalaridir. Shahar markazidagi shaxriston 3-ta darvozaga ega bo Igan, bular: (Abdul Abbos, Kesh va Junayt) darvozalari.

Shariston markazidagi Arkda esa 2-ta daivoza bolgan, ulardan biri Shaxristonga olib chiggan bolsa, ikkinchisi Rabotga olib chiggan. Saroy va zindon Ark ichida joylashgan. Juma masjidi esa Arkdan tashqarida joylashgan. Bozor esa Arkga yaqin joyda joylashgan. Bozorning bir gismi, shaxristonda joylashgan bo’lib, bir qismi Rabotga ulanib ketgan.

Boz suv anxori Toshkent shahrini shargidan g'arbigacha taxminan ikki gismga ajratgan. Bu ikki qism ham o'z navbatida yana ikki gismga bo’lingan, bular Shayxontohur, Sebzor, Ko'kcha va Beshyog och daxalaridir. Shahar paxsa devorlar bilan o raglan bolib, unda 12-ta darvoza bolgan va ikkita oddiy o’tadigan joy bolgan. Hai-bir gisida uchtadan darvoza bo’lgan.

Birinchi gismda- quyidagi darvozalar bolgan: Labzak, Taxtapul va Qorasaroy darvozalari. Ikkinchi qismda- quyidagi darvozalar bolgan: Sag’bon, Chig’atoy va

Ko’kcha darvozalari. Bular Bozsuvni bir tomonida bo’lib, keyingi qismlar bilan, bu qismlar o’rtasidan Sag’bon ko’chasi kesib o’tgan.

Uchinchi qismda- quyidagi darvozalar bo’lgan: Komolon, Samargand va Beshyog’och darvozalari.

Tortinchi qismda- quyidagi darvozalar bolgan: Qo’ymas, Qo’gon va Qashqar darvozalari, bu gismlar o rtasidan Beshyog’och ko’chasi kesib o’tgan.

Katta va asosiy bozor shahar markazida joylashgan.[12]

Toshkent shahri bir garaganda ingichka ilon izi va boshi berk ko shalardan iboratligi sezilib turadi, buni ayniqsa shaharni xarbiy tapografik plan kartasida korsa bo ladi. Shaharni haqiqiy ko’rinishini 1916-1917 yillarda "25-soajen" mashtabga ega bo’lgan xo jalik planda ko rish mumkun (*baxolovchi statistic byuro tomonidan tayyorlangan Toshkent shahrining 1911-1914 yillarda qurilgan kartasi, 1912-1915 yillarda undan ham kattaroq nashtabda gilingan. Shaharning bunday planirofkasi yani, ko’chalarning shahar markazidan tashqariga radial xolqa targashi Moskva shaharining planirfkasiga o’xshab ketadi.[13]

Ochiq osmon ostidagi etnografik muzey uchun eng qulay, mos va tỏg'ri joy - bu Toshkent shahrining hozirgi "Chorsu" maydonida joylashgan va asosan yaxshi saqlanib golgan "Shaxriston" hozirgi Gulbozor mahallasi deb hisoblanadi.

Shariston hozirda besh - yetti gektarga yaqin bo'lgan maydonga ega bo lib, Shimoliy tarafidan "Chorsu" bozori, G'arb tarafidan "Zarqaynar" ko’chasi, Janubiy tarafidan "Navoiy" ko'chasi bilan chegaralangandir.

Hozirda Shaxriston maydonida tarixiy yodgorliklardan "Gulbozor" masjidi

[12] A.I. Dobrosmislov; "Ташкент В прошлом и настоящем" istoricheski ocherk.:T-1912; (42-43-48 b.)
[13] N.G.Mallitskiy; "Tashkentskiy maxallya I mavze". :T-1927

saqlanib golgan. Jome' masjidi buzilib, tashlanib gaytadan, qurilgan. Masjidning Shimoliy tarafida bo'lgan "Xo'ja - Ahror Valiy" madrasasi buzilib ketgan, ammo uning poydevoridan goldiqlar saqlanib golgan. Undan tashqari "Shaxriston" ning sharqiy tarafida Ko'koldosh madrasasi saqlanib qolgan va qayta ta'mirlangan.

Tarixiy manbaalardagi va olimlarning olib borilgan izlanishlaridagi (8 - 20 asrlar) kartalarni o'rganish natijasida va Shaxristonning hozirgi tarxiy xolatini o'rganish natijasida ular orasidagi tafovut juda kam. Bu holat ayniqsa Shaxristondagi asosiy ko'chalarda kuzatiladi. Lekin, bu yerdagi turai - joy binolari albatta vaqt o'tishi bilan bir necha o'n va xatto yuz marotaba o' zgargan bo lishi mumkin. Bularga asosiy sabablardan biri: vaqt o'tishi bilan har bir xonadonda oilaviy o'zgarishlar natijasida katta hovlilar bo'linib alohida kichkina xovli va shunga yarasha uylarning paydo bo'lishi, vaqt ta'sirida uylarning eskirishi, zil - zilalar bo'lib turishi v.h.k. shunga qaramasdan Shaxriston maydonida tarixiy, arxitekturaviy va ilmiy ahamiyatga ega bo'lgan turar - joy binolari bor, va ular bu yerdagi jami uylarning taxminan 10 - 15 %ni tashkil qiladi.

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ON THE SCIENTIFIC SOURCES OF THE CHISHTIYA AND NAKSHBANDIYA MUJADDIDIYA OF TARIKA

Abstract: *tasavvuf and its definition in this article the essence of the doctrine of central asia and the indian will go into the land and coming too it's stuck. Also this tariqat of the attitude to the science of fiqh of the case studies performed at the level of regions and their brief content has been reflected in.*

Keywords: *Tasavvuf, india, tariqat, chishtiya tariqat, the naqshbandiya-mujaddidiya tariqat, the science of fiqh and the like.*

"Tasavvuf – ma'rifatullohni on the one hand, while on the other hand tazkiyai desire (desire for purity)and in the same way, which teach you to express actions, and realize that you need to do to achieve those instances which they mean this is a science"[14].

We have passed tasavvuf causing a given image to another in the same place, Malic ibn anas roziyallohu anhu they say: - "tasavvuf're tafakkuh Anyone as a result of (i.e., tasavvuf ichni tied to education without fear and ixlosni, because of the faqih irfon to support consumption in religion ahkom out, does not absorb the knowledge) has faqih and sufi people already, if it is fosiq. Sufi anyone, and if it is not already faqih is a zindiq. Religious things, the quran, one can create sharif, learn the fiqh, sharia from axkomi voqif tasavvuf shung'igan not to stand to the spiritual life from the rest of twine sensitive areas will be ignorant people. Anyone, and the thought of combining tasavvuf (that is, the community are able to also botinan made, and high, orif, and the perfect man) is muhaqiq be, you will attain to the truth.

As it is known from history, such as the above noble qualities he could use the practice, and who show the tariqat of not too little. According to the way they keep their activities during the quran and the hadis.

Chishtiya and Naqshbandiya-Mujaddidiya fiqhiy scientific sources the main sources of islam are also mainly of the tariqat – based on the qur'an and the hadis.

Consequently, the chishtiya verse of the qur'an, islam's main source of tariqat and his deep gives emphasis to the study. Chishtiya tariqat of our prophet muhammad (s.a.. v) and that is the source of holy hadis's also attaches great importance to learn them. This tariqat of specific literature, for example, "fal fuad avoid passing", "kashf al-mahjub" and others by o'teeth can.

[14] Тасаввуф ва нақшбандийлик (манбалар ва ҳикматлар) / Таржимон ва сўзбоши муаллифи: С.Сайфуллоҳ. Масъул муҳаррир: У.Алимов; Ўзбекистон мусулмонлари идораси. – Тошкент: "Ўзбекистон", НМИУ 2019.- 158 б.

Naqshbandiya-mujaddidiya of the qur'an as the main source of chishtiya tariqat also tariqat islam and our prophet muhammad (s.a.. v) the source of all that is holy hadis's gives great importance to study them.

Naqshbandiya-Mujaddidiya tariqat tariqat of the specific literature, for example, “letter-imaging studies will my lord I”, “risalat al-qushayriyya,” and others may also learn.

Although both are also its main source tariqat islam based on their specific, there is no difference, they are the following:

The fiqh of chishtiya tariqat of the main sources of the study, along with the tariqat attaches great importance to specific literature. Their main aim is to achieve near to allah and spiritual identities.

Naqshbandiya-mujaddidiya while the main purpose of the study the main sources of fiqh in tariqat in addition to the practical work is to find the right way and in obedience to allah. As we have seen, based on their goals, even as both islam tariqat also similar to each other although they are also its main source, but ways and their methods are slightly different. For example, chishtiya the importance of fiqh in tariqat is very great. They fiqh islomning the basic principles and rules o‘rga important to consider carrying the tool.

First of all, chishtiya a tariqat’of allah orders and will ban zolari will learn and try to apply them. This to allah their toe‘enhances did obey it.

Secondly, this peter and the disciples charlottethe life of riga, the various jewelsin the world should live, how impressdi. They fiqh through prayers, marriage, financial issues and many other issues are taught to do. Third, a fiqh by society’zolari o‘regulation of relations in rtasi, protection of rights and justice ta’minlash to try. Fourth, the representatives of this tariqat o fiqh‘spiritual identities are trying to achieve through the use of rga. Through the study of rules and principles of fiqh to approach allah and they are trying to achieve spiritual purity. It should be mentioned that, to teach love and mercy of allah fiqh tariqat members of the chishtiya, as well as to men of mercy and compassion are also taken into account.

In short, the members of this tariqat during the study of fiqh, are trying to achieve the following goals:

- The fiqh of islam's basic principles through the study of chishtiya tariqat members to understand how to apply in practical life of deep.
- Through the study of fiqh, the fulfillment of allah through prayer and this approach adheres to try.
- Follow the rules of islam in all spheres of lifeto live b. The marriage, including financial issues, social relationships and others.
- Stabilize society for justice and peace in the society by ensuring members of the chishtiya chapter fiqh tariqat will try to contribute to justice and peace.

In general, chishtiya through the study of the fiqh of the members of tariqat islomning are deep practical understanding of the rules. The importance of fiqh in tariqat Chishtiya expressed in a variety of ways. Popular units of chishtiya

shayxlari tariqat'the importance of education in fiqh great. For example, Shayx Chishtiy Muinuddin, and saint Fariduddin shayx Nizomuddin shayx atta is as popular as the depth of the network to learn the basic principles of islam, fiqh shayxu of his obedience to allah and to realize that it is necessary to strengthen located. Their disciples deep fiqhga e'tibor were motivated to give.

- Chishtiya to apply in practical life of the members of the tariqat of the rules of fiqh give great attention. The fulfillment of their prayers, marriage and fiqhga to follow in addressing the issues of inheritance, as well as in providing justice and peace in the society of the principles of fiqh are trying to use.
- Spiritual identities that can achieve through fiqh is noted. In their opinion, of the rules of fiqh o'Allah will draw through use rga will attain human and spiritual purity.
- Members of chishtiya tariqat try to apply them in practical life and learn the many books on fiqhga. For example, "fiqh-ul-I theslogan" books like cand tariqat in common by the members hishtiya are studied.

Mutually are held in members are sharing thoughts and discussions on fiqhga chishtiya tariqat. Through this discussion, members are more deeply to understand the rules of fiqh and learn how to apply them in practical life. T through this theypassed during the stages of burn, in a certain sense to help maintain a gingerbread man towards perfection will help.

In this regard, the definition of a perfect man giving Nasafiy Azizi writes: "Bilginki, as a perfect man shariah and tariqat people that are really mature and they will tell you understand this phrase, the other with the phrase, let's say: bilginki perfect human human so, when you are growing the following four things: good words, good character, good conduct and china"[15].

Naqshbandiya-mujaddidiya in tariqat overestimate the importance of the qur'an and the hadis. The basic principles and rules of islam's two holy this source were considered the most important source of studying.

The depth of the riches both of the'oni k- bee and I hadi won't naqshbandiya-mujaddidiya tariqat has the following significance:

✓ Naqshbandiya-mujaddidiya tariqat of these two representatives will realize its true essence through the study of the holy source of islam and try to follow it.

✓ The depth of the riches both of the'oni'an and the hadis shows the way to achieve spiritual identities. Naqshbandiya-mujaddidiya tariqat to approach allah through the study of these two members of the holy source, to achieve spiritual purity and are trying to improve themselves away from worldly affairs.

✓ The depth of the riches both of the'oni k- bee and I hadi will give you instructions about how you should live, not in practical life.

✓ Naqshbandiya-mujaddidiya tariqat these two members of the regulation of relationships between members of society through the study of the holy source, protection of rights and justice are trying to provide.

[15] Комилов Н. Тасаввуф. – Т.: 1996. – Б. 143.

Conclusion in words, tasavvufsiz islomiy toe to rise‘was lmas. Tasavvuf the man without the man can't be perfect. Intilma from the perfect man who does not work out to perfection for a perfect, permanent noqis, bad habits out. Thisalso has its own history to their proved on the basis of experience.

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ATHE ROLE OF AI-BASED DISTANCE LEARNING PLATFORMS IN ENHANCING WOMEN'S COMPETITIVENESS IN THE LABOUR MARKET

Abstract: *Artificial intelligence (AI)-based distance learning platforms are becoming crucial tools in addressing gender disparities in education and employment. These platforms provide women with flexible, personalised, and accessible learning opportunities that help overcome socio-cultural and structural barriers. By offering adaptive curricula, real-time feedback, and skill-oriented training, AI technologies enable women to acquire competencies that are highly demanded in the digital labour market. Evidence from recent studies indicates that AI-driven distance learning enhances women's employability, supports lifelong upskilling, and contributes to narrowing the digital skills gap. However, challenges such as affordability, unequal access to technology in rural areas, and algorithmic bias may hinder its full effectiveness. Despite these limitations, the integration of AI into distance learning represents a powerful instrument for promoting women's empowerment, competitiveness, and participation in knowledge-based economies. This paper explores both the opportunities and risks of AI-based learning in order to provide policy recommendations for fostering inclusive growth and gender equality.*

Keywords: *AI-based learning, distance education, women's competitiveness, labour market integration, digital literacy, skill development, gender equality, online training, employability, women's empowerment.*

Introduction

The transformation of the global economy under the influence of artificial intelligence (AI) has significantly reshaped both education and labour markets. In particular, AI-based distance learning platforms have emerged as powerful instruments to foster women's empowerment and competitiveness in the labour market. These platforms provide flexible, personalised, and accessible learning opportunities that are especially valuable for women facing socio-cultural and structural barriers such as unequal access to education, family responsibilities, and geographic limitations. By offering adaptive learning paths, real-time feedback, and skill-based training, AI technologies enable women to acquire digital competencies that are increasingly demanded in modern economies.

In the context of Uzbekistan, the government has prioritised the digitalisation of education and gender equality as part of national development strategies. The "Uzbekistan – 2030" strategy emphasises the importance of human capital development, innovation, and women's participation in socio-economic

life as key drivers of inclusive growth[16]. Furthermore, the Presidential Decree "On measures to further improve the system of distance education in higher and professional institutions" highlights the integration of digital technologies, including AI, into education as a strategic goal[17]. Other state programs, such as the Decree "On the Strategy for Achieving Gender Equality in Uzbekistan until 2030," reinforce the role of education and digital learning in reducing gender disparities in employment[18]. By combining these initiatives with global trends in AI-based learning, Uzbekistan is aligning its policies with international practices aimed at empowering women in the labour market.

At the same time, studies have shown that women's employability is closely linked to access to lifelong learning and digital skills[19]. AI-based platforms are uniquely positioned to support women not only in acquiring professional knowledge but also in enhancing soft skills such as leadership, communication, and adaptability. However, challenges remain, including affordability, technological infrastructure in rural areas, and the risk of algorithmic bias that may reproduce existing inequalities if not addressed[20]. These factors underline the importance of effective governance, public-private partnerships, and continuous monitoring of digital education reforms.

Therefore, analysing AI-based distance learning platforms is crucial for understanding their role in enhancing women's competitiveness in Uzbekistan and beyond. This study aims to contribute to the academic and policy discourse by evaluating the opportunities and challenges of integrating AI into distance education and its long-term implications for women's participation in the labour market[21].

Literature Review

The growing body of academic literature highlights the pivotal role of artificial intelligence (AI) and distance learning in reshaping global education systems and labour markets. International scholars argue that AI-driven educational technologies offer learners adaptive curricula, data-driven assessments, and personalised learning trajectories, which significantly enhance their employability prospects[22]. These innovations are particularly relevant for women, who often encounter barriers in accessing traditional educational institutions due to socio-cultural constraints and familial obligations[23]. Studies also demonstrate that AI-based platforms facilitate continuous professional development and equip women with essential digital competencies, thereby

[16] Presidential Decree of the Republic of Uzbekistan No. PF-158, dated September 11, 2023. *On the Uzbekistan – 2030 Strategy and the State Program for Its Implementation in 2023*.
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strengthening their competitiveness in an increasingly knowledge-intensive labour market[24].

From the perspective of gender equality, researchers emphasise that digital education has the potential to reduce structural inequalities by broadening women's participation in high-demand fields such as information technology, finance, and entrepreneurship[25]. However, some scholars also caution that algorithmic bias and unequal access to digital infrastructure may reinforce existing disparities if not carefully addressed[26]. In this regard, policy-oriented research has stressed the necessity of integrating AI-based distance education within broader frameworks of inclusive growth and sustainable development.

Uzbek scholars have similarly contributed to the discourse, underscoring the significance of digitalisation in national development and women's empowerment. For example, Q. N. To'xsanov and D. B. Abdusattorova underline that modern educational reforms in Uzbekistan are inseparable from the wider socio-economic transformation envisioned in the "New Uzbekistan" strategy, where women's active labour market participation is considered a fundamental driver of progress[27]. Moreover, Uzbek researchers highlight that the effective application of AI-based distance learning platforms requires not only technological innovation but also comprehensive institutional support, particularly in rural regions where access to education remains limited[28].

Overall, the literature indicates a consensus that AI-based distance learning platforms can substantially enhance women's competitiveness in the labour market, provided that challenges of affordability, accessibility, and inclusivity are adequately addressed. This dual perspective—drawing on both global best practices and national reforms—provides a solid foundation for further empirical investigation in the context of Uzbekistan.

Research Methodology

This study employs a qualitative research design aimed at exploring the role of AI-based distance learning platforms in enhancing women's competitiveness in the labour market. The methodology is grounded in a systematic review of academic literature, government policy documents, and international reports, which provide both theoretical and practical perspectives on the subject. The research relies on secondary data sources, including publications from global organisations such as UNESCO, the World Bank, and the OECD, as well as national legal acts and decrees of the President of the Republic of Uzbekistan related to education, gender equality, and digital transformation. By adopting a document analysis approach, the study seeks to identify key themes, opportunities,

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and challenges associated with the integration of AI into distance education systems.

The literature was selected using purposive sampling, focusing on works published between 2018 and 2024 to ensure relevance to current trends in digital learning and labour market dynamics. Particular attention was given to studies addressing gender issues, digital literacy, and women's empowerment in the context of technological innovation. Uzbek scholarly contributions were also reviewed to capture local perspectives and to align the research with the strategic objectives of the "New Uzbekistan" development agenda. To enhance validity, the analysis triangulated findings from international and national sources, allowing for a more comprehensive understanding of the phenomenon under study.

The methodological framework is interpretive in nature, aiming not only to synthesise existing knowledge but also to generate insights that can inform policy recommendations. Limitations of the study include reliance on secondary sources, which may not fully reflect individual experiences of women engaged in AI-based distance learning. Nevertheless, the chosen methodology provides a robust foundation for evaluating the potential of digital education reforms in advancing gender equality and labour market competitiveness.

Analysis and Discussion of Results

The findings of the study reveal that AI-based distance learning platforms significantly contribute to enhancing women's competitiveness in the labour market by improving access to education, digital skills, and professional development opportunities. However, the impact of these platforms varies depending on socio-economic conditions, availability of technological infrastructure, and state support mechanisms.

Table 1.
Comparative Analysis of Opportunities and Challenges of AI-Based Distance Learning for Women

Key Dimension	Opportunities	Challenges
Accessibility	Flexible learning schedules enable women to balance education with family and work responsibilities	Limited internet access in rural areas restricts equal participation
Skill Development	AI-driven adaptive curricula provide personalised training in digital literacy, entrepreneurship, and STEM fields	Algorithmic bias may limit fair representation of women in certain courses or assessments
Labour Market Impact	Increased employability, opportunities in remote jobs, and higher participation in knowledge-based sectors	Persistent gender wage gap and underrepresentation in leadership positions
Policy Alignment	Supported by Uzbekistan's *New Uzbekistan Development Strategy* and national decrees on gender equality and digital education	Implementation gaps due to insufficient funding and a lack of local expertise
Long-Term Effects	Promotion of women's empowerment and inclusive economic growth	Risk of digital divide reinforcing socio-economic inequality

The analysis demonstrates that AI-based distance learning platforms act as a double-edged sword: while they enhance women's employability and competitiveness, structural challenges remain. Evidence suggests that women benefit from flexible schedules and adaptive learning pathways, which help them acquire highly demanded skills such as coding, data analysis, and financial literacy[29]. These competencies are aligned with Uzbekistan's national strategy, which prioritises human capital development as a pillar of sustainable economic growth[30].

Nevertheless, socio-economic disparities and infrastructural limitations, especially in rural regions, constrain the full potential of AI-based education[31]. International studies warn that algorithmic systems may unintentionally reproduce gender biases if datasets lack representativeness[32]. This implies that policy

[29] UNESCO. (2022). *Artificial Intelligence and Gender Equality: Challenges and Opportunities*. Paris: UNESCO Publishing.
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measures must not only expand access but also address ethical and governance aspects of AI integration.

Furthermore, Uzbekistan's adoption of the *2030* Gender Equality Strategy provides an enabling framework for women's empowerment, reinforcing the state's commitment to inclusive growth[33]. By aligning national priorities with global best practices, the country demonstrates a proactive approach to bridging gender gaps in education and employment. However, successful implementation requires multi-stakeholder collaboration, including universities, private technology companies, and civil society organizations.

In conclusion, the results suggest that while AI-based distance learning platforms present transformative opportunities for women in Uzbekistan and beyond, long-term success depends on overcoming infrastructural, financial, and ethical barriers. Effective policy integration and continuous monitoring are essential to ensure that digital education reforms genuinely enhance women's competitiveness in the labour market.

Conclusions and Suggestions

The study concludes that AI-based distance learning platforms hold significant potential for enhancing women's competitiveness in the labour market by expanding access to education, fostering digital literacy, and enabling continuous professional development. These platforms create opportunities for women to balance learning with household and work responsibilities, thus helping overcome long-standing socio-cultural barriers to equal participation in economic life. The integration of adaptive curricula, personalised feedback, and skills training equips women with the competencies required in the digital economy, including ICT, entrepreneurship, and leadership capabilities. However, challenges such as unequal access to technological infrastructure, affordability issues, and the risk of algorithmic bias continue to limit the full realisation of these benefits.

In light of these findings, several policy suggestions can be made. First, national education and labour market policies should prioritise investments in digital infrastructure, particularly in rural and underserved areas, to ensure inclusivity and equal opportunities. Second, public–private partnerships should be encouraged to develop affordable AI-based platforms with localised content adapted to the needs of women in Uzbekistan. Third, regulatory frameworks must be strengthened to ensure ethical and transparent use of AI in education, with particular attention to preventing algorithmic bias. Fourth, training and capacity-building programs for educators should be expanded so that they can effectively integrate AI tools into teaching and mentoring. Finally, the implementation of Uzbekistan's New Uzbekistan Development Strategy and the 2030 Gender Equality Strategy should be closely monitored, with clear performance indicators to evaluate the progress of women's empowerment through digital education.

[33] Decree of the President of the Republic of Uzbekistan "On the Strategy for Achieving Gender Equality in Uzbekistan until 2030," 2021.

Overall, the findings suggest that while AI-based distance learning platforms cannot single-handedly eliminate gender disparities in the labour market, they represent a powerful catalyst for change when embedded within broader strategies of sustainable development, inclusive governance, and socio-economic modernisation.

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PLATELETS, CD40L, AND ATHEROTHROMBOSIS: THE PATHOGENETIC TRIAD. LITERATURE REVIEW

Abstract: *Platelets, the CD40/CD40L signaling axis, and atherothrombosis constitute an intricate pathogenic network integrating hemostasis, vascular inflammation, and thrombus formation. The objective of this review is to summarize and critically appraise current evidence regarding the mechanistic and clinical interplay between platelet activation, CD40 ligand (CD40L) expression, and the evolution of atherothrombotic events. Recent advances in vascular biology demonstrate that platelet-derived CD40L serves not only as a prothrombotic molecule but also as an inflammatory mediator that bridges innate and adaptive immune responses. This review consolidates data from experimental, translational, and clinical studies, outlining the molecular mechanisms by which CD40L and its receptors promote endothelial activation, leukocyte adhesion, and plaque destabilization. Conceptual diagrams and summary tables are included to illustrate the platelet–CD40L–atherothrombosis triad. It is concluded that targeting this molecular interface may offer novel therapeutic perspectives in atherosclerotic cardiovascular disease.*

Key words: *platelets; CD40L; CD40; atherothrombosis; atherosclerosis, thrombosis; vascular inflammation.*

Introduction

Atherothrombosis represents the pathological endpoint of atherosclerotic plaque rupture followed by intraluminal thrombus formation, precipitating life-threatening clinical manifestations such as myocardial infarction and ischemic stroke. While lipid infiltration and endothelial dysfunction remain classical hallmarks, contemporary evidence highlights the essential participation of platelets and immunoinflammatory mediators—particularly the CD40/CD40L system—in disease progression [6].

Platelets, long regarded solely as effectors of hemostasis, have emerged as critical orchestrators of vascular inflammation and thrombogenesis. Upon activation, they express and release a wide spectrum of cytokines, chemokines, and costimulatory molecules, among which CD40L plays a pivotal role. CD40L (CD154) interacts with CD40 on endothelial, immune, and smooth muscle cells,

initiating signaling cascades that amplify inflammatory and thrombotic responses [5].

The present review aims to delineate the pathophysiological connections among platelets, CD40L, and atherothrombosis—conceptualized as a pathogenetic triad—by synthesizing data from recent literature, emphasizing mechanistic pathways, and summarizing relevant clinical correlations.

Literature review

1. Platelet Function Beyond Hemostasis

Platelets serve as sentinels of vascular integrity, rapidly responding to endothelial injury by adhesion, activation, and aggregation. These processes are mediated through receptors such as GPIb–V–IX, GPVI, and $\alpha_2\beta_1$ integrin that interact with subendothelial collagen and von Willebrand factor [6]. Once activated, platelets release granular contents including ADP, thromboxane A_2, and serotonin, further promoting aggregation and recruitment.

In addition to hemostatic activity, platelets actively participate in inflammatory mechanisms underpinning atherosclerosis. They secrete proinflammatory mediators (e.g., CXCL4, CCL5, IL-1β), interact with leukocytes to form platelet–leukocyte aggregates, and induce endothelial expression of adhesion molecules such as ICAM-1 and VCAM-1 [8]. Thus, platelets occupy a dual role: they initiate thrombus formation at plaque rupture sites and modulate vascular inflammation during plaque evolution.

2. CD40L: Expression, Release, and Receptors

CD40L, a member of the tumor necrosis factor superfamily, was initially identified on activated T lymphocytes but is now recognized on platelets, endothelial cells, and smooth muscle cells [1]. Platelets store CD40L within α-granules, releasing it upon activation to the cell surface, from which a soluble form (sCD40L) is shed into the circulation [5].

CD40L binds to multiple receptors: its classical counterpart CD40, as well as integrins αIIbβ3 (on platelets), α5β1 (on endothelial cells), and Mac-1/αMβ2 (on leukocytes). Each interaction triggers distinct biological effects—ranging from platelet aggregation and endothelial activation to leukocyte adhesion and cytokine secretion [4]. Elevated circulating sCD40L levels correlate with thrombotic risk and plaque instability, positioning it as both a biomarker and effector of atherothrombosis [1].

3. Integrative Mechanisms Linking Platelets, CD40L, and Atherothrombosis

Experimental and clinical evidence underscores the involvement of platelet-derived CD40L in the transition from a stable atherosclerotic plaque to an occlusive thrombus [3]. Genetic deletion or pharmacologic blockade of CD40L reduces thrombus growth and attenuates vascular inflammation in murine models [4]. Moreover, CD40L expression is markedly increased in vulnerable or ruptured plaques, emphasizing its central role in plaque destabilization [5].

Mechanistically, CD40L facilitates crosstalk among platelets, endothelial cells, and leukocytes. Platelet-expressed CD40L binds endothelial CD40, leading

to NF-κB and MAPK activation, up-regulation of adhesion molecules (VCAM-1, ICAM-1, E-selectin), and secretion of proinflammatory mediators including TNF-α and tissue factor. Simultaneously, interaction with integrin αIIbβ3 reinforces platelet–platelet adhesion and thrombus consolidation [5].

4. Experimental and Clinical Observations

Henn et al. demonstrated that platelet CD40L enhances platelet–leukocyte aggregation and adhesion to the vascular wall [2]. Kuijpers et al. reported that exogenous CD40L accelerated thrombus growth on collagen substrates under arterial shear [3]. In clinical cohorts, elevated sCD40L levels predicted major cardiovascular events in patients with unstable coronary syndromes [1].

Collectively, these studies position CD40L as a nodal molecule bridging thrombosis and inflammation—its platelet origin being of primary significance for acute atherothrombotic complications.

5. Mechanistic Insights

The sequence of pathogenic events may be summarized as follows: platelet activation → CD40L exposure → interaction with endothelial and leukocytic receptors → amplification of inflammation and coagulation. This cascade results in increased metalloproteinase activity, degradation of fibrous caps, and plaque rupture [5].

Experimental models indicate that CD40L deficiency reduces matrix metalloproteinase release and macrophage infiltration within plaques, thereby enhancing structural stability [4]. In contrast, heightened CD40L signaling promotes thrombogenicity through integrin αIIbβ3 engagement, leading to dense thrombus formation [3].

Discussion

The synthesis of contemporary findings substantiates the centrality of platelets and CD40L within the multifactorial process of atherothrombosis.

First, platelets contribute to the pathogenesis of atherosclerosis far beyond their hemostatic capacity. Through secretion of chemokines and adhesion molecules, they foster leukocyte recruitment and endothelial activation even before plaque rupture [8].

Second, CD40L serves as an interface between thrombosis and immunity. Approximately 95% of circulating sCD40L derives from platelets [5]. The CD40/CD40L axis activates endothelial and immune cells, inducing pro-inflammatory cytokine expression and tissue factor production, thereby predisposing to plaque instability.

Third, from a mechanistic perspective, CD40L signaling enables platelets to function as immunothrombogenic cells that modulate vascular integrity. Nevertheless, global inhibition of CD40L in animal and clinical trials has yielded adverse thromboembolic events [4].

The relative contribution of platelet-derived CD40L versus CD40L from lymphocytes or endothelial sources remains partially unresolved. Cell-specific knockout studies in mice suggest that platelet CD40L primarily influences thrombosis rather than early atherogenesis [4].

From a therapeutic standpoint, several strategies are under investigation:

- selective inhibition of CD40L–integrin αIIbβ3 binding;
- modulation of platelet activation to limit sCD40L release;
- utilization of circulating sCD40L levels as predictive biomarkers.

Despite promising experimental results, clinical translation requires careful balance between efficacy and safety.

Results

Table 1.
Representative Experimental and Clinical Studies on Platelet CD40L in Atherothrombosis

Study	Model / Population	Key Findings
[2] Henn et al., 2010	Human platelet–endothelium co-culture	Platelet CD40L enhanced platelet–leukocyte adhesion and aggregate formation.
[3] Kuijpers et al., 2015	Murine and in vitro flow chamber	CD40L accelerated thrombus growth under high shear.
[5] Michel et al., 2017	Review (clinical + experimental)	CD40L acts as both biomarker and mediator of atherothrombosis.
[1] Antoniades et al., 2009	Clinical patients	Circulating sCD40L correlates with cardiovascular risk and plaque instability.

Table 2.
Principal Receptors for CD40L and Their Pathogenic Roles

Receptor	Localization	Function
CD40	Endothelium, macrophages, SMCs	Triggers NF-κB and MAPK cascades, elevates VCAM-1/ICAM-1, induces matrix metalloproteinases and tissue factor.
αIIbβ3	Platelets	Mediates platelet aggregation and thrombus consolidation.
α5β1	Endothelium, monocytes	Promotes adhesion and endothelial activation.
Mac-1 (αMβ2)	Leukocytes	Enhances leukocyte recruitment and vascular inflammation.

Conclusion

Comprehensive evaluation of the literature confirms that platelets and CD40L compose an interdependent pathogenic system integral to atherothrombosis.

1. Platelets as inflammatory effectors beyond hemostasis.
2. CD40L as a molecular bridge linking platelet activation to vascular inflammation.
3. Functional integration of platelet–CD40L signaling underlies plaque rupture.
4. Clinical implications: sCD40L as biomarker and potential therapeutic target.

5. Future perspectives: refinement of selective CD40L-modulating therapies.

The triad of *platelets – CD40L – atherothrombosis* embodies the intersection of thrombosis, inflammation, and vascular injury.

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GEODEMOGRAPHIC ZONING OF THE FAMILY COMPOSITION OF THE POPULATION OF TASHKENT REGION

Annotation. *The population increased in the own-self demographic processes of the study is to be directed of the work scope to further expand should means. Population geography in science of the structure of the population, and in particular age, sex, national, ethnic composition, together with family, social structure, as there are pressing them to come to the present day is one of the tasks of diagnosis and research. The family is also one of the aspects of geographical research of the population, the population's location, the height of the toe'citizens of families and the number, type, shape, and o'the toe of lcham'citizens o'is to reveal specific aspects of worthy requires.*

Key words: *family, age-gender, marriage, economic geographical place, divorce, national, demographic processes, rural districts, national-ethnic structure.*

Let's not go to any corner of the world, the family composition of the population is manifested as the main link in society. The family is an important component, which spontaneously determines the development of social capital of Man and society. As proof of this, at the seventh World Congress of families (Sydney, May 2013), "the formation of a healthy family economy will make the country prosperous"[1.] was treated as .

In population growth and settlement, family composition acts as a foundation in ensuring the well-being of society. When studying the process of marriage in the family structure of the population, first of all, it is studied within the framework of the reproduction of the population, its age-sex composition and its impact on the population. One of the geographer scientists V.Kopilov: "age-gender, marriage and family composition are associated with an increase in the population, and this is the subject of demography. The rest are exogenous i.e. variables that indirectly affect demographic processes" [8]. In addition, a.Anoxin, D.Geographer scholars such as Jitin have also expressed opinions that " marriages and divorces generally fall within the natural movement of the population, although they do not directly change the population [7;86 b.]. Indeed, the natural movement of the population is directly related to the reproduction of the population. The reestablishment of the population, in turn, has its own influence on the family composition of the population.Tashkent economic districts of respublika in itself to specific rather than has the fact that with other economic geographical districts separated is. In particular, them an example of make, the capital city of the presence of, advanced industrial cities, transportation systems,

economic - social and economic infrastructure, demographic potential is high that is to come in the fitting.

Tashkent economic region is distinguished from other economic geographical regions by the fact that it has a special place in the Republic. Examples of these include the presence of a capital city, developed industrial cities, a transport system, economic - social and economic infrastructure, high demographic potential.

The territory of own specific comfortable, natural and economic geographical place possible is that, Built and Akhangaran river from the movement of flowing since the population of the location for favorable conditions to create has given. Economic geographical districts urbanizatsion level high, the demographic processes of the development, the city and the rural population radical difference it makes. Specifically, the city of the population of the marriage and the divorce process itself to specific feature it has , if, other areas are separated is. Tashkent economic districts incoming Tashkent region of its own, located in the natural geographic location, according, nature, tourism and the population 's living conditions, according to the republic's own specific place to be able. In the territory of the population is uneven located, the population of the number and growth rates at different levels, have, own specific historical development, natural geographic location, demographic factors and socio-economic development with chambarchars is associated.

Consequently, Tashkent economic districts of man 5802,1 the number of total population in 2023, the organization of the republic's total population of 16 percent in the same territory living makes. Districts incoming Tashkent city and Tashkent region, population dynamics, location and density according vary will. Tashkent region the total population , the number of 2023 year data according 2939,700 man up of, the total population of 50 percent in cities, 49,8 percent , while the villages of living makes [10.]. Tashkent region administrative territorial administrative units , the number of 22 units, then, the rural districts the number of 15 units and 16 than cities organization is. If the number of towns than 90, 998 agriculture and are ovul of dollars. The territory of relyef structure directly by the population of the location and density vividly realized. Tashkent in the year 2023 in the region of 1 sq.miles to to‘g'ri who comes to the number of population than 194 was established.

The relief structure of the territory is reflected in the location of natural conditions and the development of Natural Resources, in turn, the participation of the population in demographic processes. The location of the population also influences its demographic views. The family composition of the population living in the mountain and Plains region, the fact that demographic processes differ from each other, assumes research through geodemographic typologization.

In this study, the regions and districts were divided into 3 groups, and the districts of Ohangaron, Boastonliq, Parkent of Tashkent region were included in the first group, namely, mountain districts. Moreover, from the analysis of the above studies, it is worthwhile to distinguish the object of the study under study at

absolute heights as follows, “the location of the population, the transport system, the contiguity of the territory are also sufficient to recognize them as a single central demogeographic region”, which called the city of Tashkent and The Tashkent Region Central These are:

1. 400-500 meters (area) area: Nurafshon sh, Bekabad city, Yangiyul city and Science, Bekabad, Culture, Quyichirchiq, Yangiyul, Chinaz district;

2. 400-500 from 1000-1100 meters (Mountain before) regions: Almalyk city, Angren city, Chirchik city, Akhangaran city and Akhangaran, Zangiota, Kibray, Pskent, Workshop, Yukorichirchik, Tashkent district;

3. Areas above 1000-1100 meters (mountainous): Parkent and Bostonian districts.

Tashkent region districts in the allocation of the district is located, by means of appropriate agreements than absolute height on the basis of the made were. Studyabed in the region in total 22 districts there are if, of them 9 of them “plain” to the districts on come on, teach students: the territory of the area of 20 percent. “Before the mountain” of the districts total area of 11 them on come, they learnabed in the territory of the area of 40 percent occupy. The region of 1000 meters, and of it the top which is “mountain areas” to districts, while 2 units of the district is included in 39,4 percent of the territory. These districts the population of the number, density, marriage and finding the number on is dramatically different from each other.

1-table

Separation of the territory of the Tashkent region into groups of absolute Heights (2022 year)

Absolute high social	cities and districts	Number of cities and districts	General has an area of.	Population number (thousand people)	Density	Number of cities and towns	Population of the city (thousand people)
Up to 0 – 400 meters (plain)	Nurafshan , Bekabad , Yangiyol cities and Akkurgan, Bekabad, Boka, Quyichirchiq, Yangiyol, Chinoz districts	9 / 41	3,13 / 20,6	430,1 / 26	137,4	30 / 29	432 / 29,3
From 400-500 m to 1000-1100 meters (Woven)	Olmaliq sh, Angren sh, Chirchiq sh, Ohangaron and Ohangaron, Zangiota, Qibray, Piskent, Tashkent districts	11 / 50	6,11 / 40,0	861,7 / 53	141	53 / 51	901 / 61
Above 1000-1100 meters (Mountain)	Parkent and Bostonlik districts	2 / 9	6,01 / 39,4	345,0 / 21	57,4	22 / 20	143 / 9,7
Total		22 / 100	15,25 / 100	1636,8 / 100	107.3	106 / 100	1,476 / 100

Source:*Table https://ru-ru.topographic-map.com sites and by author based on data of the state statistics committee of the republic of uzbekistan was established.*

Note: *in the photo-as an absolute amount, a percentage given in the denominator.*

In terms of population density, the lowland areas had a population density of 137 persons per square mile (20.6%) of the total area of the province. In contrast, the mountainous areas had a population density of 57.4 persons per km2. The highest population density figure is mainly in the Highlands, which occupy

40% of the total area. Of these areas, each sq. km.ga medial a population of 141, the population density is 2.4 times higher than in the districts located in the mountainous region.

According to research, the rural districts in the areas under study have a total of 106 cities and towns. Of these, 22 are located in mountainous regions, 53 in the Highlands and 30 in the districts of the plains raions.

From this, it was the salmog of the urban population that was higher in the Highlands, with 61%, and the urban population in the plains and Highlands respectively: 29.3%; 9.7%. So, in these districts, the population of the city is thinning from the bottom to the top, and this, in turn, is also reflected in the population density and demographic processes. It is known that the socio-economic conditions of the population have a decisive influence on the restoration of its number, on all processes and their quantity.

The family composition of the population in terms of its size, type, shape and structure also differs from each other in terms of urban and rural population and absolute altitude regions of the population. As we know, the family composition of the population differs from each other in the number and form of families in the rural population in relation to the urban population.

The families of the population of the Tashkent region make up 10% of the Republic. The highest in the number of families was the city of Angren in 2015-2020, while in 2023 the number of families in the city of Chirchik was higher 10 per cent. The city of Chirchik also has a high rate in terms of the number of families with children under the age of 18.

In the number of incomplete families, the city of Angren was higher, while in the cities of Ohangaron and Yangiyol, the amount of incomplete families can be seen to be slightly lower. In provincial districts, however, areas with a higher percentage of total families in 2015 have declined slightly by 2023. It is known to us that the abundance of families ensures natural growth of the population, human capital. But in regional districts and villages, this process is relatively slow. The rise in the age of marriage in provincial families, the decrease in the number of families and the increase in the number of divorces in turn cause geodemographic problems in the area. It is in the regional districts that the decrease in the number of non-families is also observed. The fact that the territory is close to the capital city, increasingly views on the urban population are observed in the families of rural residents.The families of residents of the region, each urban and rural population, are fundamentally different from each other.

Bostanliq, Ortachirchik and Zangiota districts of Tashkent region had the highest number of families with children under 18 years old in 2015, and by 2023, these figures will increase to 50%. it can be seen that it has decreased. The separation process is also active in the cities of Bostonliq district, which are part of the mountainous region. We know that there are families in this village that provide the republic with labor resources. According to the number of families with many children in the region, the villages of Parkent, Bostonliq, Chinoz districts had a high index until 2020, and by 2023, the number of families with

many children will be at this point. reduced by half. In general, views on marriage and family relations have changed in the families of Parkent and Bostonliq districts, which are part of the mountainous region.

The influence of the geographic location of the population on the changes in the territorial-demographic development of the family composition of the population of the Tashkent economic region was reflected in every demographic process. The positive and negative aspects of the location of the population along the altitude regions of the Tashkent region were determined. The fact that the population density, the diversity of the national-ethnic structure has its influence on the composition of families of the Tashkent economic region, which in turn affects the dynamics of demographic processes, has been thoroughly examined.

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INTEGRATING MODERN TECHNOLOGIES IN TEACHING ENGLISH FOR ART AND CULTURE STUDENTS

Abstract. *We come across more discussions of Multimedia related to the teaching English language skills. Use of Multimedia resources is an essential subject matter in English language education. Successful utilization of multimedia resources can enhance the effectiveness of the entire teaching program. The following study has been developed to understand the utility of multimedia resources in learning the English language.*

Key words: *multimedia resource, digital storytelling, foreign language, modern technologies, efficiency, virtual reality, collaboration.*

The demand for learning a foreign language is growing day by day. The subject of a foreign language is divided into four aspects (reading, interpretation, listening comprehension, and speaking), and separate concepts and skills are provided for each of them. Educational technologies are the effective use of modern information technologies in the educational process. It also provides for improving the quality and effectiveness of education by introducing modern innovative technologies into the educational process. In particular, the use of such information and communication technologies in foreign language learning has several advantages.

Teaching and learning a foreign language using modern technologies is one of the most effective methods. During the process of learning, in particular, through using computers students can also watch and listen to video clips, shows, dialogues, movies or cartoons in a foreign language. It will be possible to watch and listen to radio broadcasts and television programs in a foreign language. The use of tape recorders and cassettes, which are considered a rather traditional method, CD players can be used. The use of these technical means makes the process of learning a foreign language more interesting and effective for students. The integration of modern technologies in education is rapidly transforming the learning landscape, offering innovative approaches to traditional teaching methods. This is particularly relevant in teaching English to art and culture students, a field where creativity, critical thinking, and cultural understanding are paramount.

This article explores the potential of modern technologies to enhance English language acquisition in this specific context. In particular, the use of such information and communication technologies in foreign language learning has several advantages. The role of modern technology in language learning and

teaching is invaluable. The use of technological tools is useful in every aspect of foreign language learning (reading, reading, listening comprehension, and speaking). For example, for listening comprehension, this process is impossible without a computer, player, and CD discs. Listening comprehension is one of the most important parts of language learning. In this case, the student is simultaneously required to pay attention to the speaker's pronunciation, adherence to grammatical rules, vocabulary, and its meanings.

Art and culture students often possess a unique set of learning styles and preferences, which can pose challenges for traditional English language instruction. They may be more visually oriented, prefer hands-on activities, and require a more contextualized approach to learning. Furthermore, their creative inclinations might necessitate methods that foster self-expression and exploration, beyond rote memorization and grammar drills.

Modern technologies offer a range of opportunities to overcome these challenges and create a more engaging and effective learning environment. One of the most efficient ways is using *multimedia resource.* Interactive online platforms, educational videos, podcasts, and virtual museum tours provide rich contextual learning experiences. Students can explore art movements, cultural artifacts, and historical narratives through multimedia, strengthening their vocabulary and understanding of English in a relevant and engaging context. For ex., watching a documentary about a specific artist in English and then discussing it in class.

Digital Storytelling and Content Creation: Tools like video editing software, digital drawing tablets, and audio recording equipment empower students to create their own English-language content. They can create short films, animated stories, podcasts, or even virtual museum exhibits, fostering creativity, improving language skills, and building confidence in English communication.

Virtual Reality (VR) and Augmented Reality (AR): Immersive technologies like VR and AR can transport students to different cultural settings, allowing them to experience art and culture firsthand. This fosters cultural understanding, expands vocabulary related to specific environments and practices, and motivates deeper engagement with the English language.

Collaborative Online Platforms: Platforms like Google Classroom, Moodle, or other learning management systems (LMS) facilitate collaborative projects, discussions, and peer feedback. Students can work together on presentations, essays, or creative projects, improving their collaborative skills and English communication abilities in a supportive online environment.

Gamification and Interactive Exercises: Integrating game-based learning and interactive exercises can make language learning more engaging and motivating. Language learning apps and online games can help students practice vocabulary, grammar, and pronunciation in a fun and interactive way.

Personalized Learning: Modern technologies enable personalized learning experiences, adapting to individual student needs and learning styles. Adaptive learning platforms can assess student strengths, weaknesses, and tailor the learning path accordingly, ensuring that each student progresses at their own pace.

Psychologists emphasize that the psychological mechanisms of game activity are based on the fundamental needs of self-expression, finding a stable place in life, self-management, and the realization of one's potential. Any educational game should be based on generally accepted educational principles, academic subjects and tactics. During games, the students approach the activity with more interest and freely engage than in a regular lesson. It should be noted that play is, first, a method of teaching.

The successful integration of technology requires careful planning and implementation, including teacher training. Teachers require adequate training and support to utilize effectively these technologies in their classrooms. It must be noted the technological tools have to be integrated seamlessly into the existing curriculum to support learning objectives. Accessing and equity ensure equal access to technology and internet connectivity for all students is crucial. Within the process of learning foreign languages through multimedia appropriate assessment evaluation methods should be developed to measure students` learning outcomes effectively.

In conclusion, because of applying innovative methods in English lessons, students develop logical thinking skills, their speech becomes fluent, and the ability to respond can be quickly and correctly formed. The student strives to prepare thoroughly for the lessons. This transforms students into active subjects of the educational process. Modern technologies offer transformative potential for teaching English to art and culture students. By leveraging multimedia resources, digital storytelling tools, immersive technologies, and collaborative platforms, educators can create engaging, relevant, and effective learning experiences that cater to the unique needs and learning styles of these students. However, successful integration requires careful planning, teacher training, and a commitment to ensuring equitable access for all learners. The result will be a more dynamic and enriching educational experience that empowers art and culture students confidently to communicate in English, enhancing their creative expression and global engagement.

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O‘ZBEKISTONDA ARXITEKTURADAGI ERISHILGAN YUTUQLAR VA KAMCHILIKLAR: BIM TEXNOLOGIYASI KIRIB KELISHIDAN AVVAL VA KEYIN

Annotatsiya*: Mazkur maqolada O‘zbekistonda arxitektura sohasida erishilgan yutuqlar va mavjud muammolar BIM (Building Information Modeling) texnologiyasi joriy etilishidan avval hamda undan keyingi davr nuqtayi nazaridan tahlil qilinadi. Arxitektura tarixiy taraqqiyoti davomida an’anaviy usullar yordamida yaratilgan loyihalar va ularning ijobiy hamda salbiy jihatlari yoritiladi. Shuningdek, loyiha jarayonlarida yuzaga kelgan asosiy kamchiliklar — koordinatsiya muammolari, resurslardan samarasiz foydalanish, vaqt va mablag‘ning ortiqcha sarfi, texnik hujjatlarning bir xil standartda emasligi kabi masalalar ilmiy jihatdan asoslab berilgan.*

Kalit so‘zlar: *Arxitektura, O‘zbekiston, BIM texnologiyasi, loyihalash, qurilish, raqamli modellashtirish, samaradorlik, innovatsiya, barqaror rivojlanish, dizayn.*

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ACHIEVEMENTS AND SHORTCOMINGS IN THE ARCHITECTURE OF UZBEKISTAN: BEFORE AND AFTER THE IMPLEMENTATION OF BIM TECHNOLOGY

Abstract: *This article analyzes the achievements and existing challenges in the architectural field of Uzbekistan, focusing on the periods before and after the implementation of BIM (Building Information Modeling) technology. Throughout the historical development of architecture, projects created using traditional methods are examined, highlighting their advantages and disadvantages. In addition, the article scientifically substantiates the main shortcomings observed in design processes, such as coordination issues, inefficient use of resources, excessive time and financial costs, and the lack of unified standards in technical documentation.*

Keywords: *architecture, Uzbekistan, BIM technology, design, construction, digital modeling, efficiency, innovation, sustainable development, design.*

XXI asrda arxitektura va qurilish sohasi jadal rivojlanmoqda. Axborot-kommunikatsiya texnologiyalari, raqamli modellashtirish va sun'iy intellektning kirib kelishi loyihalash jarayonini tubdan o‘zgartirmoqda. Bu jarayonda Building Information Modeling (BIM) texnologiyasi alohida ahamiyat kasb etmoqda.

BIM - bu oddiy 3D modellashtirish emas, balki binoning butun hayotiy siklini (loyihalash, qurilish, ekspluatatsiya, rekonstruksiya va buzishgacha) boshqarish imkonini beruvchi axborot modeli hisoblanadi. Dunyoning ko‘plab mamlakatlarida BIM davlat miqyosida majburiy standartga aylangan. Masalan, Buyuk Britaniya, Germaniya, AQSh, Yaponiya va Janubiy Koreya qurilish sohasida BIMni to‘liq joriy qilgan.

Buyuk Britaniya BIMni davlat darajasida joriy qilgan birinchi yetakchi mamlakatlardan biri hisoblanadi. 2011 yildan boshlab markaziy davlat buyurtmalari uchun "collaborative 3D BIM" talab qilina boshlangan va 2016 yil aprelga qadar "BIM Level 2" standartiga mos bo‘lish majburiyati e'lon qilingan. Bu siyosatning maqsadi loyihalash va qurilish xarajatlarini kamaytirish, sifatsiz ishlarni kamaytirish va ma'lumot almashinuvini yaxshilash edi. Britaniya hukumatining Construction Strategy hujjatlari va PAS/BS (masalan, PAS 1192 ketma-ketligi, hozirgi ISO 19650 standardlariga asos bo‘lgan) orqali aniq talablar belgilandi.

Hukumat loyihalari (centrally procured projects) uchun BIM Level 2 talab etildi; shuningdek, ko‘plab sanoat tashkilotlari (CDBB - Centre for Digital Built Britain, UK BIM Alliance) va standartlashtiruvchi organlar mijozlar va yetkazib beruvchilar uchun yo‘l-yo‘riqlar ishlab chiqdi. Natijada sanoatda 3D modellashtirish, ma'lumotlarni strukturaviy boshqarish va ommaviy foydalanish odatiy holga aylandi. Rasmiy mandat sanoatga tezkor o‘tishni rag‘batlantirdi; ammo dastlabki yillarda kichik pudratchilar va kichik firma uchun integratsiya, o‘qitish va litsenziya xarajatlari kabi muammolar bo‘ldi. Umuman olganda, Britaniya namunasi - davlat buyurtmasi orqali sanoatni jadallashtirish va standartlashtirish muvaffaqiyati sifatida baholanadi. Germaniya hukumati 2010 - 2015 yillarda pilot loyihalar orqali BIMni sinab ko‘rdi va 2020 yilga kelib federal darajadagi infratuzilma (transport va katta infratuzilma) loyihalarida "digital planning and construction" standartini joriy qilishni maqsad qilgan. Shu maqsadda “First build digitally, then in reality” shiori ostida yo‘l xaritalari va pilot loyihalar ishga tushirildi. 2020 yildan boshlab bir qator federal infratuzilma tenderlarida BIM mandati bosqichma-bosqich tatbiq etila boshlandi. “BIM Deutschland” kabi milliy markazlar sanoatni o‘qitish, qo‘llanmalar ishlab chiqish va manfaatdor tomonlarni bog‘lashda muhim rol o‘ynaydi. Germaniya, ayniqsa infratuzilma (yo‘llar, temiryo‘l, portlar) loyihalarida BIM va raqamli dvigatel tizimlarni joriy qilishga katta e'tibor qaratmoqda. Germaniyada ham tijorat va sanoat subjektlari orasida standartlashtirish, dasturiy integratsiya hamda regional farqlar (bundeslandlarga qarab) mavjud. Ammo federal yo‘l xaritasi va pilot loyihalar yordamida standartlashtirish va qo‘llash kengaymoqda.

AQShda BIMni bir martada yagona federal mandat bilan hisobga olish o‘rniga -bir nechta federal agentliklar va yirik ommaviy organlar (masalan, GSA -

General Services Administration, Department of Defense turli bo‘linmalari, Federal Highway Administration va boshqalar) o‘z siyosatlari orqali bosqichma-bosqich joriy qilmoqda. Milliy darajada standartlashtirish va yo‘l xaritalar ishlab chiqish bo‘yicha NIBS (National Institute of Building Sciences) kabi tashkilotlar rol o‘ynaydi. NIBS va boshqa jamoatchilik-hukumat hamkorlik hujjatlari amaliy normalar va shartnomaviy formatlar (US National BIM Standard / NIBS hujjatlari) ustida ishlamoqda.

GSA 3D/4D va BIM texnologiyalarini federal binolar loyihalarida integratsiyalash bo‘yicha yo‘l-yo‘riqlar chiqargan; ayrim agentliklar katta infratuzilma va modernizatsiya loyihalarida BIMni talab qiladi. Shu tariqa, AQSh ko‘pagentlikli yondashuv orqali BIM qabul qilinmoqda-ya’ni yirik agentliklar yetakchilik qilib, sanoatga ta’sir ko‘rsatadi.

Uzoq va federal tizimning markazlashmaganligi, shuningdek davlat va shtat darajasidagi turli talablar bilan bog‘liq murakkabliklar mavjud. Ammo NIBSning so‘nggi amalga oshirish rejalari va agentliklarning yo‘l-yo‘riqlari sanoatdagi standartlashuvni kuchaytirmoqda. Yaponiya MLIT (Ministry of Land, Infrastructure, Transport and Tourism) boshchiligida BIM/CIM (Construction Information Modeling) konsepsiyasini ilgari surdi. Hukumat mahalliy va milliy loyihalarda BIM/CIMni tatbiq etish bo‘yicha yo‘l xaritalari, standartlar va qo‘llanmalarni ishlab chiqdi. Maqsad- qurilish jarayonlarini avtomatlashtirish, samaradorlikni oshirish va infratuzilma raqamli transformatsiyasini ta’minlash. MLIT tomonidan chiqarilgan BIM/CIM standartlari va qo‘llanmalar mahalliy hokimiyatlar va davlat buyurtmachilari tomonidan bosqichma-bosqich qabul qilindi; shuningdek sanoatda BIM bozorining iqtisodiy ko‘rsatkichlari-ya’ni dasturiy ta’minot va xizmatlar bozori sezilarli o‘sish ko‘rsatmoqda. Yaponiya bozorida BIM qabul qilinishi xususiy va davlat loyihalarida tezlashmoqda. Yaponiya uchun muhim masala - eski binolar va infratuzilmani raqamlashtirish, shuningdek kichik pudratchilarni yangi ish jarayonlariga moslashtirish. Bozor hajmi va o‘sish prognozlari (2024–2029) davlatning strategik qo‘llab-quvvatlashi bilan uyg‘unlashganini ko‘rsatadi.

Janubiy Koreya BIMni milliy darajada joriy qilish bo‘yicha kechiktirmaslik siyosatini amalga oshirdi. MOLIT (Ministry of Land, Infrastructure and Transport) va Public Procurement Service kabi organlar 2010 yildan boshlab BIM bo‘yicha rejalashtirishni boshladi va 2016 yil atrofida ommaviy buyurtmalarda BIMni majburiy talab qilishni boshladi. Ko‘plab manbalarga ko‘ra, davlat sektori uchun katta loyihalar (va ba’zi hollarda barcha jamoat qurilishlari)da BIM talab qilinadi. Koreya davlat buyurtmalarida BIM talabini joriy qilish orqali sanoat tezda moslashdi: standartlar, o‘quv dasturlari, pilot loyihalar va “smart construction” (aqlli qurilish) texnologiyalari kengaytirildi. Public Procurement Service va MOLIT davlat siyosatini bajaruvchi asosiy tashkilotlardir. Koreya misolida davlatning markaziy rejalashtirish va majburiy talab orqali tez tatbiq muvaffaqiyati aniq ko‘rinadi; ammo xususiy sektor va kichik pudratchilarning o‘tish xarajatlari va malakasi hamon muhim muammo bo‘lib qolmoqda.

O‘zbekiston ham bu jarayondan chetda qolmagan. Mustaqillikdan keyin qurilish sohasi jadal rivojlandi, yirik loyihalar barpo etildi, ammo an’anaviy 2D loyihalash usullari uzoq vaqt davomida asosiy vosita bo‘lib keldi. Natijada ayrim kamchiliklar paydo bo‘ldi. Shu sababli BIM texnologiyasining kirib kelishi milliy arxitektura sohasida sifat jihatdan yangi davrni boshlab berdi.

O‘zbekiston arxitekturasi tarixiy ildizlarga ega bo‘lib, Sharq sivilizatsiyasining muhim markazlaridan biri hisoblanadi. Samarqand, Buxoro, Xiva, Toshkent kabi shaharlardagi Registon majmuasi, Ichan qal’a kabi inshootlar jahon miqyosida qadrlanadi. Bu yodgorliklar milliy me’morchilik maktabining yuksak darajada bo‘lganini ko‘rsatadi.

Mustaqillikdan keyin poytaxt Toshkentda yangi arxitektura ansambllari barpo etildi: “O‘zbekiston davlat san’at saroyi”, “Toshkent City”, “Humo Arena” sport majmuasi, bir qancha yangi oliy ta’lim muassasalari kampuslari va mintaqaviy markazlarda shaharsozlik kengayib, yangi turar-joy massivlari qurildi. Milliy me’moriy an’analar zamonaviy texnologiyalar bilan uyg‘unlashdi. Qurilish materiallari ishlab chiqarish sohasi kengaydi, mahalliy zavodlarda sement, metall va pardozlash materiallari ishlab chiqarish hajmi ortdi.

Yuqorida keltirilgan yutuqlar bilan bir qatorda kamchiliklarni ham keltirish mumkin: Loyiha jarayonida asosan 2D chizmalar ishlatilgani tufayli qurilishda xatoliklar ko‘p uchragan. Qurilish tannarxini hisoblash, smeta hujjatlarini tayyorlash ko‘p vaqt talab qilgan va inson omiliga bog‘liq xatoliklar yuzaga kelgan. Qurilish ishlari yakunlangach, ob’ektning ekspluatatsiya davrida texnik hujjatlarni izlash yoki yangilash qiyin bo‘lgan. Energiya tejamkor va ekologik jihatdan samarali loyihalar yetarli darajada ishlab chiqilmagan. Me’morchilik sohasida xalqaro standartlarga mos kadrlar yetishmagan.

So‘nggi 10 yilda O‘zbekiston hukumati qurilish sohasini raqamlashtirishga katta e’tibor qaratdi. 2020 yildan boshlab BIM texnologiyasini loyihalash institutlariga bosqichma-bosqich joriy etish ishlari boshlandi. Loyiha jarayonining sifati oshdi va endi 3D modellar asosida olib borilmoqda. Qurilish uchun kerakli materiallar miqdori, xarajat va vaqt hisob-kitoblari avtomatik tarzda aniqlanmoqda. Buyurtmachi va investorlar loyiha yakunida qanday ko‘rinishini oldindan ko‘ra olmoqda. Qurilish vaqtida loyiha va real ob’ekt o‘rtasidagi tafovut minimal darajaga tushdi. Qurilish tugagandan keyin ham ob’ektning raqamli modeli saqlanib, texnik xizmat ko‘rsatishda yordam bermoqda. BIM yordamida energiya samaradorlik va ekologik ko‘rsatkichlarni oldindan hisoblash imkoniyati yaratildi.

O‘zbekistonda BIM texnologiyalarini joriy etish bo‘yicha dastlabki qadamlar tashlangan bo‘lsa-da, ularni keng ko‘lamda amaliyotga tatbiq etishda bir qator to‘siqlar mavjud. Ushbu to‘siqlar mamlakatda BIMning to‘liq samaradorlik berishiga jiddiy ta’sir ko‘rsatmoqda.

Hozirgi vaqtda arxitektura va qurilish sohasida faoliyat yuritayotgan ko‘plab mutaxassislar an’anaviy loyihalash uslublariga tayangan holda ish olib boradi. Ularning katta qismi Revit, ArchiCAD, Navisworks yoki boshqa BIM platformalarini mukammal darajada bilmaydi. Natijada yangi texnologiyalarni

o‘zlashtirishda sezilarli tafovut kuzatilmoqda. Ayrim mutaxassislar qisqa muddatli kurslarda ishtirok etgan bo‘lsa-da, amaliyotda yetarli tajribaga ega emas. Shu bois loyihalash jarayonlarida ko‘pincha BIMning to‘liq imkoniyatlari ishga solinmaydi.

BIM dasturlarining litsenziyalari qimmat bo‘lgani sababli ko‘plab loyihalash tashkilotlari, ayniqsa kichik va o‘rta firmalar ularni to‘liq sotib olish imkoniyatiga ega emas. Ba’zi hollarda mutaxassislar “pirat” dasturlardan foydalanishga majbur bo‘layotgan bo‘lsa-da, bu jarayon sifat va barqarorlikni pasaytiradi hamda xalqaro standartlarga zid hisoblanadi. Yirik tashkilotlarning o‘zida ham litsenziyalangan dasturiy mahsulotlar soni cheklangan bo‘lib, barcha xodimlar uchun to‘liq imkoniyat yaratib bera olmaydi.

Mamlakatda amalda bo‘lgan qurilish me’yorlari va standartlari (SNIP, GOST va boshqa normativ hujjatlar) ko‘p hollarda BIM jarayonlariga moslashtirilmagan. Loyiha hujjatlari uchun talablar, ekspertiza jarayonlari va tasdiqlash mexanizmlarida BIM modeli to‘liq hujjat sifatida qabul qilinmaydi. Bu esa loyihalash va qurilish tashkilotlarini parallel ravishda ham BIM modeli, ham an’anaviy chizmalar ishlab chiqishga majbur qiladi. Natijada vaqt va resurs ortiqcha sarflanadi, BIMning asosiy afzalliklari yo‘qolib qoladi.

So‘nggi yillarda oliy ta’lim muassasalarida BIM bo‘yicha alohida kurslar joriy etila boshlagan bo‘lsa-da, bu jarayon hali keng qamrovli emas. Talabalar odatda an’anaviy 2D chizmachilik va AutoCAD dasturlarini chuqur o‘rganadilar, biroq BIM asoslari cheklangan hajmda beriladi. Shu sababli bitiruvchilar zamonaviy talablarni qondiradigan darajada tayyor bo‘lib chiqmayapti. Bundan tashqari, ta’lim jarayonida amaliy loyihalar va sanoat bilan hamkorlik yetarli darajada yo‘lga qo‘yilmagan. Bu esa yosh mutaxassislarning nazariy bilimlarini amaliyot bilan mustahkamlashiga to‘sqinlik qilmoqda.

O‘zbekiston arxitektura va qurilish sohasi tarixiy merosni asrab-avaylash bilan birga zamonaviy yutuqlarni ham o‘zida mujassam etmoqda. Mustaqillik yillarida ko‘plab yirik inshootlar, ma’muriy binolar, madaniy va sport majmualari, turar-joy massivlari qurildi. Biroq bu jarayonlarning katta qismi an’anaviy 2D loyihalash usullariga asoslangan bo‘lib, vaqt va mablag‘ sarfini ko‘paytirar, loyihalash va qurilish jarayonida inson omiliga bog‘liq xatoliklarni kuchaytirar edi. BIM texnologiyasining joriy qilinishi esa sohada tub burilish yasadi. U nafaqat loyihalash jarayonini avtomatlashtirdi, balki loyiha ishtirokchilari - arxitektor, muhandis, pudratchi va buyurtmachilar o‘rtasidagi hamkorlikni samarali tashkil etishga imkon berdi. Natijada: Qurilish sifati oshdi, loyiha xatoliklari sezilarli darajada kamaydi, Resurslardan foydalanish samaradorligi ortdi, qurilish jarayonida material va energiya tejalishi ta’minlandi, ekologik xavfsizlik yuqori darajaga ko‘tarildi, barqaror me’moriy yechimlar ishlab chiqila boshlandi, ekspluatatsiya qulayligi ta’minlandi, ya’ni bino va inshootlarning butun hayotiy sikli samarali boshqariladigan bo‘ldi. Shu bilan birga, BIM texnologiyalarining keng joriy etilishi O‘zbekiston qurilish sohasida xalqaro standartlarga moslashish, global raqobatda o‘z o‘rnini topish, shuningdek, mamlakat me’morchilik maktabini yangi bosqichga olib chiqishga xizmat qilmoqda. Kelajakda mutaxassislar tayyorlash, normativ-huquqiy bazani

takomillashtirish va dasturiy ta’minotlardan keng foydalanish orqali BIM texnologiyalarining imkoniyatlari yanada to‘liq amalga oshirilishi kutilmoqda. Demak, O‘zbekiston me’morchiligi tarixiy meros va zamonaviy innovatsiyalar uyg‘unligida barqaror rivojlanish sari dadil qadam tashlamoqda.

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ANALYSIS OF THE CURRENT STATE OF VEHICLE SAFETY PROBLEMS IN MOUNTAINOUS ROAD AREAS

Abstract: *This article presents the current problems and solutions for ensuring the safety of vehicles on the mountainous road sections of the internationally important M-39 highway in the Jizzakh region, between km 982-1012, the specific natural and geographical conditions of mountainous areas, and the many dangers that arise for vehicle traffic.*

Key words: *International highway M-39, road traffic accident, mountain road, transport, safety, road traffic accident, traffic safety, accident, injury, harm, speed, roadway, driver, car.*

The motorization and development of the republic's economic sectors lead to a rapid increase in the intensity of freight transportation on mountain roads. In many cases, these roads do not meet the requirements of modern motor vehicles, which leads to a decrease in transport efficiency and an increase in accidents. The specific features of road conditions in complex mountainous terrain have a significant impact on their transport and operational characteristics, the working conditions of drivers, and ensuring traffic safety. Uzbekistan is located far from the seas and oceans, in the subtropical zone of the northern hemisphere, and almost 4/5 of the country's territory is located in the vast deserts and semi-deserts of Central Asia. It borders on mountain ranges in the south and east. Mountainous areas occupy about 22% of the country's territory.

Today, ensuring the safety of vehicles in mountainous areas remains an urgent and important issue. The specific natural and geographical conditions of mountainous areas create many dangers for vehicle traffic. In particular, slopes, sharp turns, narrow roads, changes in altitude pressure and adverse weather conditions make it difficult to drive a car and further increase the risk of road accidents. The network of public roads in Uzbekistan is 42,654 km [3]. Of these, mountain roads account for about 5.7% (2,431 km) of the total road network. The mountain roads of international importance crossing the territory of our republic are the A-373 Tashkent-Osh road, 116-214 km, the Kamchik pass, the M-39 Almaty-Bishkek-Tashkent-Termez road, 1120-1145 km, the Takhtkaracha pass and 1302-130 km.

The internationally important M-39 highway crosses the territory of Jizzakh region for 939-1037 km, and 982-1013 km of this road are in mountainous areas. The highest point of the region is 600-700 m above sea level. Today, an average of

more than 1,000 cars travel on this road per day. Of these, 400 are trucks, 500 are passenger cars, and 100 are buses. When analyzed, this figure is 30,000 per month and 360,000 per year. Given the traffic intensity of the M-39 highway, ensuring traffic safety on km 982-1012 and preventing and reducing the number of road accidents are urgent issues.



Figure 1. General geographical view of the M-39 road, 982-1013 km, passing through mountainous areas

The issue of road safety on mountain roads, 982-1013 km of the M-39 highway, is one of the most pressing problems today. There are a number of natural and technical factors that cause these problems.



Figure 2. Dangerous road sections at km 1011 of the M-39 highway

As can be seen from Figure 1.3, the main traffic accident zones are located at km 989, 993, 997, 1001, 1004, and 1011 in the Sharof Rashidov district, which is explained by the highest concentration of vehicles per kilometer.





a) sharp turn area *b) sharp turn geographical appearance*

Figure 3. View of a narrow and winding road in a mountainous area

The natural conditions of mountain roads - dangerous turns, steep slopes and narrow roads - make driving difficult (Figure 3, a). Especially after rain or snow, road conditions become slippery, increasing the risk of skidding and loss of control (Figure 4).



Figure 4. Driving conditions on a snowy mountain road

Given the variability of weather conditions in mountainous areas, natural factors such as fog, snow, and heavy rainfall limit visibility and pose a significant risk to drivers. Adverse weather conditions also contribute to the occurrence of road accidents in these areas. In mountainous areas, it creates difficulties for freight and passenger vehicles. The risk is especially high when moving with a loaded load. When examining the steep and sloping slopes of the road and dangerous turning areas on the 991-1013 km of the M-39 highway, the average slope reaches 12°-16°.

The length of the mountainous areas (Long Peaks) is 22 km. The average value of ascents and descents on the roads in the mountainous areas is 80-90% of the route length. The indicator of dangerous turns on the road is 45°. The above indicators can cause traffic accidents for cars and further increase the level of complexity in driving.



Figure 5. Areas without protective barriers

In the above figure, areas without protective barriers are considered areas with a very high risk of falling and exiting from the slope. Such protective measures are not sufficient on all roads in these areas. Although there are barriers, some of them are outdated and in poor condition.

In conclusion, it can be said that by implementing the above-mentioned work, we can prevent and reduce the occurrence of road accidents, the death of citizens, damage to their health, damage to vehicles, structures, cargo, and other material damage. Of course, for this, every employee, driver, and citizen assigned to these tasks must approach them responsibly. Because this situation is a matter related to human life.

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THE EFFECTIVENESS OF DEVELOPING MEASURES BASED ON THE ANALYSIS OF ROAD TRAFFIC ACCIDENTS IN MOUNTAINOUS AREAS OF THE M-39 HIGHWAY

Abstract: *This article presents current problems and solutions for ensuring the safety of vehicles in the mountainous terrain of km 982-1013 of the M-39 highway of international importance in the Jizzakh region, the specific natural and geographical conditions of mountainous areas, and numerous risks to traffic. The main direction of improving road safety is the systematic analysis of road traffic accidents and the subsequent development of comprehensive measures.*

Key words: *International highway M-39, road traffic accident, mountain road, transport, safety, road traffic accident, traffic safety, accident, injury, harm, speed, roadway, driver, car.*

Today, road accidents are becoming a pressing problem. For example, according to statistical data from the World Health Organization, about 3,000 people die and 100,000 are seriously injured in road accidents worldwide every day. Of those who died in road accidents, 13 or 36 percent were due to speeding, 9 or 25 percent were due to non-compliance with distance, 8 or 22 percent were due to fatigue, falling asleep at the wheel, 4 or 11 percent were due to crossing the road in an undesignated place, 1 or 3 percent were due to failure to pass a route vehicle, and the level of danger of mountain roads is also high (Fig. 1).

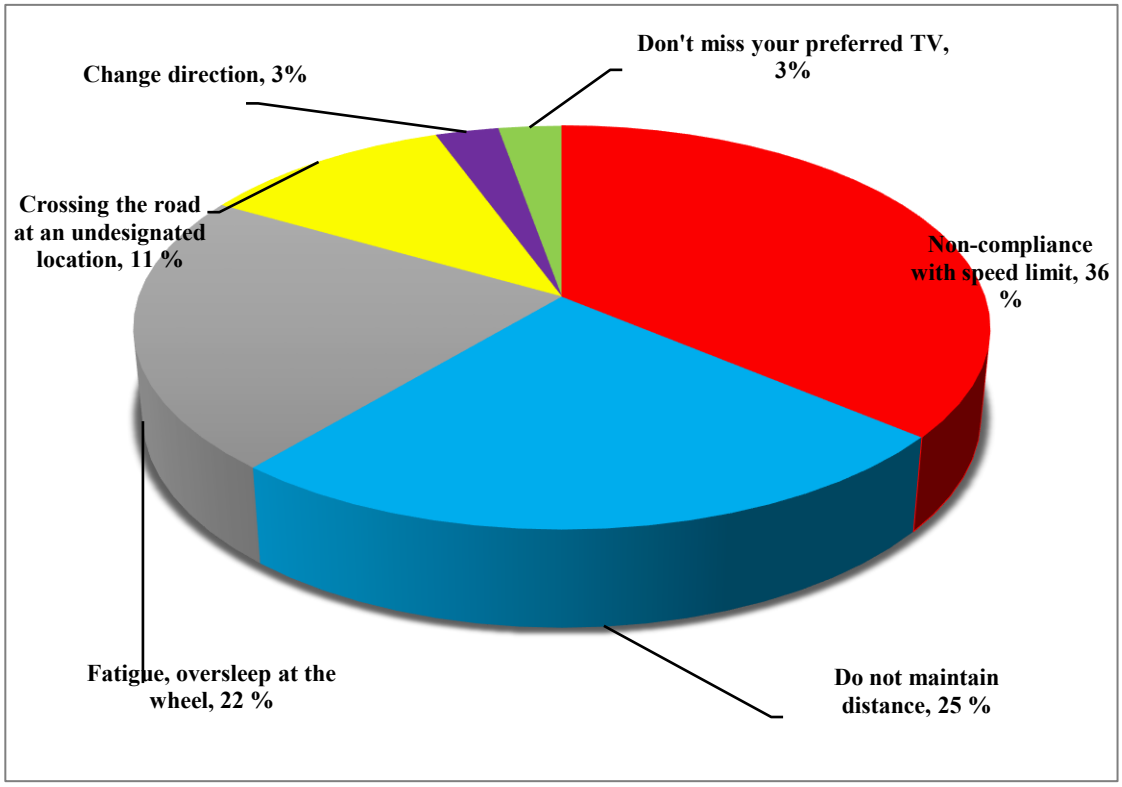


Figure 1. Indicators of the causes of road accidents on the M-39 highway between km 982-1013 for 12 months of 2024

The largest number of incidents, 29 or 76 percent, occurred in collisions. In the following places, 6 or 16% of cases of hitting a pedestrian, 2 or 5% of cases of overturning, 1 or 3% of cases of hitting an obstacle were recorded. The majority of accidents occur at night (23:00 PM).

- Cars caused the most accidents, with the number of related incidents approaching 30. This indicator is significantly higher compared to other vehicles.
- The number of accidents involving trucks is around 8, which is significantly lower than that of passenger cars.

Accidents involving buses were not recorded at all, meaning no road traffic accidents involving buses occurred on this route.

The reason may be that trucks move less or that their drivers move more cautiously. And the buses may not have participated in the road traffic accidents, since they are vehicles moving in the prescribed direction at a limited speed. These data indicate the need to further control the movement of passenger cars, especially in mountainous areas, speed limits, and increased safety measures. This plays an important role in the prevention

of road accidents (Fig. 2).

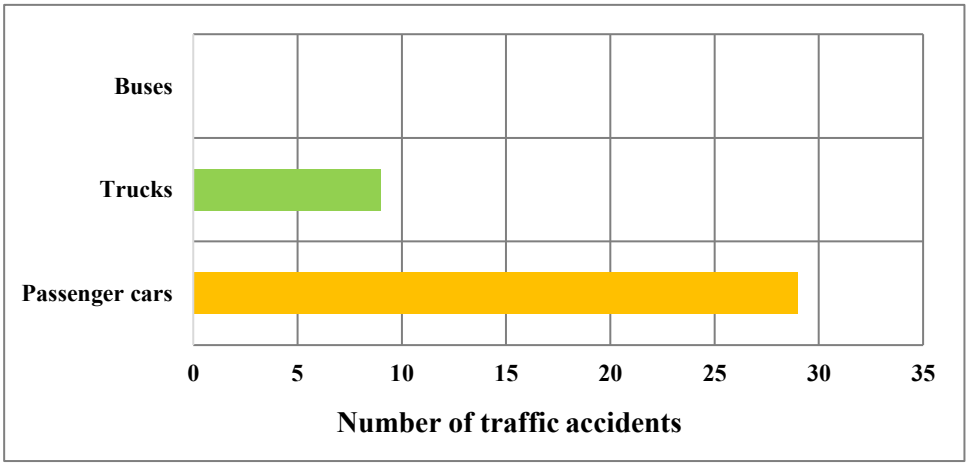


Figure 2. Number of accidents by type of vehicle in 2024 (interval of 982-1013 km of the M-39 highway)

Based on statistical data for 2024, it can be analyzed that as a result of road accidents at km 982-1013 of the M-39 highway, passing through the mountainous territory of the Jizzakh region, 29 accidents involving cars and 9 accidents involving trucks occurred.

During the 12 months of 2023, the highest indicator was observed in April at 982-1013 km of the international highway M-39, which passes through the territory of the Jizzakh region. This month, natural factors such as sharp changes in air temperature, increased precipitation, and fog in mountainous areas have complicated drivers' movement. In addition, the increase in traffic flow in the spring season, as well as the wet state of the road surface, increased the risk of slipping (Fig. 3).

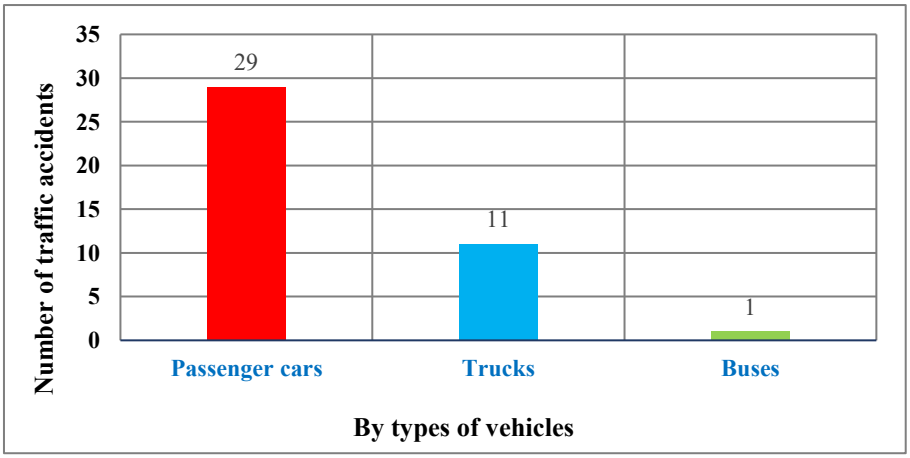


Figure 3. Accidents by type of vehicle on km 983-1012 of the international highway M-39 for 12 months of 2024

The number of accidents in 2024 is 997 km. In 2023, the largest number of road accidents by km was recorded at 997 km. The results of the analysis show that the causes of road accidents are mainly road conditions, a high degree of slope, the condition of the road surface, low visibility of the road when entering

and exiting vehicles, as well as dangerous turns. When vehicles move at high speeds, especially on sharp turns and steep slopes, insufficient braking distance increases the risk of accidents. As a result, the area of 997 km is recognized as a high accident point, and special measures to improve road safety are necessary here.

Conclusion

We need to reduce the number of accidents and define the following tasks as work to be carried out:

- taking strict measures against trucks according to road sign 5.8.7;
- taking strict measures against pedestrians who violate the rules;
- Strengthening work on detecting overtaking violations;
- relocation of radar devices installed on the M-39 highway;
- effective use of the "Free Patrol" opportunity to identify violations;
- improvement of road infrastructure;
- Implementation of dynamic road signs.

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TA’LIM MUASSASALARIDA YOSHLARGA HAYOT FAOLIYATI XAVFSIZLIGINI O‘RGATISHNING DOLZARB MUAMMOLARI VA ULARNING YECHIMLARI

Annotatsiya: *Ushbu maqolada O‘zbekiston Respublikasi maktabgacha, umumiy o‘rta, o‘rta maxsus, professional va oliy ta’lim muassasalarida hayot faoliyati xavfsizligi asoslari va qoidalarini o‘qitishda zamonaviy pedagogik texnologiyalar usullarni qo‘llash mohiyati, tamoyillari hamda o‘ziga xos jihatlari to‘g‘risidagi ilmiy taklif va tavsiyalar yoritilgan.*

Maqolada ta’lim jarayonini insonparvarlik va demokratiya tamoyillar asosida qurish eng avvalo o‘quvchi shaxsini tan olinishi, uning ijodiy faolligini oshirish, o‘quvchining ijodiy rivojlanishi, uning ichki imkoniyatlari, o‘ziga ishonch, faolligini rivojlantirishasosida ko‘riladi. O‘quvchining darsdagi faolligini oshirish, uning ijodiy imkoniyatlarini rivojlantirish, fikrlash uchun faol muhit yaratish – o‘qituvchining hozirgi kundagi asosiy vazifalaridan biri bo‘lib, dars jarayonida o‘qitishning interaktiv metodlaridan foydalanish muhim ahamiyat kasb etadi. Interaktiv ta’limda odatdagi ta’limdan farqli o‘qituvchining faolligi o‘quvchilar faolliklariga ko‘chadi.

Fuqaro muhofazasidagi ruhiy tayyorgarlik bu - fuqaro muhofazasiga oid vazifalarni bajarish mamlakat, xalq oldidagi burch ekaniga ishonchni tarbiyalash, bu tinchlik va harbiy haraktlar vaqtlaridagi o‘z vazifalarini vijdonan bajarishga, shunday vaziyatlardagi qiyinchiliklarni yengib o‘tishga o‘zini tayyorlash zarurligini tushunish, ruhiy qiyinchiliklarga chidash ruhida tarbiyalashdir.

Kalit so‘zlar: *ta’lim tizimi, ta’lim islohatlari, tarbiya, fan, hayot faoliyati, xavfsizlik, ko‘nikma, ijodiy faollik, pedagogik texnologiyalar, axborot, maktab, o‘quvchi, xavfsizlik, o‘qitish usullari, favqulodda vaziyat, fuqaro muhofazasi targ‘iboti, falokat, halokat, xavf-xatar.*

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URGENT ISSUES IN TEACHING YOUTH LIFE SAFETY IN EDUCATIONAL INSTITUTIONS AND THEIR SOLUTIONS

Abstract: *The article presents scientific proposals and recommendations on the essence, principles and peculiarities of using modern pedagogical technologies and methods in teaching the basics and rules of life safety in preschool, general education, secondary specialized, professional and higher educational institutions of the Republic of Uzbekistan.*

The article considers the construction of educational process on the basis of humanistic and democratic principles as primarily based on the recognition of the student's personality, increasing his creative activity, the creative development of the student, his inner capabilities, self-confidence, the development of his activity.

Increasing student's activity at the lesson, developing their creative abilities, creating an active environment for thinking is one of the main tasks of the teacher today, and the use of interactive teaching methods during the lesson is of great importance.

In interactive education, the teacher's activity, different from conventional teaching, is transferred to the students' activity.

Psychological training in the field of civil defense is aimed at fostering the belief that the performance of civil defense tasks is a duty to the country and the people, at understanding the need to be ready to faithfully perform their duties in peacetime and during military operations, to overcome difficulties in such situations, as well as at education in the spirit of overcoming psychological difficulties.

Keywords: *education system, educational reforms, education, science, life activity, safety, skills, creative activity, pedagogical technologies, information, school, student, safety, teaching methods, emergency, civil defense, disaster, destruction, danger.*

Kirish

Favqulodda vaziyatlar sabablarining tahlili natijalari 90 foiz holatlarda inson faoliyati bilan bog‘liq bo‘lib, bunda kasbiy tayyorgarlik darajasining pastligi, mas’uliyatsizlik va favqulodda vaziyatlarda to‘g‘ri harakat qilishga oid bilim, ko‘nikma va malakalarining yeimshmasligi sabab bo‘ladi. Olib borilgan tadqiqot ishlari doirasida maktabgacha ta’lim muassasalari tarbiyalanuvchilari, umumta’lim maktablari, o‘rta-maxsus va professional ta’lim muassasalari o‘quvchilari hamda oliy ta’lim muassasalari talabalarini favqulodda vaziyatlarda muhofazalanish, jabrlanganlarga birinchi yordam ko‘rsatish, jamoviy va shaxsiy himoya vositalaridan foydalanish qoidalari va usullariga o‘rgatish, favqulodda vaziyatlarda harakat qilishga tayyorlashning asosiy vazifalari qilib belgilab olindi. Ushbu vazifalar quyidagi yo‘nalishlarda: maktabgacha ta’lim muassasalari tarbiyalanuvyailari – doimiy ravishda maktabgacha ta’limning davlat talablari va o‘quv dasturlariga muvofiq ta’lim-tarbiya jarayonida favqulodda vaziyatlarning oldini olish va uning oqibatlariga oid muammoli-vaziyatli o‘yinlar va mashg‘ulotlarda; umumta’lim maktablari o‘quvchilari – o‘quv yili davomida, umumta’limning davlat talim standartlari va o‘quv dasturlariga muvofiq, favqulodda vaziyatlardan muhofazalanish bo‘yicha darslarda, shuningdek,

hududiy Favqulodda vaziyatlar boshqarmalari Hayot faoliyati xavfsizligi o‘quv markazlarida; o‘rta maxsus, kasb-xunar ta’lim muassasalari o‘quvchilari va oliy ta’lim muassasalari talabalari o‘quv yili davomida, o‘rta maxsus, kasb-hunar ta’lim va oliy ta’limning davlat ta’lim standartlari va o‘quv dasturlariga muvofiq, hayotiy faoliyat xavfsizligi darslarida, internet jahon axborot tarmog‘ida favqulodda vaziyatlar va uning oqibatlaridan muhofazalanishga oid ma’lumotlardan foydalanish, mobil ilovalar, shuningdek, milliy elektron platforma orqali malaka oshirish va qayta tayyorlash kurslarida hamda hududiy o‘quv markazlarida tayyorgarlikdan o‘tkazilishi belgilingan. Bu ishlarni tizimli amalga oshirish uchun aholining barcha qatlamini favqulodda vaziyatlardan muhofaza qilish bo‘yicha o‘qitish va tayyorgarlikdan o‘tkazish uzluksiz ravishda olib borilishi hamda millati, yoshi, faoliyat turi va boshqa omillardan qat’i nazar o‘qitish va tayyorgarlik jarayonida aholining barcha toifasi qamrab olinishi nazarda tutilgan [8].

Mamlakatimizda so‘ngi yillarda, xususan yangi O‘zbekiston renessansi davrida amalga oshirilayotgan keng ko‘lamli islohatlar doirasida aholini barcha qatlamlarini jumladan, respublikamiz maktabgacha, umumiy o‘rta, o‘rta maxsus, professional va oliy ta’lim muassasalari tarbiyalanuvchilari, o‘quvchilari va talabalarini hayotiy faoliyat xavfsizligi sohasida tayyorlash, o‘qitish holatini yaxshilash, ularning xavfsiz turmish darajasini yuksaltirishga, shart-sharoitlarini texnika xavfsizligi hamda sanitariya va mehnat muhofazasi talablarini yuksak darajaga ko‘tarishga alohida e’tibor qaratilmoqda. Ta’lim jarayonida keng qamrovli islohotlar amalga oshirilmoqda. Xususan, “Kadrlar tayyorlash milliy dasturi” va “Ta’lim to‘g‘risidagi” Qonun qabul qilinishi bilan uzliksiz ta’lim tizimi orqali zamonaviy kadrlar tayyorlashning asosi yaratildi [7]. Bugungi kun ta’lim tizimi ijobiy o‘zgarishga yuz tutib, ta’lim sohasi tubdan takomillashtirilmoqda. Ta’lim barcha sohalarida eng zamonaviy o‘qitish vositalaridan foydalanilmoqda. Ta’lim muassasalari zamonaviy axborot texnologiyalari bilan ta’minlanmoqda. Ijtimoiy hayot tarzi ta’limga bo‘lgan qiziqish va intilishlar faollashmoqda. Yangi taxrirda qabul qilingan “Ta’lim to‘g‘risida”gi Qonun ta’lim tizimi mazmunini tubdan o‘zgartirib yubordi. Jumladan, oliy ta’lim o‘quv rejalariga zamon va hayot talablaridan kelib chiqib katta o‘zgartirishlar kiritildi. Yosh mutaxassislarga har bir sohada chuqur va keng qamrovli ma’lumot berish, ularga berilgan bilim ishlab chiqarishda va jamiyatda o‘z aksini va dolzarbligini yo‘qotmaydigan bo‘lishiga va ularning bilim darajalari dunyo ta’lim standartlari qo‘ygan talabga javob berishiga asosiy ahamiyat qaratilmoqda. Zamonaviy hayotdagi ishlab chiqarish samaradorligini yetuk kadrlarsiz tasavvur etish mumkin emas. Har sohada inson omili, uning qadr qimmati birinchi o‘ringa qo‘yilib ish tashkil etilgan joyda yutuqlar barqaror bo‘lishi shubhasiz.

Inson tug‘ilishi bilan yashash, erkinlik va baxtga intilish huquqiga ega bo‘ladi. Inson o‘zining yashash, dam olish, sog‘ligi haqida qayg‘urish, qulay atrof muhit, xavfsizlik va gigiena talablariga javob beradigan mehnat sharoitida

ishlashga bo‘lgan xuquqlarini hayot faoliyati jarayonida amalga oshiradi. Uning bu huquqlari O‘zbekiston Respublikasi Konstitutsiyasida kafolatlangan.

Hayot faoliyat xavfsizligi insonni har qanday muhitdagi ishtirokida uning xavfsizligi va sog‘ligini ta’minlovchi, xavfli va zararli omillardan himoya qiluvchi amaliyot va nazariyani qamrab olgan ilmiy bilimlar majmui ekanligini inobatga olib, Yangi O‘zbekiston - inson qadri ustuvor bo‘lgan jamiyat va xalqparvar davlatda fuqarolarni xavfsizligi birinchi o‘rindagi eng dolzarb masala hisoblanadi. Shunday ekan Hayot faoliyat xavfsizligi fanini barcha aholi qatlamiga o‘qitish va o‘rgatish maqsadga muvofiq.

Adabiyotlar taxlili va metodologiya.

Prezidentimiz Sh.Mirziyoev takidlaganlaridek, “Maktab ta’limi sohasidagi islohotlar vazirlik va idoralar, tarmoq rahbarlari, barcha darajadagi hokimlar, ilmiy tashkilotlar, ziyolilar, keng jamoatchilikning vazifasi bo‘lishi shart va zarur. Shundagina kutilgan natijaga erishish mumkin” hamda “Ta’lim tarbiya-bu bizning kelajagimiz, hayot-mamot masalasi”. Shu bois, bu sohadagi islohotlarni kechiktirishgi haqqimiz yo‘q. Qanchalik murakkab bo‘lmasin, maktab ta’limida poydevorni bugundan mustahkam qo‘yishimiz kerak” degan so‘zlaridan kelib chiqib, barcha toifadagi rahbarlar, birday harakat qilsa kelajakda eng rivojlangan davlatlar qatorida bo‘lamiz [1].

O‘zbekiston Respublikasi Prezidentining 2022 yil 28 yanvardagi “2022 – 2026 yillarga mo‘ljallangan Yangi O‘zbekistonning taravviyot strategiyasi to‘g‘risida”gi farmon bilan tasdiqlangan yo‘nalish, maqsadva vazifalarda favqulodda vaziyatlarning oldini olish va bartaraf etishning samarali tizimini yaratish hamda sohadagi qonun hujjatlarini takomillashtirish belgilanganni tizimning yanada rivojlanishiga va takomillashuviga ijobiy omil bo‘ldi.

O‘zbekiston Respublikasi Vazirlar Mahkamasining 2019 yil 9 sentabrda “Aholini favqulodda vaziyatlarda harakat qilishga va fuqaro muhofazasi sohasida tayyorlash tartibini takomillashtirish to‘g‘risida”gi 754 - sonli qarori qabul qilingan. Ushbu qaror bilan aholining barcha qatlamini, maktabgacha ta’lim muassasalari tarbiyalanuvchilari, umumiy o‘rta ta’lim maktablari va o‘rta maxsus, kasb-hunar ta’lim muassasalari o‘quvchilari hamda oliy ta’lim muassasalari talabalari bilan o‘quv mashg‘ulotlarini o‘tkazish hamda favqulodda vaziyatlarda harakat qilishga va fuqaro muhofazasisohasida tayyorlash tartibi to‘g‘risidagi Nizom tasdiqlangan [9].

Dunyo hamjamiyatining globallashuv sari borayotgan hozirgi davirda ta’limning barcha bo‘g‘inlariga, aynan inklyuziv ta’limga alohida e’tibor qaratilmoqda. O‘zbekiston Respublikasini rivojlantirishning yettita ustkvor yo‘nalishi bo‘yicha Taraqqiyot strategiyasida “Inson qadrini yuksaltirish va erkin fuqarolik jamiyatini yanada rivojlantirish orqali xalqparvar davlat barpo etish” hamda “Nogironligi bo‘lgan shaxslarni qo‘llab-quvvatlashning samarali tizimini shakillantirish, ularning hayot sifati va darajasini oshirish” ustuvor vazifalar etib belgilangan. Bu esa, imkoniyati cheklangan o‘quvchilar hayot xavfsizligini ta’minlashning psixologik va pedogogik shart-sharoitlarini ta’minlash, pedagogik texnologiyalarni ishlab chiqish zaruriyatini ko‘rsatadi.

Ilmiy-texnika taraqqiyotining jadal rivojlanishi, yangi texnologiyalarning takomillashtirilishi va yaratilishi jamiyat va inson manfatlariga xizmat qilish uchun mo‘ljallangan bo‘lsada, yangi ijodiy natijalar bilan bir qatorda potensial xavf tug‘diriadi. Xavf manbalarini o‘rganib, uchta jamlangan maydonni ajratib ko‘rsatish mumkin: [2]. Insonning ushbu muhitda bo‘lishi uchun qulay sharoitlarni yaratish, xavfsizlik darajasini va birinchi navbatda, insoning shaxsiy fazilatlariga bog‘liq bo‘lgan individual darajasini oshirish muhim ro‘l o‘ynaydi. Aholi o‘rtasida ko‘plab qurbonlar bo‘lgan turli xarakterdagi favqulodda vaziyatlarni ko‘payishi kundalik hayotda va ekstremal vaziyatlarda xavfsizlikni ta’minlay oladigan malakali mutaxasislarni tayyorlashni taqazo etadi.

Ta’lim jarayonida hayot faoliyat xavfsizligini o‘rganish sohasida uchta daraja mavjud: Umumiy ta’lim, oliy ta’lim, hayot xavfsizligi mutaxassislarni tayyorlash. Har bir daraja ma’lum ma’lumotlarni olishga qaratilgan bo‘lib, bilimlarni yig‘ish tamoyili asosida qurilgan. “Hayot faoliyat xavfsizligi” fanini o‘rganishda nazariya va amaliyotning birligi, ayniqsa favqulodda vaziyatlarda olingan bilimlarni amalda qo‘llash qobiliyati inson salomatligi va hayotiga bog‘liq bo‘lganda muhimdir [3].

O‘zbekiston Respublikasi Vazirlar Mahkamasining 2011 yil 19 iyuldagi qarorida aholiga favqulodda vaziyatlar va ular sodir bo‘lganda to‘g‘ri harakatlanishga oid bilim-malakalarini izchil singdirish va ularga bu kabi vaziyatlarga ham ruhan, ham jismonan shay turishdek asosiy maqsad ko‘zlangan.

Prezidentimiz Sh.Mirziyoev tomonidan yosh avlodni ham ma’nan, ham jismonan barkamol etib tarbiyalashga muhim e’tibor qaratib kelinmoqda. Shu nuqtai nazardan, bugungi kunda ta’lim oluvchilarning dunyoqarashini boyitish, ularda Vatanga sadoqat, uning taraqqiyotiga daxildorlik hissi, milliy g‘ururni shakillantirish, ularni milliy va umuminsoniy qadriyatdar ruhida kamol toptirish, yuqori intellekt hamda yuksvk ma’naviyatli qilib tarbiyalash hamda xavfsizlikni ta’minlash “Hayotiy faoliyat xavfsizligi” kursining oldidi turgan muhim vazifalardan biridir.

Dunyoda keskin o‘zgarishlar, favqulodda holatlar yuz berishi, kutilmaganda baxtsiz hodisalarga uchrashi, “Hayot faoliyat xavfsizligi” fanini o‘rganishda nazariya va amaliyotni uyg‘unlashtirishga, aholining barcha qatlamlarini o‘qitib o‘rgatishga, zamonaviy pedagogik texnologiyalarning xilma-xilligidan foydalanishni taqoza etadi.

Zamonaviy pedagogik texnologiyalarning xilma-xilligidan foydalanishdan oldin, pedagog olimlar V. M. Shepel, B.T. Lixachev, I. P. Volkov, V. M. Monaxov, U. Nishonaliev, V. Yu. Pityukov, V. K. Dyachenko, M.V.Klarin G. K. Selevkolarning qo‘llanmalari, ilmiy adabiyotlari va fikrlari bilan tanishish hamda quyidagi tushunchalarga asosiy e’tiborni qaratish maqsadga muvofiqdir [4].

Texnologiya (yunon. “techne” – mahorat, san’at, “logos” – tushuncha, ta’limot) – muayyan (ishlab chiqarish, ijtimoiy, iqtisodiy va b.) jarayonlarning yuksak mahorat, san’at darajasida tashkil etilishi.

Ta’lim texnologiyasi (ingl. “an educational technology”) – ta’lim (o‘qitish) jarayonining yuksak mahorat, san’at darajasida tashkil etilishi Ta’lim

texnologiyasi – ta’lim maqsadiga erishish jarayonining umumiy mazmuni, ya’ni, avvaldan loyihalashtirilgan ta’lim jarayonini yaxlit tizim asosida, bosqichma - bosqich amalga oshirish, aniq maqsadga erishish yo‘lida muayyan metod, usul va vositalar tizimini ishlab chiqish, ulardan samarali, unumli foydalanish hamda ta’lim jarayonini yuqori darajada boshqarish.

Ta’lim metodi – o‘quv jarayonining majmuaviy vazifalarini yechishga yo‘naltirilgan o‘qituvchi va talabalarning birgalikdagi faoliyati usuli bo‘lsa, ta’lim metodikasi esa muayyan o‘quv predmetini o‘qitishning ilmiy asoslangan metod, qoida va usullar tizimi [5].

Bugungi kunda ta’lim texnologiyalarini shartli ravishda ikki turga ajratish mumkin, ular *an’anaviy va noan’anaviy*:

an’anaviy ta’lim texnologiyasi - muayyan muddatga mo‘ljallangan, ta’lim jarayoni ko‘proq o‘qituvchi shaxsiga qaratilgan bo‘lib, o‘qitishning an’anaviy shakli, metodi va ta’lim vositalarining majmuidan foydalanib ta’lim-tarbiya maqsadiga erishishdir;

noan’anaviy ta’lim texnologiyasi - muayyan muddatga mo‘ljallangan, ta’lim jarayoni markazida talaba shaxsi bo‘lib, o‘qitishning zamonaviy shakli, faol o‘qitish metodlari va zamonaviy didaktik vositalarning majmuini ta’lim-tarbiya ishidan ko‘zlangan maqsad va kafolatlangan natijaga erishishga yo‘naltirishdir.

Noan’anaviy ta’lim texnologiyasi an’anaviy ta’lim texnologiyasidan farq qilib, talabalarning bilish imkoniyatlarini rivojlanishiga sharoit yaratadi, mustaqil ishlashlariga alohida e’tibor beriladi, bilish faoliyatlari izlanuvchan va ijodiy harakterga ega bo‘ladi. Dars tuzilmasi o‘zgaruvchan Noan’anaviy ta’lim texnologiyasi o‘z navbatida uchga bo‘linadi: hamkorlikda o‘rganish, modellashtirish, tadqiqot (Loyiha) bo‘ladi.

Hamkorlikda o‘rganish-talabalarning bilimini o‘zlashtirish, singdirish, mustahkamlash bo‘yicha reproduktiv faoliyatini ta’minlovchi, mahorat va malakani ketma-ketlik bo‘yicha talabaning bevosita boshchiligida ishga solishni tashkil etishga asoslangan o‘qitish va bilim olishdir. U talabalarning mustaqil guruhlarda ishlashi evaziga ta’lim olishini ko‘zda tutadigan metodrdan iborat. Bularga kitob bilan ishlash, o‘quv suhbati, davra suhbati, aqliy xujum, kichik guruhlarda ishlash, bahs-munozara kabi metodlarni kiritish mumkin.

Modellashtirish - real hayotda va jamiyatda yuz beradigan hodisa va jarayonlarning ixchamlashtirilgan va soddalashtirilgan ko‘rinishini auditoriyada yaratish va ularda talabalarning shaxsan qatnashishi va faoliyat evaziga ta’lim olishini ko‘zda tutadi. Uning asosiy maqsadi talabalarning faqat tinglashi emas, balki bilimlarni o‘zlashtirishda bevosita ishtirokini ta’minlash orqali ta’lim jarayonining samaradorligini oshirishga qaratilgan. Bularga ishbop o‘yinlar va rolli o‘yinlar kabi metodlarni kiritish mumkin [6]. Fanlararo aloqadorlikni pedagogik faoliyat su’bektlarining quyidagi yo‘nalishlarni muvofiqlashtirishni bildiradi:

O‘quv materialining mazmuniga ko‘ra, hayot faoliyati xavfsizligi chuqurroq o‘zlashtirish uchun talabaning boshqa fanlardan olgan bilimlaridan foydalanish, o‘zaro qonunlar va nazariyalarni talqin qilishning birligi, turli fanlardan

o‘rganiladigan o‘zaro bog‘liq hodisalar, jarayonlar, hodisalar haqidagi tushunchalarni talqin qilishning birligi, turli fanlar bo‘yicha o‘rganiladigan o‘zaro bog‘liq materiallarni tanlashni muvofiqlashtirish;

hayot faoliyati xavfsizligi sohasidagi shakllangan ko‘nikmalarga ko‘ra, o‘quvchilarni o‘quv va o‘quv-ishlab chiqarish ishlarini rejalashtirishga o‘rgatish usullarini muvofiqlashtirish; intellektual, amaliy ko‘nikmalarni, kitob bilan ishlash ko‘nikmalarini, tashkilotchilik qobiliyatlarini shakllantirishga yondashuvlar birligini, o‘qitish uslublari va vositalari bo‘yicha: turli fanlarda qo‘llaniladigan o‘quv-tarbiya ishlarining mutodlari va o‘qitish usullarini muvofiqlashtirish; o‘quv qurollari va ularni hayot faoliyati xavfsizligi darslarida qo‘llash usullarini mujassamlashtirish;

o‘quvchilarni tarbiyalash va rivojlanishi usulari va vositalari bo‘yicha ta’lim jarayonini xavsizlik, insonparvarlashtirish, demokratlashtirish, hamkorlik pedagogikasi g‘oyalari va tamoyillari asosida boshqarish; o‘rganilayotgan materialni hayot bilan, amalièt bilan bog‘lash, barcha o‘qituvchilardan talabalarga qo‘yiladigan pedagogik talablarning birligi va mujassamlashtirish, o‘quvchilarning jamoaviyligini, sherikligini, va o‘zaro yordamini rivojlantirish; hayot xavfsizligini ta’minlash va sog‘lom turmush tarzini saqlashda o‘qituvchining shaxsiy namunasiga erishmoq lozim.

Fanlar o‘rtasidagi bog‘liqlik ta’lim tuzilmalaridan biri bo‘lib, ushbu fanni o‘rganishda boshqa fanlar bo‘yicha bilimlardan foydalanishga imkon beradi. Shundagina, mutaxasisning turli fanlar bo‘yicha olgan bilim, ko‘nikma va malakalari o‘zaro bog‘langan va o‘zaro bog‘liq bo‘lib, yagona kompleksni ifodalagan holda uning sifatli tayèrlanishi mumkin. O‘quv tematik rejalari va boshqa rejalashtirish hujjatlarini tayèrlashda o‘quv mavzulari darajasida fanlararo aloqalarni amalga oshirish maqsadga muvofiq.

Tadqiqotlarimiz davomidagi kuzatish, o‘rganish va tahlil qilish natijalariga ko‘ra, respublikasiz ta’lim tizimidagi muassasalarda xayot faoliyati xavfsizligini o‘qitish va o‘rgatishni quyidagi zamonaviy pedagogik texnologiyalari samarali va maqsadli hisoblanadi, xususan:

Maktabgacha ta’lim tashkilotlarida o‘tkaziladigan ta’lim-tarbiya mashg‘ulotlari tarkibiga “Hayotiy faoliyat xavfsizligi” tushunchalarini integratsiya qilingan holda ko‘nikma hosil qilish (shakillantirish) bo‘yicha tavsiyaviy shakl sifatida quyidagilar taklif etiladi:

Bola tabiatda yolg‘iz, kutilayotgan natija, bolalarda haèt xavfsizligi tushunchalarini shakllantirish: Hayot xavfsizligi tushunchalarini shakllantirishdagi qiyinchiliklar Hayot xavfsizligi tushunchalarini shakllantirishdagi yuzaga kelgan muammolarni kutilayotgan natija bolalarni hayotda, ya’ni tabiatda yolg‘iz qolganda uy hayvonlari, har turdagi hasharotlar va sudralib yuruvchilarga tegmaslikni o‘rgatish. Har turdagi hasharotlar va sudralib yuruvchilarga zarar yetkazmaslik xavfli vaziyatga tushmaslik choralari haqida tushuncha hosil qilish. Bunda xavf xatarlarni yuzaga kelishi, oqibatlari va ulardan saqlanish bo‘yicha tushunchalar beriladi.

Hayot xavfsizligi tushunchalarini shakllantirishdagi qiyinchiliklar:

bolalarga umumiy ma’lumot berilgandan so‘ng, bolalar uy hayvonlari har turdagi hasharotlar va sudralib yuruvchilar bir-biridan farqlashda qiyinchiliklarga duch keladi, shunda ularga ko‘rgazmali tasviriy vositalardan foydalanish zarur bo‘ladi.

Hayot xavfsizligi tushunchalarini shakllantirishdagi yuzaga kelgan muammolarni bartaraf etish yo‘llari: bolalar ongi va tasavvurida yaxshi aks ettirish maqsadida, uy hayvonlari har turdagi hasharotlar va sudralib yuruvchilarni sahna ko‘rinishi asosida tushintirildi.

Taklif, xulosa va bolada tushunchalarni shakillanish darajasi: bolalar tushunchaga ega bo‘ldi. Ushbu mavzu asosida videoroliklar, slaydlar, rasmlar ko‘proq tayyorlansa. Tayyorlangan rasmlarni bolalarga ko‘rsatib rasm chizdirish yanada samarali usul bo‘ladi.

Mavzu: Bola uyda yolg‘iz bo‘lganda eshiklarni quliflanib qolishi. Bolalarda hayot xavfsizligi tushunchalarini shakllantirish: bolalarni ayrim holatlarda uyda yolg‘iz bo‘lganda uy eshigini ichkaridan quliflanib qolib, uzoq vaqt, ya’ni tashqaridan yordam kelgunicha ichkarida qolib ketib, qo‘rquvga tushib qoladilar. Uy eshigini ichkaridan har xil turdagi qulflarni o‘ynayman deb ichkaridan yopib qo‘yganda vaximaga tushmaslik xavf tug‘diradigan narsalarga teginmaslik haqida tushuncha berish.

Hayot xavfsizligi tushunchalarini shakllantirishda yuzaga kelgan muammolarni bartaraf etish yo‘llari: mashg‘ulotda olingan tushuncha, ko‘nikma va malaka savol va topshiriqlar asosida o‘tkazildi. Bog‘cha xonalarida sahna ko‘rinishi asosida tushuntirildi.

Taklif, xulosa va bolada tushunchalarni shakillanish darajasi: bolalar tushunchaga ega bo‘ldi. Ushbu mavzu asosida videoroliklar, slaydlar, rasmlar, ko‘proq multfilm tayyorlansa maqsadga muvofiqdir.

Hayot faoliyati xavfsizligi bo‘yicha o‘quv jarayonida qo‘llaniladigan pedogogik texnologiyalar umumiy nuqtai nazaridan. O‘yin texnologiyalari.

O‘quv jarayonida faollashtirish va intensivlashtirishga tayanadigan o‘qituvchi o‘yin faoliyatidan quyidagi hollarda foydalaniladi:

1) havaskor texnologiyalar sifatida o‘quv fanining mazmuni tushunchalari, bo‘limlari, mavzularni ishlab chiqish uchun;

2) boshqa texnologiyalarda elementlar sifatida;

3) darsni (sinfni) yoki uning bir qismini tashkil etishda yetakchi texnologiya sifatida (kioish, yangi materialni tushuntirish, o‘rganilgan narsalarni mustahkamlash, mashqlar, nazorat);

4) sinfdan tashqari ishlarni tashkil etishda (kollektiv ijodiy faoliyat).

O‘yin texnologiyalari o‘quv jarayonining bir qismi bo‘lib, umumiy mazmun, syujet, xarakter bilan birlashtirilgan. Bunda o‘yin syujeti ta’limning asosiy mazmuni bilan parallel ravishda amalga oshiriladi va o‘quv jarayonini faollashtirishga yordam beradi. Masalan, Favqulodda vaziyatlar, Fuqaro muhofazasi va Yong‘in xavfsizligi to‘g‘risidagi qonunlari hamda Hayot faoliyat xavfsizligi asoslari va qoidalarini o‘qitishda talabalar va o‘quvchilarni qutqaruvchi, yong‘in-qutqaruvchi, shifokor, razvedkachi, professor-o‘qituvchi va

boshqa kasb egalari sifatida harakat qilishlari, birinchi o‘rinda ushbu kasblarga bo‘lgan qiziqishi va muxabbatni, ikkinchi o‘rinda esa o‘zlarining xotiralarida haloskor bo‘lish orzusi umrbod saqlanishi mumkin deb o‘ylayman.

Maktabda hayot xavfsizligi asoslari bo‘yicha integratsiyalashgan darslar turli yo‘llar bilan fanlararo va tizimlararo integratsiya bo‘yicha amalga oshirilishi mumkin: ikki, uch, va to‘rtta mavzuni birlashtirish,musobaqalar, o‘yinlar, ijodkorlik darslari, ommaviy muloqot shakllariga taqlid qiladigan darslar (konferensiya, manbuot anjumani, munozaralar, og‘zaki jurnal va boshqa) shakllari.

Yong‘in, gaz portlashlari juda og‘ir oqibatlarga olib keladi. Tadqiqotchi-psixolog Syuart “Halokatda omon qolish” degan kitoblarida yozishlaricha, ko‘pchilik uchun yong‘in vaqtida uning alangasi do‘zax o‘ti bo‘lib tuyuladi. Ehtimolki, yong‘in vaqtida odamlarni qaysidir boshqa xavfli vaziyatdagidan ko‘ra kuproq vahima bosadi. Bu xavfli xodisaning hususiyati avval vahima qilib qochishdan iborat. Bu odamning xavfli vaziyatdan qochib qutilishga urinishidan boshqa narsa emas. Odam hamma narsani unutib, hech kim bilan hisoblashmaydi, asosiy maqsad butun vujudini qamrab olgan, ba’zan mutlaqo asossiz qo‘rquvdan qutulish bo‘ladi. Yong‘indagi vaziyatni odam o‘zining omon qolishiga to‘g‘ridan to‘g‘ri tahdid deb tushunadi, badanni muzdek ter bostirib yuboradigan, qattiq qo‘rquv hissi paydo bo‘ladi, fojia bir zumlikkina bo‘lib tuyuladi, miyada esa darhol harakat qilish kerak, degan fikr tug‘iladi. Tabiiyki, odam o‘zini nazorat qila olmay qoladi. Buning sababi juda oddiy: odam xavfli sharoitda faqat o‘zini o‘ylaydi, atrofidagi hech kimni va hech nimani sezmaydi. Shuning uchun, o‘ylamay netmay, beixtiyor harakat qiladi. Murakkab sharoitda istalgan kishining hayot uchun xavfli vazifani bajarishga tayyor ekaniga ishonib ish tutib bo‘lmaydi. “Hech nimadan qo‘rkmaydigan” odam bo‘lmaydi. Hamma gap sarosima hissini yengib o‘tish uchun, to‘g‘ri qarorga kelib, harakat qila boshlash uchun kerak bo‘ladigan vaqtda. Shoshilinch vaziyatga tayyorgarlik ko‘rgan odamda bu anchagina tez bo‘ladi. Tayyorgarligi yo‘q kishida esa harakatsizlik, xovliqish uzoq vaqt saqlanib turadi-da psixika buzilishini kuchaytirib yuboradi. Favqulodda vaziyatlar yuz berishi ehtimoli borligini va xavf darajasi to‘g‘risida aholi o‘rtasida tushuntirish ishlari olib borish kerak. Biroq, bunda odamlarni qo‘rqitmaslik, balki bu xavfni unutmaslik, favqulodda vaziyatlar sodir bo‘lganda muhofazalanishga tayyor turishga da’vat etmoq kerak. Shunda favqulodda vaziyatlar oqibatida yetadigan zararlar eng kam darajada bo‘ladi.

Zamonaviy pedagogik texnologiyalarni amalga oshirish professor - o‘qituvchi va talabaning o‘zaro ta’sirisiz mumkin emas, bu “o‘qituvchi-talaba” tizimidagi suhbatdoshlarni teng sub’ektlar sifatida qabul qilishni nazarda tutadi, ya’ni bir jarayonning ikkita sub’ekti birgalikda harakat qilish kerak, ularning hech biri ikkinchisida hukmronlik qilmasligi kerak. O‘qituvchi ham, o‘quvchilar ham ta’lim jarayonining sub’etklari hisoblanadi. Ammo o‘qituvchiga o‘quvchilarning o‘quv va kognitiv faoliyatining yetakchisi roli ham beriladi, bu ularing mustaqil ishlashi, faolligi va ijodiy izlanishni rag‘batlantiradi. Ong va faollikning uyg‘unligi o‘quvchilarda mutaqil fikr yuritish, xulosalar chiqarshi, vaziyatni

ob’ektiv baholash va olingan bilimlarni amliyotda qo‘llashga yordam beradi. Bu kombinatsiya muammoli vaziyatlarni hal qilishda tashabbus va ijodkorlik manbai bo‘lib xizmat qiladi. Onglilik, faollik va mustaqillik tamoyilini muvaffaqiyatli amalga oshirish uchun quyidagi qoidalarga rioya qilish kerak: interfaol ta’lim usularidan faol foydalangan holda muayan vaziyatda vazifani hal qilish maqsadini aniq tushunishga yerishish; mustaqil ishlash ko‘nikmalarini shakllantirishga ko‘proq e’tibor berishi, o‘quvchining aqliy faoliyatini faollashtirish, o‘rganilayotgan materialni tushinish, mexanik yodlashni istisno qilish. Nazariya va amaliyotni o‘zaro bog‘liqlik usulini amalga oshirishda fanni o‘rganishda izchillik va izchillik tamoyiliga qa’tiy rioya qilishga, ularni tushinishga asoslangan bilimlar tizimini shakllantirishga asoslangan munosabat va shu bilan birga sinflarning uzluksizligini saqlab qolish. Qayd etib o‘tilgan zamonaviy pedagogik texnologiyalarni hayot faoliyati xavfsizligi sohasidagi tushuncha va bilimlarni o‘rgatish va o‘qitishda qo‘llash èsh avlodni hayotga va jamiyatga tayyorlashda ijobiy natijalar beradi.

Xulosa:

“Zamonaviy hayot faoliyati xavfsizligi darsini o‘z ijodiy ishlanmalaridan faol foydalanish fonida, uni qurish nuqtai nazaridan ham, o‘quv materiali, pedagogik texnologiya mazmunini tanlashda ham darsning klassik tuzilishini o‘zlashtirishni aks ettirishi va uning taqdimotini o‘rgatishdir. Zamonaviy darsning a’anaviy darsdan tub farqi shundaki, natijalar nafaqat fan bilimi, axborot texnologiyalar yordamida o‘zlashtirish, bu bilimlarni nostandart hayotda omon qolishda qo‘llash qobiliyatini rivojlantirishdan iborat. Yuqorida qo‘llanilgan zamonaviy pedogogik texnologiyalari o‘quv jarayoni samaradorligini, shaxsiy fikrlar kuchayganini, o‘quvchilarning onglilik va tayèrgarlik darajasini yuqori natijalarga erishilganini, o‘qitishda “professor - o‘qituvchi-talaba” pedagogik texnologiyasi eng samarali usul ekanligini o‘tkazilgan taxlillar natijalariga ko‘ra namoyon bo‘ldi. Bugungi kunda an’anaviy va innovatsion pedagogik ta’lim texnologiyalarni yoshi, guruhi, guruh mutaxassisligi, yashash sharoitlari hamda joylashgan xududlarini ham inobatga olish, zamonaviy pedogogik texnologiyalar bilan olib borilgan dars mashg‘ulotlarda yuqori natijalarni ko‘rsatdi.

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EXPERIMENTAL STUDY OF THE ENGINE WITH ADDITIONAL AIR ON NATURAL GAZ FUEL IN “COBOLT”

Abstract. *This article presents the prospects for the use of natural gas for automobile engines, which can be expressed, first of all, in terms of environmental friendliness, the abundance of raw materials in our country and the unique performance of the engine.*

Key words*: car engines, natural gas fuel, additional air, gas cylinder*

Currently the rapid reduction of organic fuel reserves and the continuous growth of the human need for energy consumption, which leads to environmental pollution, creates a situation characterized by energy-ecological degradation. For this reason, large-scale research is being conducted to solve the problems of reducing the consumption of non-renewable energy sources and the pollution of the environment with toxic waste. The most developed countries have stricter requirements for the ecology of waste gases. Thus, in the last 10 years, the European Economic Community has made rapid progress in the field of reducing car engine emissions. Euro-1 standards have been accepted in Europe in 1993. Euro-2 standards in 1997, Euro-3 standards in 2001, Euro-4 standards in 2006. Euro-5 standards and Euro-6 standards are being harmonized for implementation from 2011 and 2015, respectively. [1]

Currently, the main types of fuel used for car engines are studied by many authors, including foreign scientists Erokhov V.I. [8], Khachiyan A.S., Chernyshova N.D., John Stepherson and Uzbek scientists A.Mutalibov, N.Mannonov, B.I.Bazarov, S.M.Kadyrov, M.M.Orifdjonov et al.

TABLE 1.
List of measurements to be performed

The name of the quantity to be measured	Unit of measurement	Marker	Recommended accessories		
			Name	Accuracy class	Measurement limit
Gas pressure in cylinder(s) before test	kgs/cm^2 (MPa)	R_1	Exemplary pressure gauge GOST 6521	1.0	0-250 (0-25.0)
Pressure in cylinder(s) at end of test	kgs/cm^2 (MPa)	R_2	Exemplary pressure gauge GOST 6521	1.0	0-250 (0-25.0)
Gas temperature (ambient air)	^{0}C	t_2	Thermometer with meteorological glass GOST 112	1.0	-100 +100
Test time	s	t	Stopwatch GOST 5072	0.5	–
Distance of the vehicle during the test	km	S	Speedometer GOST 12936 (ST SEV 48657)	0.5	–

Note: Tests should be conducted in the following natural conditions: [6]

- the wind speed does not exceed 3 m/s;
- when there is no rain;
-air temperature from -5 to +25°C;
-atmospheric pressure 730-770 mm.sim. top;
-air humidity -90%.

1. The method of measuring the amount of gas consumed during the experiment consists in determining the change in gas pressure in the cylinder and the temperature of the gas (ambient air) at the beginning and end of the test, setting the appropriate gas compression factors.

2. The amount of gas consumed during the test is determined by the formula here,

$\sum V_b$ – total volume of the cylinder, m^3;

R_1 va R_2 – pressure of the gas in the cylinder at the beginning and end of the test, kgs/cm^2 (MPa);

z_1 va z_2 – compression coefficient at the start and end of the test.

$$\sum V_b = V_b * \frac{n}{1000}, \quad m^2 (1)$$

Here

V_b – volume of one cylinder, l;

n – number of cylinders.

Gas compressibility factors are functions of gas temperature and pressure determined by a nomogram. [7]

Example: testing the Cobolt car with a gas cylinder, V_b=100 l, we get

R_1=18,5 MPa, R_2=16,8 MPa, t_2=14 ^{0}C, z_1=0,83; z_2=0,825 ,

Then

$$\sum V_b = 100/1000 = 0{,}1 m^3 \quad (2)$$

$$Q_{yo} = 10 \cdot 0{,}1 \left(\frac{18{,}5}{0{,}83} - \frac{16{,}8}{0{,}825}\right) = 1.93\ m^3 \quad (3)$$

Figure 3. Nomogram for calculating the volume of gas consumed

By determining Q_g, knowing the mileage S of the car and the useful work done W, we can calculate the mileage or gas consumption of the vehicle:

$$Q_n = 100 \cdot \frac{Q_g}{S},\ \text{m}^3/100\ \text{km} \quad (4)$$

$$Q_m = 100 \cdot \frac{Q_g}{W},\ \text{m}^3/\text{mkm} \quad (5)$$

if, Q_g – gas consumption, m^3;

S – the distance traveled by the car *km*;

W – useful work ratio, $t \times km$.

TABLE 2.

Processed results of the experiment for the Cobolt car in the route "Bakhmal – Jizzakh – Bakhmal"

№	Mean value of fuel consumption		Deviation from the average value $x_i - \bar{x}$	$(x_i - \bar{x})^2$
	In natural gas	When adding additional air to natural gas		
1	10,70	9,95	0,249	0,062001
2	10,37	9.89	-0,071	0,005041
3	10,56	9.92	0,099	0,009801
4	10,75	10.02	0,299	0,089401
5	10,36	9.88	-0,091	0,008281
6	10,70	9.92	0,249	0,062001
7	10,52	9.89	0,059	0,003481

In natural gas $\bar{x} = 104{,}51 : 10 = 10{,}45$ m^3/100 km

When adding additional air to natural gas ẋ=98,94:10=9,894 m^3/100 km

Deviation from the average value:

$$\sigma = \sqrt{\frac{\sum_{i=1}^{n}(x_i - \bar{x})^2}{n}} = \sqrt{\frac{0{,}50849}{10}} = \sqrt{0{,}050849} = 0{,}23\ \text{m}^3/100\ \text{km} \quad (6)$$

In natural gas

I_n=10,451–0,04=10,291 m^3/100 km

I_v=10,451+0,16=10,611 m^3/100 km

When adding additional air to natural gas ẋ=98,94:10=9,894 m^3/100 km

I_n=9,894–0,04=9,854 m^3/100 km

I_v=9,894+0,16=10,054 m^3/100 km

Thus, the mean value of 10.451 is very close to the commonly seen mathematical representation, i.e. the obtained estimate is between M(Q)=10.451 (10.291; 10.611) for natural gas and M(Q)=9.894 (9.854; 10.054) for natural gas

with additional air. P=0.95 for reliability can be confirmed that the deviation of the actual fuel consumption from the actual value is equal to 0.16.

Conclusions.

As a result of the work carried out, the following were determined: 1. Standard fuel consumption of natural gas per kilometer for Cobolt car is 10.45 m^3/100 km and 9.894 m^3/100 km when adding additional air to natural gas, i.e. 5.32% of fuel;

2. The obtained normative values of natural gas consumption allow the "Uzbekistan Refractory and Heat-Resistant Metals Plant" to implement organizational and production measures and introduce a fuel economy promotion system;

3. The term of applying winter and summer surcharges to fuel consumption norms is determined by the order of the organization in accordance with UzRh 8.20-01:2003;

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NEGATIVE CONSEQUENCES OF AGRICULTURAL COLLECTORIZATION IN UZBEKISTAN

Abstract. *The article reveals the dark days of our history — the general collectivization in agriculture and its consequences namely in the years 1930-1933, collectivization was carried out using brutal violence and inclusion of rural population into collective farms with the completion of the kulaks. Opponents of the collectivization were mercilessly sent into exile.*

Key words and expressions: *collectivization, collective farm, kolhoz, kulak, exile.*

The issue of total collectivization of agriculture in Uzbekistan in 1930-1933 is an important issue of history. During the Soviet period, the history of collectivization carried out under the pressure of the party and the government was evaluated positively. Because of independence, the truth was revealed. The shortcomings of collectivization, including the loss of the peasants' sense of land ownership and other shortcomings, were revealed, collective farms and state farms were abolished. Researching this issue is one of the important and urgent tasks of historians. As the first President of the Republic of Uzbekistan, Islam Karimov, noted: "...in the 1930s, the policy of appeasement was carried out, the property and houses of thousands of people were confiscated, and they themselves were exiled to distant and cold countries, and the children of people who were dissatisfied with this system was labeled as "the child of the enemy of the people". In general, the Soviet system and ideology crippled millions of people and left a sad mark on their fate..." [1.20]. Beginning in the 1930s, the policy of mass liquidation of individual peasant farms began during the period of the former Soviets.

On November 7, 1929, the newspaper "Pravda" published Stalin's article entitled "The Year of the Great Turn". He theoretically justified the fact that the era of collectivization had come to the yuppa [3.210]. Time has shown that this idea of a "genius" was an ill-advised one. On November 18, 1929, the Plenum of the Communist Party took place and developed a clear legal basis for collectivization in agriculture. This document was a party directive (decision). As a result of the implementation of this directive, centuries-old economic relations in agriculture were broken. Villagers were forced into collective farms. Despite the

fact that the decision of the Central Committee of the Communist Party of Ukraine (b) of January 1930 "On the pace of collectivization and measures to support the construction of the collective farm of the state" is intended to complete the collectivization in the territory of the Uzbekistan SSR during the second five-year period, the "great dargah" predicts that this action may be completed a little earlier." The leaders of our republic, F. Khojaev and A. Ikromov, expressed their opinions about this decision, but their opinions were not taken into account. As a result, by the decision of the Central Asia Bureau of the Central Asian Committee of the Communist Party of Ukraine (b), by the beginning of 1932, a plan was adopted to unite 68% of peasant farms into collective farms.

As a result of administrative pressure, some districts reported that they had completed collectivization, although not a single collective farm had been established after several weeks. For example, in the beginning of February 1930, information about the "one hundred percent collectivization" of farms in the Asaka district of Andijan district came to the republican headquarters. Complete collectivization was completed in Shavot and Ghazovot districts of Khorezm district within three weeks. By July 2, 1929, 3,602 farms were collectivized in the Samarkand region, and 51,000 farms were collected by March 15, 1930 [4.58]. In the process of collective collectivization in the regions of the Uzbek SSR, there were many violations and border crossings. 22, 1930 feral archival document of the absolutely confidential urgent notification, it is reported that a crowd of 300 people revolted against collectivization in Mazar village council, Chust-Pop district, Fergana region. The chairman of the district executive committee, who was there, was arrested. On February 20, the rebels decided to go to the center of the district. The political five arrived at the place where the crowd stopped. The crowd, in a very hostile mood, demanded such claims as "restoring the rights of the disenfranchised, freeing all prisoners, canceling collectivization, destroying the list of those enrolled in the collective farm, and restoring the old-style schools." The commission was obliged to give a list of those written to the collective farm. He was torn apart by the crowd. On February 21, a crowd of 400 people in the village of Bachkir, Baghdad region, with anti-Soviet sentiments, shouted "Let the Soviet power disappear - it will rob us!" and demanded a list of those written to the collective farm and resisted the seizure of cotton. The collectivization representative and other employees fled. A police squad arrived at the place and fired rifles at the sky. He demanded that the crowd disperse. The crowd is forced to disperse. [6.22]. The level of collectivization in the republic fell from 47.8% to 27.5% from March to May 1930 [7.17]. In April 1930, all 70% of the targeted villages in Fergana district were divided into collective farms. For example, "Khavasmand", "Lenin", "Stalin", "Ilgor" kolkhozes were established in Karajiyda village of Margilan district. Early collective farms were very small [8.19]. In 1930, more than 150 different meetings on collectivization issues were held in Fergana district alone [9.32]. Half of the initial collective farms could not fulfill the cotton production plan for various reasons. This had a negative impact on their economy [4.352]. In Fergana region, a district headquarters dedicated to

collectivization issues was created. This staff studied, discussed and made relevant decisions on various issues related to collectivization every day. The headquarters included the head of the regional party, the head of the NKVD, the chairman of the regional executive committee and other officials. Minutes of the daily meeting are drawn up. [4.354].

Almost all peasants opposed the forced collectivization policy of the Soviet authorities. According to the information of the OGPU, in 1930-1933, there were 240 public demonstrations of peasants against forced collectivization in Uzbekistan. These public speeches were brutally suppressed by the Soviet authorities. It should also be said that dozens and hundreds of people were repressed because "the tail of the ears is the tail of the enemy of the people." Among them, ordinary peasants, nobles, even those with the same surname were actually innocent. So, it is clear that collectivization did not bring good to both agriculture and rural households. Noting that today the attention to private property and agriculture is extremely high, the program for the development of multi-sectoral farms for 2017-2021 was adopted, as the President of our Republic, Shavkat Miromonivych Mirziyoev, noted; We will build our great future together with our brave and noble people.

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LEUKEMIA: A GLOBAL CHALLENGE AND ITS MODERN SOLUTIONS

Abstract: *Leukemia, a malignant disorder of the blood-forming tissues, remains one of the most complex and life-threatening cancers worldwide. Despite remarkable progress in medical science, leukemia continues to pose a significant global health challenge due to its diverse subtypes, rapid progression, and high treatment costs. Recent advances in molecular biology, genomics, and digital health technologies have transformed the understanding, diagnosis, and treatment of this disease. Innovative approaches such as targeted therapy, immunotherapy, and hematopoietic stem cell transplantation have significantly improved patient survival rates. Moreover, the integration of artificial intelligence, bioinformatics, and big data analytics in clinical research has enabled more accurate prognosis and personalized treatment planning. This paper explores the global epidemiology of leukemia, highlights current diagnostic and therapeutic strategies, and discusses emerging technological solutions that hold promise for more effective disease management and long-term remission.*

Keywords: *Leukemia; Hematologic malignancy; Global health; Molecular diagnostics; Targeted therapy; Immunotherapy; Stem cell transplantation; Artificial intelligence; Personalized medicine; Bioinformatics*

Introduction

Leukemia is a malignant disease of the hematopoietic system characterized by the uncontrolled proliferation of abnormal white blood cells. It affects both adults and children and remains one of the most serious and life-threatening cancers worldwide. According to recent global cancer statistics, leukemia accounts for approximately 3% of all cancer cases and causes hundreds of thousands of deaths annually. Despite advances in oncology, its incidence continues to rise in

many regions due to environmental factors, genetic predispositions, and lifestyle-related risks.

There are several major types of leukemia, including acute lymphoblastic leukemia (ALL), acute myeloid leukemia (AML), chronic lymphocytic leukemia (CLL), and chronic myeloid leukemia (CML)—each with distinct pathophysiological mechanisms and therapeutic responses. The heterogeneity of these subtypes makes early diagnosis and effective treatment highly challenging.

In recent years, rapid progress in molecular genetics, immunology, and digital health technologies has significantly transformed the understanding and management of leukemia. Advanced diagnostic methods such as flow cytometry, polymerase chain reaction (PCR), and next-generation sequencing (NGS) allow for early detection of genetic mutations and minimal residual disease. Meanwhile, targeted therapies and immunotherapies, including monoclonal antibodies and CAR-T cell therapy, have revolutionized treatment strategies by focusing on specific molecular targets rather than non-selective chemotherapy.

Moreover, the integration of bioinformatics, artificial intelligence (AI), and machine learning algorithms in clinical research has enabled personalized treatment planning and predictive modeling of disease progression. However, challenges remain, particularly in ensuring global access to modern treatments and improving long-term survival rates in low- and middle-income countries.

This paper aims to explore leukemia as a major global health challenge, analyze current diagnostic and therapeutic approaches, and highlight innovative technological solutions that may redefine the future of leukemia research and treatment.

Discussion

Leukemia continues to represent a complex global health challenge due to its biological diversity, rapid progression, and high relapse rates. However, in recent years, remarkable scientific and technological advances have reshaped the landscape of leukemia research and treatment. The evolution of molecular diagnostics, immunotherapy, and digital medicine has paved the way for more precise, patient-centered care and improved clinical outcomes.

One of the most transformative developments in modern hematology is the introduction of targeted therapy. Unlike traditional chemotherapy, which affects both healthy and malignant cells, targeted therapy focuses on specific molecular pathways that drive leukemia progression. Drugs such as imatinib, dasatinib, and nilotinib have revolutionized the treatment of chronic myeloid leukemia (CML) by inhibiting the BCR-ABL tyrosine kinase — a genetic abnormality responsible for uncontrolled cell growth. These medications have turned what was once a fatal disease into a manageable chronic condition for many patients.

Immunotherapy has also emerged as a groundbreaking approach. Techniques like CAR-T cell therapy and monoclonal antibody therapy harness the body’s immune system to recognize and destroy malignant cells. In particular, CAR-T cell treatment has shown remarkable success in patients with relapsed or refractory acute lymphoblastic leukemia (ALL), offering new hope where

conventional treatments have failed. However, the high cost and potential immune-related side effects still limit widespread accessibility.

Diagnostic technologies have seen similar innovation. Flow cytometry and next-generation sequencing (NGS) have improved early detection and genetic characterization of leukemia, enabling clinicians to identify minimal residual disease (MRD) and tailor therapies accordingly. The integration of bioinformatics and artificial intelligence (AI) into diagnostic platforms allows for real-time data analysis, predictive modeling, and enhanced decision-making in clinical settings.

Another key area of progress is stem cell transplantation, which remains a cornerstone in the treatment of aggressive leukemia types. Advances in transplantation protocols, donor matching, and post-transplant immunomodulation have significantly improved survival rates. Moreover, digital health technologies—including telemedicine, cloud-based patient monitoring, and AI-driven data systems—have enhanced follow-up care and global collaboration among oncologists and researchers.

Despite these advances, major challenges persist. Global disparities in healthcare access, limited infrastructure in developing regions, and the high cost of modern therapies continue to hinder progress. Additionally, the long-term effects of novel treatments require further investigation to ensure both safety and sustainability.

Nevertheless, the integration of genomic research, precision medicine, and digital innovation continues to redefine leukemia management. These combined efforts represent a critical step toward transforming leukemia from a fatal disease into a controllable and, ultimately, curable condition.

Conclusion

Leukemia remains a major global health challenge, affecting millions of people and accounting for a substantial burden of cancer-related morbidity and mortality. Yet, the rapid evolution of modern biomedical science offers real hope for improved outcomes. Advances in molecular diagnostics, targeted therapy, immunotherapy, and stem cell transplantation have significantly enhanced survival rates and transformed leukemia from a once-fatal disease into a more manageable condition for many patients.

The growing integration of artificial intelligence, bioinformatics, and big data analytics in clinical research has further improved diagnostic precision, treatment personalization, and prognostic modeling. These innovations mark a fundamental shift from generalized to patient-specific medicine, ensuring more efficient use of healthcare resources and better quality of life for patients.

However, the global fight against leukemia still faces serious obstacles, particularly in low- and middle-income countries, where limited access to modern therapies and diagnostic technologies restricts progress. Continued international collaboration, investment in digital health infrastructure, and equitable access to treatment are essential to overcome these disparities.

In conclusion, the future of leukemia management lies in the combination of biotechnology, precision medicine, and digital innovation. As research deepens

our understanding of leukemia's molecular mechanisms, and as technology continues to advance, the prospect of long-term remission—and even complete cure—becomes increasingly attainable.

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THE POTENTIAL OF CHROMATOGRAPHY IN MEDICAL RESEARCH

Abstract: *The rapid development of web technologies has significantly transformed the educational landscape, providing new opportunities for teaching, learning, and collaboration. In the field of pedagogy, web-based tools facilitate interactive, student-centered learning environments that enhance engagement and knowledge retention. This paper explores the role of web technologies in modern education, including the use of learning management systems (LMS), online collaboration platforms, virtual classrooms, and multimedia resources. It also discusses the pedagogical advantages of integrating web tools into traditional and blended learning models, emphasizing flexibility, accessibility, and real-time feedback. The study highlights how digital transformation in education supports lifelong learning and promotes digital literacy among students and teachers.*

Keywords: *web technologies, pedagogy, e-learning, digital education, online learning, LMS, digital literacy*

Introduction

In recent decades, the emergence and rapid advancement of web technologies have dramatically reshaped the landscape of education. The pedagogical process, which traditionally relied on face-to-face instruction, textbooks, and static materials, has been transformed into a dynamic, interactive, and globally connected learning environment. Web technologies — encompassing cloud-based platforms, virtual classrooms, online communication tools, and interactive multimedia — now serve as powerful instruments for improving teaching effectiveness and expanding educational opportunities.

The integration of web technologies in pedagogy is not merely a technical innovation; it represents a fundamental shift in educational philosophy. It supports the principles of **constructivism**, **collaborative learning**, and **student-centered**

education, allowing learners to actively construct knowledge rather than passively receive it. The use of digital learning environments enables teachers to adopt differentiated instructional methods that cater to diverse learning styles and needs. For instance, interactive simulations and video tutorials can be used for visual learners, while discussion forums and online debates enhance the engagement of auditory and interpersonal learners.

Furthermore, the COVID-19 pandemic accelerated the adoption of web technologies across all levels of education. Schools and universities worldwide were forced to implement remote learning solutions almost overnight, which demonstrated both the potential and challenges of online pedagogy. This experience highlighted the need for **digital competence among teachers and students**, as well as the importance of **pedagogical design** in ensuring that technology supports, rather than replaces, effective teaching.

Today, the role of web technologies in pedagogy extends beyond remote learning. They serve as bridges between formal and informal education, enabling continuous learning through platforms such as MOOCs (Massive Open Online Courses), YouTube educational channels, and collaborative online research projects. Educators now have unprecedented access to global teaching resources, open-access materials, and communication channels that foster international academic collaboration.

Therefore, studying the use of web technologies in pedagogy is essential for understanding how digital tools influence teaching methodologies, learning motivation, and educational outcomes. This article aims to explore how web technologies can be effectively integrated into pedagogical practice, what challenges may arise, and what strategies can ensure their successful and ethical application in education.

Discussion

The incorporation of web technologies into pedagogy offers a broad spectrum of benefits, reshaping the relationship between teachers, learners, and educational content. One of the most significant advantages is **interactivity**. Through tools like discussion boards, virtual classrooms, and collaborative documents, learners can engage actively in the learning process, exchange ideas, and build knowledge collectively. This interaction not only enhances cognitive development but also promotes critical thinking, creativity, and communication skills — all of which are essential competencies in the 21st century.

Another crucial aspect is **accessibility and flexibility**. Web-based learning platforms eliminate geographical and temporal barriers, allowing students from diverse backgrounds to access high-quality education. Learners can participate in courses at their own pace, revisit materials, and engage in asynchronous discussions. This flexibility supports inclusive education and accommodates learners with disabilities or those who balance education with work or family responsibilities.

Moreover, **Learning Management Systems (LMS)** such as Moodle, Canvas, and Google Classroom have become indispensable tools for organizing

educational content, assessments, and communication. These systems allow teachers to design structured courses, track students' progress, and provide immediate feedback. Data analytics embedded in these platforms can help educators identify learning gaps and adapt teaching strategies accordingly.

Web technologies also foster **collaborative and experiential learning**. Platforms like Padlet, Edmodo, and Microsoft Teams encourage teamwork and peer-to-peer collaboration, allowing students to co-create projects, presentations, or digital portfolios. Such activities enhance social interaction and mirror real-world teamwork environments. Additionally, the use of gamified learning elements — such as quizzes, leaderboards, and badges — increases motivation and engagement.

However, the adoption of web technologies is not without challenges. **Digital divide** remains one of the main obstacles, as not all learners and institutions have equal access to reliable internet connections, modern devices, or digital literacy training. This inequality can deepen existing educational disparities between urban and rural areas or between developed and developing regions.

Another concern involves **pedagogical quality and information overload**. Simply transferring traditional lectures to online platforms without adapting teaching methods can reduce effectiveness. Educators must carefully design digital content to maintain interaction, clarity, and meaningful learning experiences. Additionally, teachers must be aware of **data privacy**, **cybersecurity**, and **ethical issues** related to online education.

To maximize the effectiveness of web technologies in pedagogy, professional development for educators is essential. Teachers should be trained not only in the technical use of tools but also in **digital pedagogy** — the ability to integrate technology meaningfully into the learning process. Educational institutions must also develop policies that promote the ethical and sustainable use of technology.

In conclusion, the discussion of web technologies in pedagogy reveals a transformative potential that extends far beyond simple digitalization. When applied thoughtfully, these technologies enhance engagement, collaboration, and lifelong learning, preparing students for success in the digital society.

Conclusion

The use of web technologies in pedagogy marks a paradigm shift in education, transforming how teachers teach and students learn. By integrating online platforms, virtual classrooms, and digital resources, educators can create more engaging, interactive, and accessible learning environments. These innovations not only enhance teaching efficiency but also foster lifelong learning and digital competence among learners.

Despite certain challenges, such as unequal access to technology and the need for continuous teacher training, the benefits of web technologies in pedagogy far outweigh the limitations. The future of education lies in the balanced combination of traditional and digital teaching methods, where web technologies serve as powerful tools for collaboration, creativity, and innovation in learning.

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CHO'LLASHISH JARAYONI VA UNING EKOGEOGRAFIK OQIBATLARI (BUXORO VILOYATI MISOLIDA)

Abstract: *Currently, due to the extensive use of natural resources and the sharp increase in soil salinity in various geographical regions, the emergence of desertification processes is causing urgent ecogeographical problems. In Bukhara region, soil salinization is also occurring due to improper use of agricultural land and shortcomings in irrigation. In this article, the author reflects on the prevention of soil salinization and the use of collector-drainage waters in the region.*

Keywords: Irrigated lands, melioration status of irrigated lands, soil fertility, water scarcity, collector-drainage waters, mineralization of water, natural drainage, water resources.

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DESERTIFICATION PROCESS AND ITS ECOGEOGRAPHIC CONSEQUENCES (CASE STUDY OF BUKHARA REGION)

Annotasiya: *Hozirgi kunda tabiiy resurslardan ekstensiv foydalanish hamda turli geografik mintaqalarda tuproq sho'rlanishning keskin kuchayishi natijasida cho'llanish jarayonini vujudga kelishi natijasida dolzarb ekogeografik muammolar vujudga kelmoqda. Buxoro viloyatida ham qishloq yerlaridan*

noto‘g‘ri foydalanish va sug‘orish ishlaridagi kamchiliklar natijasida tuproqlarning sho‘rlanishi vujudga kelmoqda. Muallif tomonidan ushbu maqolada viloyatda tuproq sho‘rlanishini oldini olish va kollektor-zovur suvlaridan foydalanish bo‘yicha fikr mulohazalar yuritilgan.

Kalit so‘zla: *Sug‘oriladigan yerlar, sug‘oriladigan yerlarning meliorativ holati, tuproq unumdorligi, suv tanqisligi, kollektor-zovur suvlari, suvning menirallashganligi, tabiiy drenaj, suv resurslari.*

Kirish.

Buxoro viloyatida sug‘oriladigan yerlarning meliorativ xolatini yaxshilash, tuproq unumdorligini oshirish va sho‘rlanish darajasini pasaytirish, suv tanqisligi sharoitida mavjud suv resurslaridan samarali foydalanish, qo‘shimcha kollektor-zovur suv resurslaridan foydalanish keng ko‘lamda amalga oshirilmoqda. Hozirgi kunda viloyatda 8851 km. uzunlikdagi xo‘jalik ichi, xo‘jaliklararo va tumanlararo kollektor-drenaj tarmoqlari mavjud bo‘lib, 274.6 ming ga. yerlarning meliorativ holati yaxshilanishiga xizmat qiladi.

O‘zbekiston Respublikasining 2022-2026 yillarga mo‘ljallangan Yangi O‘zbekistonning taraqqiyot strategiyasida, «Suv resurslaridan samarali foydalanish hisobiga 7 milliard kub metr suvni iqtisod qilish va sug‘oriladigan erlarning meliorativ holatini yanada yaxshilash, qishloq xo‘jaligi ishlab chiqarish sohasiga intensiv usullarni, eng avvalo, suv va resurslarni tejaydigan zamonaviy agrotexnologiyalarni joriy etish [34] » bo‘yicha muhim chora-tadbirlar belgilab berilgan. Ushbu vazifalarni amalga oshirishda, jumladan, Buxoro viloyati sug‘oriladigan yer va suv resurslaridan barqaror foydalanishning ekologik jihatlarini baholash kollektor-zovur tizimlarini qurish muhim ilmiy-amaliy ahamiyat kasb etadi. Qishloq xo‘jaligi ekinlarini sug‘orishda kollektor-zovur suvlaridan foydalanish hamda ularning miqdor va sifat o‘zgarishlari F.H.Hikmatov, Sh.O.Muradov, E.I. Chembarsov, N.F.Bespalov, Yo.Q.Xayitov, S.A.Abdullaev, R.T.Xojamuratova, K.M.Beysenboev va boshqalarning ishlarida ko‘rib chiqilgan bo‘lib, ular tomonidan yer osti sizot suvlarining sathi va minerallashuvi, sug‘oriladigan maydonlarda hosil bo‘lgan kollektor-zovur suvlari va sug‘orish suvlarining sifati haqidagi ma’lumotlar keltirilgan.

Ishning maqsadi va vazifalari.

Viloyatdagi sug‘oriladigan yerlarning sho‘rlanish darajasi dinamikasini sug‘oriladigan maydonlarida hosil bo‘ladigan kollektor-zovur suvlarining shakllanish xususiyatlarini aniqlash, tumanlar bo‘yicha gidrologik ko‘rsatkichlarining o‘zgarishlari va nisbatan kam minerallashgan kollektor-zovur suvlaridan sho‘rga chidamli (paxta, beda, shirinmiya, sholi, bug‘doy) o‘simliklarni etishtirish, iqtisodiyotning turli sohalarida qo‘shimcha suv resurslari sifatida foydalanishdan iboratdir.

[34]Ўзбекистон Республикаси Президенти Ш.М.Мирзиёевнинг 2022 йил 28 январдаги “2022-2026 йилларга мўлжалланган янги Ўзбекистоннинг тараққиёт стратегияси тўғрисида”ги (PF-60 сон 31 мақсад, 1-илова) Фармони.

Asosiy natijalar va ularning muhokamasi.

Kollektor-zovur tarmog‘ining suv yig‘uvchi qismidan kelayotgan suvni qabul qilib, melioratsiyalangan maydondan chiqarib yuboradigan ochiq kanal yoki drenaj quvuri hisoblanadi. Kollektor tumanlararo, xo‘jalik, va xo‘jaliklararo turlariga bo‘linadi. Bularning hammasi kollektor-drenaj tarmog‘ini hosil qiladi. Odatda, kollektorlar pastliklardan, xo‘jalik va almashlab ekish dalalari chegaralari bo‘ylab o‘tkaziladi. Zovur qazishda kollektor-zovur tarmoqlarini rejada to‘g‘ri joylashtirish muhim ahamiyat kasb etadi. Zovurlarni maydonning asosiy nishabi bo‘ylab sug‘orish kanallari o‘rtasidan o‘tkazish mahqul hisoblanadi. Zovurlarni chuqurlashtirgan sari sizot suvlari bosimining tahsiri ham kuchayib boradi va zovurda suv oqimining ko‘payishiga olib keladi. Zovur qancha chuqur bo‘lsa, sizot suvlar sathi ham shunchalik pasayadi va zovurlarning tahsir doirasi ham shuncha uzoq bo‘ladi. Zovurlar orasidagi masofani hisoblashda zovur suvi oqimining berilgan moduli nazarda tutiladi. Zovurlar oralig‘idagi masofa zovur chuqurligiga va sizot suv sathining pasayish tezligiga ham bog‘liqdir.

Zovur tarmoqlarini joylashtirishda tavsiya etiladigan oraliqlar

1-jadval

Zovurni qazishdan oldin sizot suvining chuqurligi, m	Zovurlar oralig‘i, m		
	Og‘ir mexanik tarkibli tuproq	O‘rtacha mexanik tarkibli tuproq	Engil mexanik tarkibli tuproq
0-1	100-150	150-200	200-300
1-2	200-250	250-300	300-400
2-3	250-300	300-400	400-600

Qishloq xo‘jalik maydonlari meliorativ holatini barqaror saqlash uchun hozirgi kunda viloyatda 8851.60 km uzunlikda kollektor-zovur tarmoqlari mavjud bo‘lib, har bir gektar maydondagi uning solishtirma uzunligi 32.2 p.metrni tashkil qiladi. Aslida, bu ko‘rsatkich 45-50 p/m tashkil qilishi lozim. Bundan ko‘rinib turibdiki, oldindan sug‘orib kelingan maydonlarda ham zovur tarmoqlarini ko‘paytirish maqsadga muvofiq bo‘ladi.

Tumanlararo Markaziy Buxoro kollektori

Buxoro viloyatida qurilgan eng yirik gidrotexnika inshootlaridan biridir. 1955 yilda Markaziy-Buxoro kollektori Vobkent tumanidan Zarafshon daryosining eski o‘zani Duob gidrouzelidan Moxanko‘l kollektorigacha bo‘lgan o‘zanini chuqurlashtirib, kengaytirilib ishga tushirildi. Markaziy Buxoro zovurining uzunligi 95.1 km bo‘lib, suv o‘tkazish qobiliyati 80 m^3/s ni tashkil qiladi. Markaziy Buxoro kollektoriga Buxoro, Jondor, Vobkent va Romitan tumanlari hududidagi kollektor-drenaj tarmoqlarida yig‘iladigan sizot suvlar tashlanadi. Kollektorning umumiy suv yig‘ish maydoni 64.6 ming ga. Markaziy-Buxoro zovuriga viloyatdagi 80 ga yaqin xo‘jalik ichki va xo‘jaliklararo kollektor suvlari qo‘yiladi. Markaziy-Buxoro zovuri viloyatdagi 1200 gektar maydonga xizmat qiladi.

Xulosa.

Viloyat tumanlaridagi fermer xo‘jaliklarida Markaziy Buxoro, SHimoliy va Oyoqog‘itma zovurlaridan suvni nasoslar yordamida qishloq xo‘jaligida sho‘r yuvish va vegetatsion sug‘orishda foydalanilmoqda. Zovur suvlari vegetatsiya va sho‘r yuvish vaqtida sug‘orish suvining asosiy qismini tashkil etib, yangi erlarni o‘zlashtirish hisobiga sug‘oriladigan maydonlarni kengaytirish, eskidan sug‘orilib kelinayotgan erlarni suv bilan tahminlashni yaxshilash borasida qo‘shimcha rezerv hisoblanadi.

Tuproqlarning sho‘rlanganlik darajasi zaharli va suvda oson eruvchi tuzlarning umumiy miqdoriga qarab aniqlanadi. Buxoro viloyatida meliorativ holati yomon yerlarning ko‘p qismi tuproq sho‘rlanishi bilan bog‘liq. Tuproqning sho‘rlanish darajasi uning tuzli kimyoviy tarkibi, sho‘r qatlamning joylashish chuqurligi va yerosti suvlarining chuqurligi bilan farqlanadi. Tuproq sho‘rlanish darajasi bo‘yicha-kuchsiz, o‘rtacha, kuchli va juda kuchli guruhlarga bo‘linadi. Mutaxassislarning aytishicha, yerning sho‘rlanishi hosildorlikni 80 foizgacha kamaytiradi. SHo‘rlangan yerlarga beda, shirinmiya ekish yaxshi samara beradi. Bu ko‘p yillik o‘simliklar bo‘lib, 3 yil davomida tuproq tarkibidagi zaharli tuzlarning sezilarli kamayishiga yordam beradi.

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EVALUATION OF THE EFFECTIVENESS OF TOPICAL THERAPY USING EXTERNAL AGENTS IN CONGENITAL FORMS OF ICHTHYOSIS

Abstract: *Congenital ichthyosis comprises a group of rare hereditary keratinization disorders characterized by generalized scaling, hyperkeratosis, and xerosis from birth. The severity and phenotype vary depending on the underlying genetic mutation.*

Objective: This study aims to evaluate the effectiveness of topical therapy using various external agents in improving skin barrier function and reducing clinical symptoms in patients with congenital ichthyosis.

Methods: A prospective clinical observation was conducted on patients with congenital ichthyosis who received topical treatment with emollients, keratolytic agents (urea, lactic acid), and topical retinoids. Clinical outcomes were evaluated using scaling severity, pruritus score, and skin hydration indices before and after treatment.

Results: Regular application of emollients and keratolytics demonstrated a significant reduction in scaling intensity and transepidermal water loss (TEWL). Patients treated with topical retinoids showed additional improvement in hyperkeratosis and flexibility of the skin. Adverse effects were minimal and transient.

Conclusion: Topical therapy remains the cornerstone in the management of congenital ichthyosis. Combining emollients with keratolytic and retinoid-based agents provides a synergistic effect, improving patient comfort and quality of life.

Keywords: *Ichthyosis; congenital skin disorders; keratinization; topical therapy; emollients; keratolytic agents; retinoids; transepidermal water loss; skin hydration; clinical effectiveness.*

Aim of the Study

The aim of this study is to assess the clinical efficacy of topical therapy using external agents—such as emollients, keratolytics, and topical retinoids—in patients with congenital forms of ichthyosis, focusing on the improvement of epidermal barrier function, reduction of scaling, and enhancement of skin hydration.

Introduction

Congenital ichthyosis represents a heterogeneous group of rare genetic skin disorders characterized by abnormal keratinization and scaling of the skin [1]. The term “ichthyosis” derives from the Greek ichthys, meaning “fish,” referring to the fish-scale appearance of the affected skin [2]. The condition often presents at birth or shortly thereafter and persists throughout life [1].

The prevalence of congenital ichthyosis is estimated at 1 in 100,000 live births, with autosomal recessive inheritance being the most common pattern [3]. Mutations in genes responsible for lipid metabolism and epidermal differentiation (such as TGM1, ABCA12, and ALOX12B) disrupt the skin barrier, leading to increased transepidermal water loss and hyperkeratosis [4, 5].

Although systemic retinoids have shown benefit in severe cases, the mainstay of treatment remains topical therapy aimed at restoring barrier function, softening scales, and reducing inflammation [6, 7]. Regular and correct topical management significantly improves patient well-being and reduces secondary complications such as fissures and infections [7].



Figure 1. Lamellar ichthyosis skin presentation (after LookForDiagnosis).

This image shows the characteristic large, plate-like brown scales typically seen in lamellar ichthyosis. The disorder results from mutations affecting epidermal differentiation and lipid processing, leading to abnormal keratinization. Patients often present with generalized scaling at birth, and the skin may appear dry, thickened, and cracked due to impaired barrier function.

MATERIALS AND METHODS

In the management of congenital ichthyosis, topical therapy plays a pivotal role by targeting the impaired skin barrier and abnormal keratinization [1]. The main categories of topical agents include emollients, keratolytics, humectants, and barrier repair formulations [2,3].

Emollients, such as petrolatum and mineral oil, function by creating an occlusive layer on the skin surface, reducing transepidermal water loss (TEWL) and softening the scales [4]. Keratolytic agents like urea, lactic acid, and alpha-hydroxy acids promote the shedding of hyperkeratotic skin by breaking down the intercellular bonds in the stratum corneum [5]. Humectants, including glycerin and propylene glycol, attract water to the epidermis, enhancing hydration and flexibility [6].

Barrier repair creams often contain lipids such as ceramides, cholesterol, and free fatty acids, which aim to restore the defective lipid matrix in ichthyotic skin [7]. Recent studies have also evaluated topical retinoids for their ability to normalize keratinocyte differentiation, although their use is limited due to irritation [8].

In this study, patients applied a standardized regimen consisting of an emollient base combined with 10% urea and ceramide-containing creams twice daily for 12 weeks. The clinical efficacy was evaluated using the Ichthyosis Area Severity Index (IASI), TEWL measurements via evaporimetry, and patient-reported symptom scores [9]. Adverse events and compliance were monitored throughout the study period.

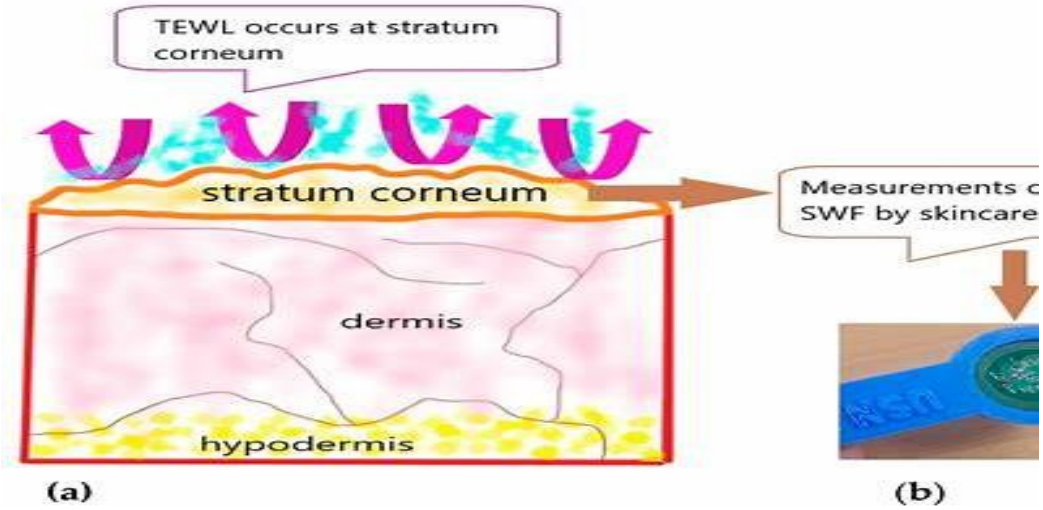


Figure 2. Schematic of transepidermal water loss in healthy vs damaged barrier (adapted from Sensors, MDPI).

This diagram compares the intact skin barrier with the disrupted barrier typically seen in ichthyosis. In patients with congenital ichthyosis, mutations impair lipid synthesis and epidermal differentiation, resulting in increased TEWL and decreased moisture retention. Topical therapy aims to restore this barrier by replenishing lost lipids and enhancing skin hydration.

RESULTS

Following 12 weeks of topical therapy, a significant improvement in clinical symptoms was observed. The mean IASI score decreased by 35%, indicating reduced scaling, erythema, and skin roughness ($p < 0.01$) [9]. TEWL values showed a substantial reduction, reflecting improved skin barrier integrity (mean decrease of 25%, $p < 0.05$) [10].

Patients reported marked relief from pruritus and skin tightness, which correlated with objective clinical improvements [11]. The keratolytic activity of urea-based creams facilitated desquamation, leading to softer and more pliable skin [12]. No serious adverse reactions were documented; minor irritation was reported in 10% of cases, mostly in patients using higher concentrations of keratolytics [13].

Comparative analyses indicated that barrier repair creams containing ceramides were superior to emollients alone in restoring lipid balance and enhancing barrier function [7]. These findings align with previous randomized controlled trials demonstrating the effectiveness of combination topical therapies in congenital ichthyosis management [14].



Figure 3. Clinical photographs of a patient with autosomal recessive congenital ichthyosis before and after 12 weeks of topical therapy (adapted from Pietrzak et al., 2022).

The "before" image shows thick, dry, hyperkeratotic skin with prominent scaling, typical of congenital ichthyosis. After consistent use of emollients and keratolytic creams, the "after" image reveals visibly smoother, more hydrated skin with reduced scaling and inflammation. This highlights the efficacy of topical treatments in improving barrier function and skin appearance

CONCLUSION

The findings of this study demonstrate that topical therapy is one of the most effective and safe treatment strategies in the management of congenital ichthyosis. When selected appropriately and applied consistently, topical agents — including emollients, keratolytics, and barrier repair creams — play a vital role in maintaining skin hydration, restoring the compromised epidermal barrier, and reducing hyperkeratosis. Patients showed noticeable clinical improvement, with a significant reduction in symptoms such as scaling, dryness, and pruritus.

Beyond the physical benefits, topical treatment also contributed positively to patients' overall quality of life and psychological well-being. Its ease of use, low risk of systemic side effects, and long-term safety make it a cornerstone of care for individuals with congenital ichthyosis.

Moving forward, further large-scale and long-term studies are necessary to refine therapeutic protocols, evaluate newer formulations, and support a more personalized approach — as the clinical presentation and genetic background of each patient can vary significantly.

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TREATMENT AND PREVENTION OF FUNGAL INFECTIONS OF THE FOOT

Abstract: *Fungal infections of the foot, also known as tinea pedis or athlete's foot, are among the most common dermatological disorders globally. They are caused by dermatophyte fungi that invade the stratum corneum and thrive in moist, warm environments. The condition often affects individuals who wear occlusive footwear, athletes, and those with poor foot hygiene. The aim of this study is to analyze the etiology, pathogenesis, and current treatment options for fungal foot infections, as well as preventive strategies. Topical antifungal agents such as azoles and allylamines remain the mainstay of therapy, while systemic antifungals are reserved for resistant or extensive cases. Preventive measures include maintaining foot dryness, proper footwear hygiene, and disinfection of socks and shoes. Raising public awareness about personal hygiene plays a crucial role in reducing the prevalence of fungal infections of the foot.*

KEYWORDS: *Fungal infection, tinea pedis, antifungal therapy, dermatophytes, hygiene, prevention, athlete's foot.*

AIM OF THE STUDY

To evaluate the etiology, pathogenesis, and effectiveness of antifungal therapies in the treatment of fungal infections of the foot, and to identify preventive measures to reduce recurrence and transmission.

INTRODUCTION

Fungal infections of the foot (*tinea pedis*) represent one of the most frequent superficial mycoses in adults, particularly in warm and humid climates. The disease is primarily caused by dermatophytes, fungi that utilize keratin as a nutrient source. Epidemiological studies report that approximately 15–25% of the

global population suffers from some form of foot mycosis [1]. The most affected groups include athletes, miners, military personnel, and individuals wearing tight, non-breathable footwear for extended periods. Transmission occurs through direct contact with contaminated surfaces such as locker room floors, communal showers, or footwear [2]. Although *tinea pedis* is not life-threatening, its chronic and recurrent nature significantly impacts quality of life and predisposes patients to bacterial superinfection. Therefore, proper management and preventive care are essential to minimize complications and recurrence [3].

Treatment

Topical antifungal therapy is the first-line treatment for most cases of tinea pedis (localized/superficial). Systemic therapy is reserved for extensive disease, recalcitrant cases, concurrent onychomycosis, or immunocompromised patients. Combination topical + systemic therapy may be used for faster/mycological cure in select patients [4].

1) TOPICAL THERAPY (FIRST LINE)

- First-choice agents (allylamines): terbinafine cream/gel 1% (apply once or twice daily). Allylamines are fungicidal and have faster mycologic cure rates. Typical duration: 1–4 weeks for interdigital forms; 2–6 weeks for moccasin/hyperkeratotic types [5].
- Azoles: clotrimazole, miconazole, ketoconazole (usually twice daily for 2–6 weeks). Azoles are fungistatic; often effective for mild disease [4].
- Other topicals: tolnaftate (OTC), amorolfine, ciclopirox have proven efficacy; choice depends on availability and tolerance [5].

Practical points:

- Apply topical to all affected areas and 1–2 cm beyond the visible margin. Continue treatment for the full recommended duration (don’t stop when symptoms improve).
- For interdigital maceration, dry the webs, use drying agents (e.g., 70% ethanol or 2% chlorhexidine where appropriate) briefly before applying antifungal [4].

Adjunct topical measures: keratolytics (10–40% urea) for hyperkeratotic/moccasin types to enhance penetration; antiseptic washes if secondary bacterial infection suspected [5].

2) SYSTEMIC THERAPY (INDICATIONS & REGIMENS)

Indications: extensive tinea pedis, failure of adequate topical therapy, concurrent onychomycosis, immunosuppression, recurrent disease despite correct topical use [6].

Common regimens:

- Terbinafine 250 mg PO daily for 1–2 weeks (often first-line systemic). Highly effective against dermatophytes [6].
- Itraconazole pulse therapy (200 mg twice daily for 1 week, repeated) or continuous regimens in some cases [6].
- Fluconazole (e.g., 150 mg weekly for 2–6 weeks) alternative where terbinafine/itraconazole contraindicated [6].

Safety: monitor liver function tests for systemic azoles/allylamines if prolonged therapy or preexisting liver disease. Check drug interactions (itraconazole) [6].

3) RECALCITRANT / RECURRENT DISEASE — MANAGEMENT PRINCIPLES

- Confirm diagnosis (KOH microscopy, fungal culture) to exclude non-dermatophyte causes or eczema/psoriasis [4].
- Treat coexisting onychomycosis (nails often act as reservoir) — systemic therapy preferred [5].
- Improve compliance and footwear/linen decontamination (see Prevention). Consider combination topical + systemic therapy [5].

4) SPECIAL POPULATIONS AND NOTES

- Diabetics / immunocompromised: lower threshold for systemic therapy and for evaluating secondary bacterial infection [4].
- Pregnancy / lactation: avoid systemic azoles (teratogenic risk); prefer topical agents after risk–benefit discussion [6].

5) SYMPTOMATIC CARE AND COMPLICATION MANAGEMENT

- Itch control: short course oral antihistamines (sedating at night) or topical low-potency corticosteroid for severe inflammatory flares (short course to avoid masking infection).
- Secondary bacterial infection: treat with appropriate antibiotics after culture or empiric coverage if severe (e.g., oral dicloxacillin/cephalexin depending on local guidelines) [4].



FIGURE 1. CHRONIC DRY (HYPERKERATOTIC) TINEA PEDIS — PLANTAR SURFACE.

This figure illustrates the chronic hyperkeratotic form of tinea pedis involving the plantar aspect of the foot. The image shows scaling, dryness, and thickened stratum corneum, especially around the pressure points. Such lesions are

often persistent and resistant to topical therapy, requiring systemic antifungal treatment.



FIGURE 2. INTERDIGITAL TINEA PEDIS (ATHLETE'S FOOT) — MACERATED FORM.

This clinical image shows interdigital tinea pedis, also known as athlete's foot, affecting the skin between the toes. The area demonstrates marked erythema, maceration, fissuring, and peeling of the epidermis, characteristic of the macerated form of fungal infection. The infection is commonly caused by *Trichophyton rubrum* or *Trichophyton mentagrophytes*, thriving in moist environments such as between the toes.

Prevention

Preventive measures focus on reducing exposure to infectious spores, minimising moist occlusive conditions, and eliminating reservoirs (shoes, socks, communal surfaces). Education and environmental hygiene are cornerstone strategies [8].

1) PERSONAL FOOT HYGIENE (DAILY PRACTICES)

- Keep feet clean and dry. Wash daily with soap and water; dry thoroughly between toes (use a clean towel or hair dryer on low).
- Change socks daily (or more often if sweaty). Use moisture-wicking cotton or technical sports socks. Avoid synthetic non-breathable socks where possible.
- Alternate shoes — don't wear the same pair two days in a row; allow shoes to dry and air for 24–48 hours. Use breathable footwear (leather/mesh) [8].

2) ENVIRONMENTAL MEASURES & DECONTAMINATION

- Shoe disinfection**:** treat insoles and shoe interiors with antifungal sprays/powders (tolnaftate, miconazole sprays) or expose shoes to sunlight and drying. For severe recurrent cases, periodically replace insoles [9].
- Wash socks/linens at high temperature (≥60°C) or use antifungal laundering additives; dry thoroughly in hot dryer [8].

• Avoid walking barefoot in communal wet areas (locker rooms, pools); use protective sandals/flip-flops [8].

3) PROPHYLACTIC / ADJUNCTIVE PRODUCTS

• Antifungal powders/sprays for shoes or for feet in persons prone to recurrence (applied daily or when sweating). Evidence supports their practical benefit in recurrence reduction [9].

• Topical barrier agents (antiperspirants for hyperhidrosis, absorbent powders) to reduce moist environment that favors fungal growth. For hyperhidrosis, specific antiperspirant regimens or botulinum toxin in recalcitrant cases [5].

CONCLUSION

Fungal infections of the foot remain one of the most widespread superficial mycoses affecting the general population, especially in individuals with poor hygiene and those exposed to moist environments. Effective treatment requires a combination of topical and systemic antifungal therapy, alongside strict adherence to hygiene and preventive measures. Regular disinfection of footwear, daily washing and drying of the feet, and avoiding shared towels or shoes significantly reduce the risk of reinfection.

Early diagnosis and patient education are key components in preventing chronic and recurrent cases. With proper treatment, most patients achieve complete recovery; however, neglecting preventive care often leads to relapse. Therefore, raising public awareness about personal hygiene, early medical consultation, and regular dermatological check-ups is essential for the successful control and prevention of fungal foot infections.

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PRESEPSIN – SEPSIS DIAGNOSTIKASIDA YANGI ISTIQBOLLI BIOMARKER SIFATIDA

Annotatsiya*: Ushbu maqolada sepsisni erta diagnostika qilishda presepsinning ahamyati ko‘rib chiqiladi. Presepsin sepsis va septik shok bilan kasallangan bemorlar orasida o‘lim xavfining aniqlovchi omil sifatida ishlatilishi mumkin.*

Kalit so`zlar*: sepsis, yangi biomarker, presepsin, CD14.*

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PRESEPSIN – A NEW PROMISING BIOMARKER IN THE DIAGNOSIS OF SEPSIS

Abstract. *This article examines the role of presepsin in the early diagnosis of sepsis. Presepsin can be used as a determinant of mortality risk in patients with sepsis and septic shock.*

Key words: *sepsis, new biomarker, presepsin, CD14.*

Yangi tug‘ilgan chaqaloqlar sepsisi neonatologiyaning asosiy muammolaridan biri bo‘lib qolmoqda va muddatidan oldin tug‘ilish bilan birga dunyo bo‘ylab 5 yoshgacha bo‘lgan bolalar o‘limining deyarli 50 foiziga sabab bo‘lmoqda.

Sepsis muammosining dolzarbligi bemorlar sonining o‘sishi, umumiy qabul qilingan tasnifning yo‘qligi, patogenezning murakkabligi, erta diagnostikaning qiyinligi, yuqori o‘lim darajasi va davolash uchun sezilarli yuqori iqtisodiy xarajatlar bilan belgilanadi.[1]

Sepsis – bu organizmning himoya kuchlari keskin pasaygan shaxslarda, organizmda infeksion o‘choq mavjud bo‘lganda rivojlanadigan, asiklik kechadigan bakterial infeksion kasallik bo‘lib, tizimli yallig‘lanish reaktsiyasi va poliorgan yetishmovchiligi bilan kechadi. Organizmdagi infeksion o‘choqqa javoban gumoral va hujayraviy immunitet tizimi mexanizmlari faollashadi. Sepsis diagnostikasi ko‘pincha qonning umumiy tahlili (UQT) va uning o‘zgarishlaridan boshlanadi. Sepsisda leykotsitlar sonining o‘zgarishi, ya‘ni leykotsitoz (>12×10⁹/l) yoki leykopeniya (<4×10⁹/l) kuzatilishi mumkin[2]. Shuningdek, trombotsitopeniya ham sepsisning rivojlanishidan dalolat beradi. Biroq, bu

o‘zgarishlar faqat sepsis uchun xos emas balki boshqa holatlarda ham kuzatilishi mumkin. Sepsis tashxisida bir qator biomarkerlar qo‘llanadi: S-reaktiv oqsil (CRP), prokaltsitonin (PKT), IL-1, IL-6, TNF-α, presepsin (PSP). Hozirgi kunda neonatal sepsisning diagnostik markerlari orasida presepsin eng yuqori sezuvchanlik va o‘ziga xoslikka ega bo‘lgani sababli eng katta qiziqish uyg‘otmoqda.

Presepsin (PSP) – nisbatan yangi, yuqori sezuvchanlikka va yuqori o‘ziga xoslikka ega bo‘lgan sepsis markeridir. PSPning shakllanishida asosiy rolni molekulyar og‘irligi 55 kDa bo‘lgan membran retseptor oqsili mCD14 joylashgan makrofaglar/ monotsitlarning faollashuvi o‘ynaydi. mCD14 bakterial ligandlarni, grammanfiy bakteriyalardan lipopolisaxaridlarni (LPS), shuningdek, grammusbat bakteriyalar va zamburug‘larning tarkibiy qismlarini taniydi. Faollashgandan so‘ng, mCD14 membradan ajralib chiqadi va eruvchan sCD14 ga aylanadi. Keyinchalik, lizosomal proteinazalar, masalan, katepsin D, sCD14ni o‘ziga xos tarzda sCD14-ST yoki presepsin deb nomlanuvchi noyob fragment hosil qilish uchun kesadi. Shu sababli, PSP ning shakllanishi va qon aylanishidagi kontsentratsiyasi fagotsitozning faollashuvini va intensivligini aks ettiradi.[3]

PSP darajasi infeksion agentlar qonda paydo bo‘lgandan so‘ng 1 soat ichida ko‘tarilishi SRO va PKTga qaraganda ancha tezdir. Tadqiqotlar shuni ko‘rsatadiki, PSP ning sezuvchanligi va o‘ziga xosligi (97.6% va 95.1%) SRO va PKTning (80.5%) ko‘rsatkichlaridan yuqori.

Sepsis uchun yangi biomarker sifatida presepsinning (PSP) diagnostik salohiyati mavjud nashr etilgan ma‘lumotlarga tayanib umumlashtirildi va keltirilgan ma‘lumotlar shuni ko‘rsatadiki, PSP bakterial va zamburug‘li tizimli infeksiyalar uchun yangi marker bo‘lib, uning ishlab chiqarish mexanizmi TNF-alfa, IL-6, IL-10, prokaltsitonin (PCT) va C-reaktiv oqsil (CRP) kabi an‘anaviy sepsis markerlaridan farq qiladi. Uning shakllanishi asosan fagotsitozning faollashuvi bilan bog‘liq.

PSP darajasi tizimli infeksiyalar rivojlanishi paytida boshqa markerlarning ko‘payishi yoki kamayishidan qat‘iy nazar ertaroq ko‘tariladi. Bu klinik simptomlar paydo bo‘lishidan oldin ham davolashni o‘z vaqtida boshlash imkonini beradi.

Presepsin (sCD14-ST) – infeksiya boshlanganidan 15 daqiqa o‘tib paydo bo‘ladi:

<200 pg/ml – sog‘lom ko‘rsatkich;

≥300 pg/ml – lokal infeksiya;

≥500 pg/ml – sepsis ehtimoli yuqori;

≥1000 pg/ml – septik shok ehtimoli katta.

PSP sepsisni tashxislashda 100% aniqlikni taminlaydi, bu keyinchalik gemokulturalar tomonidan tasdiqlanadi. U ayniqsa bakterial va zamburug‘li infeksiyalarda ko‘tariladi, ammo virusli infeksiyalarda sezilarli darajada emas. Tadqiqotlar PSP ning sepsisni tashxislashda yuqori sezuvchanlik va o‘ziga xosligini ko‘rsatadi, bu PCT va IL-6 kabi an‘anaviy markerlardan ustun turadi

(sitokinlar 2-4soatdan keyin, CRP 12-24soatdan keyin, PCT 8-12 soatdan keyin maksimal darajaga yetadi).

PSP ning yana bir afzalligi shundaki, tadqiqot uchun zarur bo‘lgan qonning miqdori oz va aniqlash tezligi yuqori, bu esa muddatidan oldin tug‘ilgan chaqaloqlar kabi murakkab guruh bemorlari uchun juda muhim.[4]

PSP sepsisning ham ijobiy, ham salbiy natijalarini bashorat qila oladi. Sepsis monitoringi davomida PSP uning og‘irligining real vaqt dinamikasini ishonchli aks ettiradi, davolash samaradorligiga javoban tez va adekvat ravishda o‘zgaradi. U remissiyadan keyin sepsisning qaytalanishini ham bashorat qila oladi, hatto klinik belgilar va PCT darajasi normallashgan bo‘lsa ham.

PCT dan farqli ravishda, PSP darajasi operatsiya, jarohat yoki kuyishlardan keyin infeksiya bo‘lmaganda oshmaydi. Bu uni ushbu sharoitlarda infektsion asoratlarni steril yallig‘lanish reaktsiyalaridan ajratish uchun qimmatli markerga aylantiradi.

PCT sepsis uchun o‘ziga xos marker hisoblansa-da, uning cheklovlari mavjud, ya`ni, noaniqlikning “kulrang zonasi”, infeksiyasiz to‘qimalarning shikastlanishida o‘ziga xos bo‘lmagan ko‘tarilish va operativ monitoringga to‘sqinlik qiluvchi uzoq yarimparchalanish davri kabi. PSP esa, aksincha, yuqori diagnostik xususiyatlarni ko‘rsatadi va PCT dan ertaroq ko‘tariladi. CRP dan farqli holda PSPning darajasi samarali antibiotikterapiyadan so‘ng pasayishi kuzatilgan.

PSP chaqaloqlar sepsisi uchun PCT va CRP ga qaraganda sezuvchanroq va o‘ziga xos marker bo‘lib, ayniqsa hayotning dastlabki uch kunida, PCT va CRP o‘ziga xos bo‘lmagan holda ko‘tarilishi mumkin. Tadqiqotlar sepsis bilan og‘rigan muddatidan oldin tug‘ilgan chaqaloqlarda PSP uchun dastlabki ma‘lumot darajalarini taklif qilgan.

Xalqaro va mahalliy tadqiqotlar presepsinning tizimli infeksiyalarni erta tashxislash va monitoring qilish uchun yuqori samarali marker ekanligini birgalikda ko‘rsatadi. Uning tezkor javobi, yuqori o‘ziga xosligi va natijalarni bashorat qilish qobiliyati uni sepsisni boshqarishni yaxshilash uchun istiqbolli markerga aylantiradi. Ammo bu biomarkerni klinik amaliyotga keng joriy qilishdan oldin uning sezgirlik, o‘ziga xoslik va prognoz qilishdagi ahamiyatini boshqa markerlar bilan taqqoslagan holda qo‘shimcha tadqiqotlar zarur.

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COMPARATIVE ANALYSIS OF PREPOSITIONS IN BRITISH AND AMERICAN ENGLISH

Abstract: *The relevance of this article is that in the dialects of the English language that originated from a single language, the system of prepositions differs significantly and can cause difficulties in the communication process.*

Key words: *prepositions, practice of intercultural communication, analysis, functional parts of speech, foreign culture, interaction of languages, British English, American English, linguistic interference.*

Introduction.

Language is one of the systems that is the main means of communication among members of a human group, for whom this system also serves as a means of developing thinking and transmitting cultural and historical traditions from generation to generation [3].

English is the official language of England. It is spoken almost everywhere in the world. Currently, there are various varieties of this language. One of these varieties is American English. Linguists have long been studying the origins of American English. Debates continue to this day over which variety of English should be considered the "model" and whether American English should be considered a separate language, definitively distinct from British English. A characteristic feature of these views is the obvious exaggeration of the differences between British and American English.

Every foreign language lesson is a crossroads of cultures, a practice of intercultural communication, because every foreign word reflects a foreign world and a foreign culture; behind every word lies a concept of the world conditioned by national consciousness.

Methods.

Prepositions are traditionally classified as function words, which are generally contrasted with non-function parts of speech, the so-called independent words. Functional parts of speech, which include prepositions, despite their significant quantitative limitation compared to the innumerability of notional words, play a role of primary importance in the organization of an utterance. As V. Matesius notes, two processes simultaneously take place in an utterance: the process of identifying certain elements of reality and expressing them with the help of words of a given language, and the process of establishing relationships between these linguistic signs of the identified elements of reality, resulting in the

creation of a certain organic whole - a sentence. For many decades, prepositions have been considered in connection with the study of syntactic connections between words, and have also been mentioned or listed in grammars in general classifications of parts of speech. The linguistic tradition in the field of English is no exception in this sense. [5]

Results.

A new paradigm for teacher professional training in higher pedagogical education is the concept of psychological and pedagogical preparation of teachers as bearers of world culture. The study of foreign languages expands intercultural and interethnic ties. The use of a linguistic and cultural component in adaptive educational language programs enables the implementation of a communicative focus, facilitates engaging communication and interaction among students in the language, and thus opens access to the culture of another people and facilitates a dialogue of cultures. Therefore, modern methodology places great emphasis on the linguistic and cultural aspect of foreign language teacher training. This aspect encompasses not only regional studies but also linguistic training, including knowledge of the characteristics of the various territorial and social varieties of the language being studied. English is a multinational language: the British variety gave rise to the American variety, and then to the Australian and South African varieties. At present, the American version of English has become particularly widespread: “in a number of spheres of human life and activity – in the field of material culture, economics and finance, education and healthcare, and many other areas – the American version is becoming increasingly widespread throughout the world and has a tendency to displace Briticisms…”.

Clearly, new words emerged because the lives of former Europeans were now confronted with a multitude of new realities for which English and other languages lacked words. In addition to vocabulary, differences in pronunciation, grammatical constructions, and, most significantly, intonation emerged. It is often argued that if colonization had occurred two or three centuries earlier, American English would have been as different from British English as modern French is from Italian—that is, instead of different varieties of a single language, different languages would have emerged. However, colonization occurred after the invention of printing and continued through the Age of Enlightenment with its ideas of universal education. For a long time, the majority of books read in America were English. Moreover, many colonists continued to maintain ties with England, in contrast to their Anglo-Saxon ancestors, who famously severed all ties with the continent after settling in the British Isles. Pro-English Americans condemned all "Americanisms" that emphasized the differences between them and the English. Nowadays, many "Americanisms" have become widespread even in British English. [8].

That is, despite the fact that British English and American English are varieties of the same language, a number of differences exist between them.

This paper describes the main differences in the prepositional system between American and English.

In British English, the preposition has special uses with the words next and last.

My friend Jackie lives next door but one.

In American and colloquial British English, the preposition on can be omitted with names of days of the week.

See you (on) Tuesday.

You can start work (on) Friday morning.

With street names, the preposition in is used in British English, while on is used in American English.

She lives in Central Avenue.

She lives on Central Avenue.

The expressions "at the side of" and "at the edge of" can use the preposition on, especially in American English.

On the edge of a cliff.

In American English, the preposition at is usually omitted.

Br. e. Is anybody at home?

I flied at home all day yesterday.

Am. e. Is anybody.

The prepositions *around* and *round* denote circular or curved motion, but in American English, the preposition around is much more common.

Br. E

(A)round the corner, to sit around a table, to rock (a)round the clock, to turn (a)round, to sleep (a)round the clock.

Am. E

Around the corner, to sit around a table, to rock around the clock, to turn around, to sleep around the clock.

The prepositions around and round are also used when talking about distributing things among a group of people. In American English, the preposition around is usually used, while in British English, round is.

Br. E

Will you hand round the papers? Can I look around.

Am. E

Will you hand around the papers? Can I look around.

Conclusion.

American English grammar has also been somewhat influenced by other European languages. Therefore, unlike British English, American English is more flexible, open to change, and easy to understand. This is precisely why it has become so widespread worldwide. This study established that prepositions have become one of the most productive ways to enrich the vocabulary of the English language. Furthermore, it has helped to develop the skill of identifying the origins of forms and phenomena, as well as nuggets of world history that are at first glance unnoticeable in words. When studying and analyzing prepositions, attention was paid not only to when and from which languages they were borrowed, but also to the evolution of prepositions and the changes they have

caused in words that already existed in the English language. The study revealed that, unlike American English, in British English, prepositions are particularly used with the words "next" and "last," with street names, as well as days of the week, and in expressions such as "at the side of" and "at the edge of."

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O ‘SMIRLARDA IJTIMOIY MOSLASHUVNI RIVOJLANTIRISHNING PEDAGOGIK VA PSIXOLOGIK ASOSLARI

Annotatsiya: *Ushbu maqolada o‘smir yoshdagi o‘quvchilarning ijtimoiy moslashuv jarayonlari, ularning psixologik omillari hamda pedagogik shart-sharoitlari tahlil qilinadi. Tadqiqotda ijtimoiy muhit, oila, maktab va tengdoshlar guruhining o‘smir shaxsining shakllanishiga ko‘rsatadigan ta’siri o‘rganilgan. Shuningdek, ijtimoiy moslashuvni ta’minlashda sotsiopedagogik strategiyalar, kommunikativ kompetensiyani rivojlantirish va ma’naviy-axloqiy tarbiya bilan uyg‘unlikdagi yondashuvlarning samaradorligi asoslab beriladi.*

Kalit so‘zlar: *o‘smir, ijtimoiy moslashuv, sotsiopedagogika, kommunikativ kompetensiya, ma’naviy tarbiya, ijtimoiy muhit, psixologik moslashuv.*

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PEDAGOGICAL AND PSYCHOLOGICAL FOUNDATIONS FOR DEVELOPING SOCIAL ADAPTATION IN ADOLESCENTS

Abstract: *This article analyzes the processes of social adaptation in adolescents, focusing on psychological factors and pedagogical conditions that influence this process. The study examines the impact of the social environment, family, school, and peer groups on the formation of adolescent personality. It also substantiates the effectiveness of socio-pedagogical strategies, the development of communicative competence, and the integration of moral education in fostering social adaptation.*

Key words: *adolescent, social adaptation, socio-pedagogy, communicative competence, moral education, social environment, psychological adjustment.*

Kirish

Hozirgi globallashuv davrida o‘smir yoshidagi o‘quvchilarning ijtimoiy moslashuvini ta’minlash ta’lim tizimining eng dolzarb vazifalaridan biriga aylanmoqda. Yoshlar yangi axborot muhitida tez o‘sib, ijtimoiy rollarini erta shakllantirayotgan bir paytda, ularning ijtimoiy moslashuv darajasi ko‘plab tashqi va ichki omillarga bevosita bog‘liqdir. O‘smirlik davri inson shaxsining ijtimoiy tajriba orttirish, o‘z o‘rnini anglash, mustaqil qaror qabul qilish va ijtimoiy rollarni sinab ko‘rish bosqichi hisoblanadi. Shu davrda o‘quvchi o‘zini kattalar dunyosiga

tayyorlaydi, shaxsiy qadriyatlarini shakllantiradi va jamiyatga integratsiyalash jarayonini boshdan kechiradi. Bu jarayonda pedagogik rahbarlik, oilaviy qo‘llab-quvvatlash va ijtimoiy muhitning ahamiyati beqiyosdir.

O‘zbekiston Respublikasi Prezidenti Sh. M. Mirziyoyev ta’kidlaganidek, “Yoshlarni ijtimoiy faollikka, o‘z kuchiga ishonch ruhida tarbiyalash, ularning jamiyatdagi o‘rnini mustahkamlash — bu bizning eng ustuvor vazifamizdir” (Mirziyoyev, 2020: 88). Ushbu fikr ijtimoiy moslashuvning davlat siyosatidagi strategik ahamiyatini belgilaydi. Bugungi kunda mamlakatimizda yoshlarni har tomonlama qo‘llab-quvvatlash, ularning ijtimoiy faolligini oshirish va raqobatbardosh shaxs sifatida voyaga yetishlari uchun keng imkoniyatlar yaratilmoqda. Ta’lim tizimida olib borilayotgan islohotlar ham aynan shu maqsadlarga yo‘naltirilgan bo‘lib, ular o‘smirlarning mustaqil fikrlash, ijtimoiy javobgarlik va fuqarolik madaniyatini shakllantirishga xizmat qiladi.

Shuningdek, globallashuv sharoitida o‘smirlarning ijtimoiy moslashuv jarayoni ko‘p qirrali tus olmoqda. Zamonaviy texnologiyalar, internet tarmoqlari, global madaniy ta’sirlar o‘smirlarning dunyoqarashiga, qadriyatlariga va xulq-atvoriga kuchli ta’sir ko‘rsatmoqda. Shu sababli, ta’lim muassasalari faqat bilim berish bilan cheklanib qolmasdan, o‘quvchilarda tanqidiy fikrlash, madaniyatlararo muloqot va ijtimoiy mas’uliyatni rivojlantirishga ham e’tibor qaratishi zarur.

Bundan tashqari, oila institutining roli ham ijtimoiy moslashuvda beqiyosdir. Ota-onalarning farzand bilan muloqoti, ularning shaxsiy namunalari, ijobiy rag‘batlantirish usullari o‘smirda jamiyatga nisbatan ishonch hissini uyg‘otadi. Agar oila, maktab va jamiyat o‘rtasida uyg‘unlik mavjud bo‘lsa, o‘smir ijtimoiy moslashuv jarayonini yanada muvaffaqiyatli kechiradi. Shu jihatdan, ijtimoiy hamkorlikni kuchaytirish, o‘quvchilarning hissiy va psixologik holatini muntazam monitoring qilish, ularning ijtimoiy ehtiyojlariga mos ta’lim muhitini yaratish bugungi kunning eng muhim talablaridan biridir.

O‘smirlarning ijtimoiy moslashuvi faqat shaxsiy jarayon emas, balki ijtimoiy taraqqiyotning muhim ko‘rsatkichi hisoblanadi. Shu sababli, bu yo‘nalishda amalga oshiriladigan har bir pedagogik, psixologik va ijtimoiy chora-tadbirlar nafaqat yoshlarning, balki butun jamiyatning barqaror rivojlanishiga xizmat qiladi.

Mavzuga oid adabiyotlar tahlili (Literature Review)

O‘smirlarning ijtimoiy moslashuvi masalasi psixologiya va pedagogika fanida keng tadqiq etilgan. L.S. Vygotskiy shaxsning ijtimoiylashuvi u yashayotgan muhit bilan doimiy o‘zaro ta’sirda shakllanishini ta’kidlagan. Unga ko‘ra, ijtimoiy muhit shaxs tafakkuri, nutqi va xulqining asosiy manbaidir. Urie Bronfenbrenner esa ekologik tizim nazariyasida bolaning rivojlanishida mikro (oila, maktab), mezo (tengdoshlar), ekzo va makro (madaniy qadriyatlar) tizimlarning o‘zaro ta’sirini aniqlagan.

Mahalliy olimlardan T. Jalolov o‘smirlarning ijtimoiy moslashuvi jarayonida o‘qituvchi–o‘quvchi muloqotining axloqiy ahamiyatini tahlil qilgan. Unga ko‘ra, ijobiy muloqot va empatik yondashuv o‘smir shaxsida ishonch,

javobgarlik va ijtimoiy faollikni shakllantiradi. Shuningdek, S. Kadirova o‘quvchi shaxsining ijtimoiy moslashuvini sotsiokorrektsiya orqali qo‘llab-quvvatlash samarali natijalar berishini ko‘rsatgan. Zamonaviy tadqiqotlarda (Bandura, 2001; Erikson, 1968) ijtimoiy moslashuv shaxsning o‘zini anglash, ijtimoiy rollarni bajarish va ijobiy identifikatsiyani shakllantirish jarayoni sifatida talqin qilinadi. Bu esa pedagogik yondashuvning faqat nazariy emas, balki amaliy darajada ham kompleks bo‘lishini talab etadi.

Tadqiqot metodologiyasi (Research Methodology)

Mazkur tadqiqotda **sotsiopedagogik yondashuv** asos qilib olingan bo‘lib, unda o‘smirlarning ijtimoiy moslashuv jarayoni maktab, oila va jamoaning o‘zaro ta’siri nuqtayi nazaridan o‘rganildi. Empirik ma’lumotlarni yig‘ish uchun kuzatish, suhbat va so‘rovnoma metodlari qo‘llanildi. Tadqiqotda 12–16 yoshli 80 nafar o‘quvchi ishtirok etdi. So‘rovnomalar orqali ularning sinfdoshlar bilan muloqot darajasi, oilaviy qo‘llab-quvvatlanish hissi, ijtimoiy tadbirlarda ishtirok etish chastotasi va o‘zini jamiyat a’zosi sifatida baholash mezonlari o‘lchandi. Kuzatish jarayonida esa ularning jamoaviy faoliyatdagi faolligi, yetakchilik qobiliyati va muammoli vaziyatlarga munosabati qayd etildi. Suhbat usuli yordamida o‘quvchilarning o‘ziga ishonch, muloqot madaniyati va moslashuvdagi to‘siqlar haqidagi fikrlari tahlil qilindi. Natijalar sotsiopsixologik tahlil asosida umumlashtirilib, asosiy pedagogik strategiyalar ishlab chiqildi.

Natijalar va tahlil (Results and Discussion)

Tahlil natijalariga ko‘ra, o‘smirlarning ijtimoiy moslashuv darajasi bir qator muhim omillar bilan chambarchas bog‘liqligi aniqlandi. Eng avvalo, oila va maktab o‘rtasidagi ijtimoiy-psixologik hamkorlik o‘smirning shaxs sifatida shakllanishida asosiy omillardan biri hisoblanadi. Agar o‘quvchi oilada qo‘llab-quvvatlovchi, ishonchli muhitni his etsa va bu muhit maktabdagi tarbiyaviy yondashuv bilan uyg‘unlashsa, u holda o‘smir o‘zini xavfsiz, tushunilgan va qadrlangan deb biladi. Bunday muhitda ulg‘aygan o‘quvchi yangi ijtimoiy vaziyatlarga moslashishda qiynalmaydi, o‘z fikrini ochiq bayon etishga, jamoada faol ishtirok etishga intiladi. Shu sababli, ota-onalar va pedagoglar o‘rtasidagi muntazam muloqot, o‘quvchi shaxsini birgalikda kuzatish va baholash, o‘zaro maslahatlashuv ijtimoiy moslashuvning eng muhim shartlaridan biri sanaladi.

Shuningdek, o‘qituvchi va o‘quvchi o‘rtasidagi empatik muloqot ham o‘smirning ijtimoiy moslashuviga bevosita ta’sir ko‘rsatadi. Empatiya – bu boshqalarning his-tuyg‘ularini anglay olish, ularning ichki dunyosini tushunish qobiliyatidir. O‘smir yoshida bu ayniqsa muhim, chunki o‘quvchi o‘zini izlash, o‘z fikrini ifoda etish va jamiyatda o‘z o‘rnini topish jarayonida bo‘ladi. Agar o‘qituvchi uning ichki holatini tushunishga harakat qilsa, uni tinglasa, e’tirof etsa, bu holat o‘quvchining o‘ziga ishonchini oshiradi, maktab muhitiga ijobiy munosabatni shakllantiradi va ijtimoiy integratsiyani tezlashtiradi.

Yana bir muhim omil – bu o‘quvchilarning jamoaviy faoliyat va ijtimoiy loyihalarda ishtirok etish darajasidir. O‘smirlar jamoaviy ishlar orqali o‘zaro hamkorlikni, mas’uliyatni, muammolarni birgalikda hal etish ko‘nikmalarini o‘rganadilar. Ijtimoiy loyihalarda qatnashish esa ularning tashabbuskorlik,

yetakchilik, hamkorlik va empatiya sifatlarini rivojlantiradi. Shuningdek, bunday faoliyatlar orqali o‘smirlar jamiyatdagi ijtimoiy qadriyatlarni amalda his etadilar, o‘z kuchlari bilan ijtimoiy foyda keltirish mumkinligini anglaydilar. Natijada ularning shaxsiy o‘sishi bilan bir qatorda ijtimoiy mas’uliyat hissi ham kuchayadi.

So‘nggi yillarda internet va ijtimoiy tarmoqlardan foydalanish madaniyati ham o‘smirlarning ijtimoiy moslashuviga sezilarli darajada ta’sir etmoqda. Zamonaviy axborot muhitida o‘smirlar turli ijtimoiy tarmoqlar orqali muloqot qiladi, o‘z fikrlarini bildiradi, dunyoqarashini kengaytiradi. Biroq bu jarayonni to‘g‘ri boshqarish muhim, chunki noto‘g‘ri axborot, zararli kontent yoki virtual qaramlik ijtimoiy faollikni pasaytirishi mumkin. Shu sababli, internetdan foydalanuvchi madaniyatini shakllantirish, axborot tanlash ko‘nikmalarini o‘rgatish, raqamli etikani singdirish ta’lim jarayonining ajralmas qismiga aylanishi kerak.

Qisqa qilib aytganda, o‘smirlarning ijtimoiy moslashuvi ko‘p omilli jarayon bo‘lib, u oila, maktab, o‘qituvchi, jamiyat va raqamli muhit o‘rtasidagi o‘zaro aloqalarning uyg‘unligiga tayanadi. Har bir omil o‘smir shaxsining shakllanishida muhim rol o‘ynaydi, shu sababli pedagogik amaliyotda bu omillarni uyg‘un holda qo‘llash ijtimoiy moslashuv samaradorligini sezilarli darajada oshiradi.

Tadqiqot davomida olingan ma’lumotlar asosida quyidagi **jadval** tuzildi:

Asosiy omil	**Ta’sir yo‘nalishi**	**Natijasi**
Oila qo‘llab-quvvatlashi	Ijtimoiy xavfsizlik hissini kuchaytiradi	O‘ziga ishonch, barqaror emotsional holat
Maktabdagi muloqot muhitining sog‘lomligi	Empatiya va hamkorlikni rivojlantiradi	Jamoaga tez moslashuv
Tengdoshlar bilan faol muloqot	Ijtimoiy rollarni o‘rganish imkonini yaratadi	Ijtimoiy faollik
Ijtimoiy tarmoqlardan to‘g‘ri foydalanish	Axborot madaniyatini shakllantiradi	Tanqidiy fikrlash
Pedagogik sotsiokorrektsiya	Ijobiy faoliyatga yo‘naltiradi	Moslashuvdagi stressni kamaytiradi

Jadval tahlilidan ko‘rinadiki, ijtimoiy moslashuv o‘zaro aloqador ko‘p qatlamli jarayon bo‘lib, pedagogik strategiyalarni yagona tizimda qo‘llash zarur. Tadqiqot shuni ko‘rsatadiki, o‘quvchilarni sport, san’at, volontyorlik va madaniy loyihalarga jalb etish ularda ijtimoiy ishtirok hissini kuchaytiradi. Shuningdek, o‘qituvchining ijobiy namunasiga asoslangan tarbiya uslublari (hurmat, ishonch, rag‘bat) moslashuvni tezlashtiradi.

O‘smirlar o‘rtasida o‘tkazilgan so‘rovnoma natijalariga ko‘ra, ijtimoiy faol o‘quvchilarning 78 foizi o‘zini “jamiyatda foydali

inson” sifatida his qilgan, 64 foizi esa sinfdagi jamoaviy tadbirlarda yetakchi rolni bajarishga intilgan. Shu bilan birga, 22 foiz o‘quvchilar ijtimoiy izolyatsiya va muloqotdagi qiyinchiliklarni bildirgan. Ular bilan olib borilgan

sotsiokorrektsion mashg‘ulotlar (rolli o‘yinlar, guruhli treninglar) natijasida moslashuv ko‘rsatkichlari 18 foizga oshgani qayd etildi.

Xulosa va takliflar

Xulosa qilib aytganda, o‘smir yoshidagi o‘quvchilarning ijtimoiy moslashuvi – bu shaxsning ma’naviy, psixologik va ijtimoiy jihatdan jamiyatga uyg‘unlashish jarayoni bo‘lib, uni pedagogik va psixologik yondashuvlar orqali boshqarish mumkin. Oila, maktab va mahalla hamkorligiga asoslangan strategiya o‘smirlarning barqaror ijtimoiy identifikatsiyasini shakllantiradi.

Tadqiqot asosida quyidagi takliflar ilgari suriladi:

Tadqiqot natijalari asosida bir qator amaliy tavsiyalar ishlab chiqildi. Avvalo, maktablarda ijtimoiy moslashuv markazlarini tashkil etish va psixologik maslahat xizmatini kuchaytirish zarur. Bunday markazlar o‘quvchilarga o‘z his-tuyg‘ularini tushunish, stress va moslashuvdagi qiyinchiliklarni yengib o‘tish, shuningdek, ijtimoiy muhitda o‘z o‘rnini topishda yordam beradi. Psixologlar, pedagoglar va sinf rahbarlari o‘rtasidagi hamkorlik o‘smirlarning individual muammolarini erta aniqlash va ularni ijobiy yo‘naltirish imkonini beradi.

Shuningdek, o‘qituvchilarni sotsiopedagogik treninglardan o‘tkazish ham dolzarb vazifalardan biridir. Bunday treninglar o‘qituvchilarga o‘quvchilarning individual ehtiyojlarini aniqlash, ularning hissiy holatini tushunish va har bir o‘quvchiga mos yondashuvni tanlash imkonini beradi. Zamonaviy ta’lim sharoitida har bir o‘quvchining psixologik xususiyatlari, oilaviy muhit va shaxsiy qiziqishlarini hisobga olgan tarbiyaviy yondashuv samarali natija beradi. Shu yo‘l bilan o‘smirlarning o‘ziga ishonchi, ijtimoiy faolligi va o‘qishga bo‘lgan motivatsiyasi oshadi.

Bundan tashqari, o‘smirlarni ijtimoiy foydali faoliyatlarga keng jalb etish muhim ahamiyat kasb etadi. Volontyorlik, sport musobaqalari, ekologik aksiyalar va ijtimoiy loyihalarda ishtirok etish ularning jamoaviy hamkorlik, mas’uliyat, tashabbuskorlik va liderlik sifatlarini rivojlantiradi. Bunday faoliyatlar o‘quvchilarga jamiyat hayotida faol ishtirok etish imkonini beradi, bu esa ularning ijtimoiy integratsiyasini kuchaytiradi. Shuningdek, ijtimoiy foydali ishlar o‘smirlarning ma’naviy o‘sishiga, mehnatsevarlik va insonparvarlik qadriyatlarini shakllantirishga xizmat qiladi.

Yana bir muhim yo‘nalish — axborot xavfsizligi va media madaniyat bo‘yicha ta’lim dasturlarini kengaytirishdir. Bugungi raqamli davrda o‘smirlar turli ijtimoiy tarmoqlar, internet platformalari va axborot manbalaridan faol foydalanadilar. Shu sababli, ularni salbiy axborot oqimidan himoya qilish, tanqidiy fikrlashni shakllantirish va media savodxonlikni oshirish dolzarb masalaga aylangan. Maktab dasturlariga media madaniyat, axborot tanlash mezonlari va raqamli etika bo‘yicha mavzularni kiritish orqali yoshlarning ongli axborot iste’moli madaniyati rivojlanadi.

Umuman olganda, ushbu chora-tadbirlarni tizimli tarzda amalga oshirish o‘smirlarning ijtimoiy moslashuv jarayonini yanada samarali qiladi. Shu bilan birga, bu jarayon nafaqat ta’lim tizimi, balki butun jamiyatning ijtimoiy barqarorligi va ma’naviy taraqqiyotiga ham ijobiy ta’sir ko‘rsatadi.

Natijada, o‘quvchilarda mustahkam ijtimoiy immunitet, ijobiy hayotiy pozitsiya va ma’naviy barqarorlik shakllanadi, bu esa ularning barkamol shaxs sifatida voyaga yetishini ta’minlaydi.

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OPPORTUNITIES FOR USING DIGITAL MONITORING PLATFORMS IN ASSESSING INEQUALITIES BETWEEN SOCIAL STRATA

Abstract. *This article analyzes the opportunities of using digital monitoring platforms to identify, assess, and forecast economic disparities among social strata in the country. It substantiates the advantages of digital systems that enable in-depth assessment of social differentiation through rapid data exchange, real-time statistical indicators, and big data analytics. The strategic significance of digital monitoring in targeted policy planning, accurate identification of low-income groups, and optimization of social assistance mechanisms is also highlighted. The research is based on theoretical analysis and practical examples, emphasizing the role of digital platforms in ensuring social justice and balancing the distribution of resources.*

Keywords. *social stratification, digital monitoring, big data, social justice, economic disparities, real-time analysis, analytical platform, targeted policy, data integration, vulnerable social groups.*

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IJTIMOIY QATLAMLAR O‘RTASIDAGI TAFOVUTLARNI BAHOLASHDA RAQAMLI MONITORING PLATFORMALARIDAN FOYDALANISH IMKONIYATLARI

Annotatsiya. *Mazkur maqolada mamlakatda ijtimoiy qatlamlar o‘rtasidagi iqtisodiy tafovutlarni aniqlash, baholash va prognozlash jarayonida raqamli monitoring platformalaridan foydalanishning imkoniyatlari tahlil qilinadi. Tezkor ma’lumotlar almashinuvi, real vaqt rejimidagi statistik ko‘rsatkichlar va katta ma’lumotlar tahlili orqali ijtimoiy farqlanish darajasini chuqur baholash imkonini beruvchi raqamli tizimlarning afzalliklari asoslanadi. Shu bilan birga, ijtimoiy siyosatni maqsadli rejalashtirish, aholining kambag‘al qatlamlarini aniq identifikatsiya qilish hamda ijtimoiy yordam mexanizmlarini optimallashtirishda raqamli monitoringning strategik ahamiyati yoritiladi. Tadqiqot nazariy tahlil va amaliy misollar asosida olib borilgan bo‘lib, raqamli platformalarning ijtimoiy adolatni ta’minlash va resurslar taqsimotini muvozanatlashtirishdagi roli asosiy e’tiborga olingan.*

Kalit so‘zlar. *ijtimoiy tabaqalanish, raqamli monitoring, katta ma’lumotlar, ijtimoiy adolat, iqtisodiy tafovutlar, real vaqt tahlili, analitik platforma, targetlashgan siyosat, ma’lumotlar integratsiyasi, ijtimoiy xavf guruhlari.*

Kirish

So‘nggi yillarda iqtisodiyotda ijtimoiy tengsizlik jarayonlarini o‘rganish va ularni real vaqt rejimida baholashga bo‘lgan ehtiyoj sezilarli darajada ortib bormoqda. Ijtimoiy qatlamlar o‘rtasidagi daromad, iste’mol, ta’lim va sog‘liqni saqlash imkoniyatlariga kirish darajasidagi tafovutlar nafaqat ijtimoiy barqarorlikka, balki makroiqtisodiy o‘sish sur’atlariga bevosita ta’sir ko‘rsatadi. An’anaviy statistik usullar ko‘pincha oraliq davrda to‘plangan ma’lumotlarga asoslanishi sababli real vaziyatni operativ ko‘rsatib bera olmaydi. Shu bois raqamli monitoring platformalari iqtisodiy ko‘rsatkichlarni avtomatik yig‘ish, segmentlar kesimida tahlil qilish va ijtimoiy xavf guruhlarini tezkor aniqlash imkonini beruvchi zamonaviy yechim sifatida e’tirof etilmoqda. Bunday tizimlar katta ma’lumotlar bazasi, sun’iy intellekt algoritmlari va prognozlash modellari orqali ijtimoiy farqlanish dinamikasini aniq baholashga yordam beradi. Raqamli monitoring ijtimoiy siyosatning maqsadli yo‘naltirilishini ta’minlab, davlat resurslarining samarali taqsimlanishi va ijtimoiy adolat tamoyillariga asoslangan qarorlar qabul qilinishiga xizmat qiladi. Ayniqsa daromadlar notekis taqsimlanishi, bandlikdagi nomutanosiblik, kambag‘allik darajasining hududlar bo‘yicha farqlanishi kabi ko‘rsatkichlarni tahlil qilishda raqamli platformalar monitoringi ilmiy va amaliy jihatdan yuqori samaradorlik beradi. Bugungi kunda bunday tizimlardan foydalanish moliyaviy xavflarni erta aniqlash, soliq bazasini kengaytirish, past daromadli qatlamlarni aniqlash va ularga differensial yondashuv asosidagi ijtimoiy himoya mexanizmlarini shakllantirishda muhim vosita sifatida qaralmoqda. Shu nuqtai nazardan, raqamli texnologiyalar asosida ijtimoiy tafovutlarni baholash mexanizmlarini takomillashtirish milliy ijtimoiy-iqtisodiy siyosatning ustuvor yo‘nalishlaridan biriga aylanmoqda.

Metodlar

Tadqiqotda ijtimoiy qatlamlar o‘rtasidagi iqtisodiy tafovutlarni aniqlash va baholash uchun raqamli monitoring tizimlariga asoslangan analitik yondashuv qo‘llanildi. Avvalo, mavjud xalqaro va milliy monitoring modellari, xususan big data, real vaqt tahlili, profilaktik prognozlash va segmentatsiya mexanizmlari solishtirma tahlil asosida o‘rganildi. Ma’lumotlar sifatida ochiq hukumat statistik bazalari, raqamli soliq tizimi, elektron to‘lov platformalari, ijtimoiy yordam reyestrlari va onlayn bandlik resurslaridan olingan makro va mikro darajadagi raqamli ko‘rsatkichlardan foydalanildi. Shu bilan birga, ijtimoiy farqlanish ko‘lamini aniqlashda Gini koeffitsienti, Palma koeffitsienti, Lorents egri chizig‘i va real daromad indekslari kombinatsiyalangan holda qo‘llandi. Raqamli monitoring platformalari imkoniyatlarini baholashda ma’lumotlar integratsiyasi darajasi, javob berish tezligi, segmentlar bo‘yicha differensial aniqlik va siyosiy qarorlar uchun moslashuvchan prognoz berish kuchiga e’tibor qaratildi. Tadqiqot yondashuvi sifatida deskriptiv statistika, taqqoslama tahlil, indikatorlar asosida

dinamik monitoring va ehtimollik elementlari bilan boyitilgan prediktiv analitik modellashtirish usullari uyg‘unlashtirildi. Raqamli platformalar orqali ijtimoiy xavf guruhlarini ajratib ko‘rsatish imkoniyati alohida mezon sifatida baholandi. Mazkur yondashuv natijalarining ishonchliligini ta’minlash uchun ma’lumotlarning aniqlik darajasi, yangilanish chastotasi va ularning siyosiy qarorlar qabul qilishga real ta’siri nazarda tutilgan holda tizimli baholash amalga oshirildi. Raqamli monitoringning amaliy qiymatini baholashda uning ijtimoiy resurslarni targetlash imkoniyati, real vaqt prognozlash qudrati va qarorlar qabul qilish tezligini oshirishdagi o‘rni asosiy metodologik yo‘nalish sifatida belgilandi.

Natijalar

Tadqiqot natijalari shuni ko‘rsatdiki, raqamli monitoring platformalari ijtimoiy qatlamlar o‘rtasidagi tafovutlarni an’anaviy statistik yondashuvlarga nisbatan tezkor va aniq aniqlash imkonini beradi. Real vaqt rejimidagi ma’lumotlar oqimi asosida daromadlar tarkibi, rasmiy va norasmiy bandlik ko‘rsatkichlari, iste’mol xarajatlari hamda ijtimoiy yordam oluvchilar profilini segmentlar bo‘yicha ajratish imkoniyati shakllandi. Katta ma’lumotlar texnologiyalari orqali ma’lumotlar faqat hududiy kesimda emas, balki yosh, bandlik turi, moliyaviy faollik darajasi, davlat yordamiga ehtiyoj darajasi kabi determinantlar bo‘yicha ham qatlamlarga ajratildi. Ayniqsa, noaniq darajadagi yashirin kam daromadli guruhlarni aniqlashda onlayn tranzaksiyalar dinamikasi va elektron soliq ma’lumotlarining uyg‘un tahlili yuqori samaradorlik ko‘rsatdi. Raqamli monitoring tizimlari yordamida ijtimoiy xavf darajasi bo‘yicha “real vaqt xaritasi” tuzish imkoniyati paydo bo‘ldi, bu esa hududlar bo‘yicha kambag‘allik darajasini faqat o‘rtacha ko‘rsatkich emas, balki mikrosegment darajasigacha aniqlashni ta’minladi. Tijorat banklari va elektron to‘lov tizimlari bilan integratsiya qilingan monitoring platformalari aholining moliyaviy faollik darajasini real sektorda bozor harakati bilan solishtirish imkonini berdi. Eng muhim natijalardan biri shundaki, raqamli monitoring asosida ijtimoiy yordam tizimini differensiallashtirish va resurslarni eng zarur segmentlarga aniqlik bilan yo‘naltirish imkoniyati keskin oshdi. Shu bilan birga, statistik kechikmalarni kamaytirish, inflyatsiya ta’sirini hisobga olgan holda real xarid qobiliyatini avtomatik tarzda qayta baholash ham muvaffaqiyatli amalga oshdi.

Muhokama

Olingan natijalar raqamli monitoring platformalaridan foydalanish ijtimoiy siyosatni samarali targetlash va iqtisodiy barqarorlikni ta’minlashda strategik ahamiyatga ega ekanini ko‘rsatadi. An’anaviy statistik yondashuvlar faqat oraliq davrlarda to‘plangan ma’lumotlarga asoslanganligi sababli real vaqt o‘zgarishlarini aks ettira olmaydi, bu esa iqtisodiy inqirozlar, inflatsiya bosimi yoki bandlikdagi kutilmagan siljishlarga kechikkan reaksiya berilishiga olib keladi. Raqamli monitoring esa yagona ma’lumotlar ekotizimini shakllantirish orqali davlat boshqaruvi, bank sektori, soliq organlari va ijtimoiy himoya tizimi o‘rtasida ma’lumotlar oqimini tezkor koordinatsiya qiladi. Ayniqsa, ijtimoiy farovonlik darajasidagi keskin tafovutlarni mikrosegment darajasida aniqlash imkoniyati resurslarni befoyda yo‘nalishlarga ajratish xavfini kamaytiradi. Shu

bilan birga, raqamli platformalar orqali kambag‘allikning yashirin shakllarini aniqlash, “faol iqtisodiy ishtirokchi bo‘lsa-da past daromadli” toifadagi guruhlarni farqlash imkoniyati paydo bo‘ladi. Biroq, raqamli monitoring tizimlarining samaradorligi ma’lumotlarning integratsiya darajasi, huquqiy moslashuvchanlik, axborot xavfsizligi va malakali analitik kadrlar mavjudligiga kuchli darajada bog‘liq.

Asosiy yo‘nalish	Mazmuni	Raqamli monitoring roli	Kutilayotgan foyda
Ijtimoiy tafovutlarni aniqlash	Daromad va iste’mol notekisligi	Real vaqt big data tahlili orqali yashirin guruhlarni aniqlash	Davlat siyosatini aniqlik bilan targetlash
Hududiy nomutanosiblik	Shahar-qishloq farqi, infratuzilma tafovuti	Interaktiv xaritalash (heatmap)	Mintaqaviy resurslar qayta taqsimoti
Kambag‘allik tahlili	Yashirin va tranzaksiyaviy kambag‘allik	Soliq va to‘lov tizimlari integratsiyasi	“Noto‘g‘ri nafaqa berish”ning oldini olish
Siyosiy qaror qabul qilish	Ma’lumot kechikishi muammosi	Real-time alert tizimi	Proaktiv iqtisodiy choralar
Raqamli xavfsizlik va ishonchlilik	Ma’lumotlar sifati va maxfiyligi	Integratsiya va AI asosida verifikatsiya	Shaffoflik + korrupsiya riskini kesish

Shuningdek, ijtimoiy-iqtisodiy ko‘rsatkichlarni monitoring qilishda faqat statistik raqamlarni emas, balki uy xo‘jaliklari xulq-atvori, iste’mol modeli va raqamli faollik dinamikasini ham tahlil qilish zarurligi aniqlangan. Demak, raqamli monitoring platformalari faqat nazorat vositasi emas, balki ijtimoiy siyosatni proaktiv rejalashtirish va iqtisodiy xavflarni oldindan prognozlash uchun strategik analitik infratuzilma sifatida namoyon bo‘ladi.

Xulosa

Tahlillar shuni ko‘rsatadiki, raqamli monitoring platformalari ijtimoiy qatlamlar o‘rtasidagi iqtisodiy tafovutlarni chuqur va real vaqt rejimida baholash imkoniyatini beruvchi eng samarali mexanizmlardan biridir. Bunday tizimlar tomonidan taqdim etiladigan doimiy ma’lumotlar oqimi ijtimoiy xavf guruhlarini aniqlashni ancha tezlashtiradi, kambag‘allik va daromadlar notekis taqsimlanishini mikrosegment darajasigacha o‘rganish imkoniyatini ochib beradi. Raqamli monitoring natijalari asosida ijtimoiy yordam tizimini differensial asosda optimallashtirish, iqtisodiy resurslarni eng muhtoj qatlamlarga aniq va maqsadli yo‘naltirish mumkinligi tasdiqlandi. Shu bilan birga, raqamli tizimlar iqtisodiy shoklar, inflatsiya yoki mehnat bozori o‘zgarishlariga sekin emas, balki proaktiv reaksiya berish imkonini yaratadi. Biroq, bunday tizimlarni samarali joriy etish uchun davlat ma’lumotlar bazalarining integratsiyasi, axborot xavfsizligi kafolatlari, shaffoflik darajasi va mutaxassislarning malakasi yuqori bo‘lishi zarur. Umuman olganda, raqamli monitoring infratuzilmasi ijtimoiy adolatni ta’minlash, iqtisodiy siyosatni aniq ma’lumotlar asosida yo‘naltirish va barqaror ijtimoiy-

iqtisodiy rivojlanishni qo‘llab-quvvatlash uchun keng strategik imkoniyatlarni ochib beradi.

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ASSESSMENT OF PHYSICAL DEVELOPMENT IN EARLY CHILDHOOD AMONG CHILDREN BORN TO MOTHERS WHO EXPERIENCED COVID-19 DURING PREGNANCY

Abstract. *The COVID-19 pandemic has had far-reaching effects on maternal and child health worldwide. Recent studies suggest that intrauterine exposure to SARS-CoV-2 infection may influence fetal growth, early development, and postnatal adaptation. This review aims to analyze the available data on the physical development of infants and young children born to mothers who experienced COVID-19 during pregnancy. The findings indicate that while most children demonstrate normal growth parameters, a subset shows mild deviations in anthropometric indicators and psychomotor milestones, particularly among those exposed during the second or third trimester. The possible mechanisms include placental inflammation, maternal hypoxia, and cytokine-mediated effects on fetal development. Early monitoring and targeted interventions are recommended to ensure optimal growth outcomes.*

Keywords: *COVID-19, pregnancy, intrauterine exposure, physical development, early childhood, anthropometry, maternal infection.*

Introduction.

Since its emergence in late 2019, COVID-19 has posed significant challenges to global health systems. Pregnant women represent a vulnerable group due to the immunological and physiological changes inherent to gestation. Although vertical transmission of SARS-CoV-2 remains rare, maternal infection may still have indirect effects on fetal and neonatal outcomes (1).

Physical development during early childhood reflects the overall health and growth potential of the child. It is influenced by prenatal, perinatal, and postnatal factors. The consequences of maternal COVID-19 during pregnancy on children's physical growth parameters, such as body weight, length, and head circumference, have become an important topic of pediatric and perinatal research (2).

This review summarizes current literature regarding the effects of maternal COVID-19 infection on the physical development of early childhood, emphasizing the potential mechanisms and clinical implications.

Literature Review.

Several observational studies have investigated the outcomes of pregnancies affected by COVID-19. Chen et al. (2020) observed that neonates born to infected mothers generally had normal birth weights and Apgar scores, though a small proportion exhibited intrauterine growth restriction (IUGR) (3). Similarly, Knight

et al. (2021) found that preterm delivery rates were higher among COVID-19-positive mothers compared to non-infected controls (4).

A multicenter study in Europe reported that maternal infection during the third trimester was associated with lower birth weights and a slightly increased risk of neonatal intensive care unit (NICU) admission (5). Meanwhile, Schwartz and colleagues (2022) highlighted placental pathology findings consistent with inflammatory and vascular injury, potentially affecting fetal oxygenation and growth (6).

Longitudinal follow-ups have shown that most infants catch up in weight and length by 6–12 months, though mild psychomotor delays may persist in a minority of cases (7). Such outcomes are believed to be multifactorial, influenced not only by infection itself but also by maternal stress, altered prenatal care, and socioeconomic factors during the pandemic period.

Discussion

The impact of maternal COVID-19 infection on early physical development appears to be modest in most cases, but the variability in outcomes warrants continued attention. Mechanistic hypotheses include:

1. Placental Inflammation and Hypoxia: SARS-CoV-2 can induce chronic histiocytic intervillositis and vascular malperfusion, leading to reduced nutrient and oxygen transfer to the fetus (6).

2. Cytokine Storm and Immune Activation: Elevated maternal interleukins and TNF-α may affect fetal neurodevelopment and growth (2).

3. Preterm Birth and Iatrogenic Delivery: Increased rates of cesarean sections and premature births among infected mothers can influence postnatal adaptation and growth trajectories (4).

Despite these potential risks, current evidence does not demonstrate widespread or severe growth impairment among children born to mothers with COVID-19. Instead, subtle and transient deviations are more common, emphasizing the importance of longitudinal monitoring during infancy and early childhood.

Healthcare systems should prioritize follow-up programs for these children, incorporating regular anthropometric assessment, nutritional counseling, and neurodevelopmental evaluation. Preventive measures such as maternal vaccination and optimized antenatal care are also critical in mitigating risks.

Conclusion.

Children born to mothers who experienced COVID-19 during pregnancy generally exhibit normal patterns of physical development, though some may experience mild and temporary deviations. Further large-scale, longitudinal studies are needed to clarify the long-term implications of intrauterine exposure to SARS-CoV-2. Continuous follow-up and early intervention strategies can ensure favorable outcomes and support optimal child health in the post-pandemic era.

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PRIORITY DIRECTIONS OF DEVELOPMENT OF THE REGIONAL INNOVATIVE ECONOMY OF THE REPUBLIC OF UZBEKISTAN

Abstract: *The article focuses on the development of innovation-oriented elements of the economy and factors caused by the growing role of modernization of market relations in the national economy. Achieving the effect of innovative development of the national economy requires its systemic reorganization based on an effectively functioning economic mechanism. Optimization of the role and magnitude of the innovation component in structuring the economy is implemented as a relatively independent economic process.*

Changing the resource structure of the national economy, bringing it to the forefront of the global economy through innovative modernization, and optimizing the formation and accumulation of the nation's wealth are possible through the optimization of human potential. This capability should be supported by measures that stimulate, regulate, and manage human potential for its optimal development. The author concludes that using innovation-directed investments contributes to the formation of an innovation-oriented financial market mechanism, giving the process a more definite and practical character.

Keywords: *regional economy, development strategy, innovative activity, innovative development, efficiency, development mechanism.*

In the conditions of modern market relations of the Republic of Uzbekistan, special attention is paid to the implementation of an innovative development model based on traditional Government development strategies of the Republic of Uzbekistan for 2017-2021 (https://goo.gl/VDXS4k).

Changing the conditions of various elements of innovative development in a stage-by-stage mechanism dictates: firstly, in our opinion, the urgency of solving the problems of transferring the economy of Uzbekistan to innovative development, because at each stage of this transition it will be important to take adequate measures and use the appropriate elements; secondly, they contribute to the development of all non-economic factors; thirdly, the transformation of the goals of innovative economic development in a necessary and constant state of not only development, but also the development of the socio-economic system.[1]

The causes of emerging contradictions in the country's economic development, caused by economic, demographic, and environmental issues, can be resolved through the use of elements that, both in their nature of action and in the directions of their impact, actualize the innovative activities of entities without

interfering with their interests or disrupting the conditions of competitiveness. Depending on the dynamics and timeframe of the innovation project, the elements of the mechanism should be divided into regulatory elements, stimulating elements, and moderating elements. By the entities using them, elements ensure the provision of power by state-owned enterprises, transnational corporations, and enterprises. This classification of innovative development provides the main elements for the direction of their use for the innovative transformation of the domestic economy.

Considering the key characteristics of the most economic mechanism for innovative development and the actors involved in its activation, it is necessary to highlight the following areas of its application and the corresponding elements of their implementation:

First, creating the fundamental conditions for the innovative development of the Uzbek economy, ensuring opportunities for the emergence and development of innovation, and shaping the economy's receptivity to innovation. This necessarily requires the identification and utilization of a whole group of factors capable of structurally reorganizing the conditioned factors within them, establishing dependencies and connections between individual economic sectors capable of accumulating a systemic effect.

Second, transforming the production process itself requires various organizational features of the innovation process that contribute to the innovative nature of the labor process, increasing its productivity to the required level, enabling its replacement by machines, transforming knowledge into a defining and determining factor of production, and thus accumulating the production effect.

Third, achieving the necessary level of financial support for production upon entering an innovative development path, which will require additional methods aimed at focusing financial flows on innovative and transformative areas and accumulating the investment effect.[2]

It has been established that the following instruments are used to optimize human potential in forming an innovative and integrated structure of the national economy: concern for the state's well-being and financing the needs for sufficient volumes of higher education and scientific research; the restoration and enhancement of the prestige of scientific and pedagogical work based on a significant increase in its remuneration and an increase in the fund; updating the material, technical and technological base of science and education, which will allow the use of modern educational technologies, integration into the transnational education system and successful competition in the global educational market; solving problems, training specialists in these professions for the production sphere of the required quality; in order to ensure the demand for science and education - organizing the implementation of a strategy not simply for diversification of the economy, but for the creation of an economy of the neo-industrial era.

Recognizing the extent of resource support for innovative development in the economic sector, the authors note the possibility of its implementation,

provided that the financial market mechanism is innovation-focused. This focus can be achieved through the following methods: improving the market environment; developing employment; market antimonopolization; and creating a highly competitive institutional market environment. The need to use these methods is mediated by both the functioning of most markets and the state of the entire economic system, its receptivity to innovative investment and technological evolution. Innovative restructuring of the financial market mechanism occurs through the creation of a highly competitive institutional environment.

By organizing institutional modifications and legal restrictions on the reproductive contours of the economic system, national capital can receive stimulating impulses from the financial market and organize cash flow directions that quickly generate new ones, consistent with existing realities, recreate the existing structure, and ensure a way out of the deep economic crisis by developing a new, innovative production foundation.

- Insufficient R&D funding does not ensure the necessary quality of growth in scientific output.

- Low innovative activity of the republic's leading industrial enterprises and industries.

- Insufficient funding for the scientific and innovation process to ensure progressive, technical, and technological modernization of industrial production by enterprises (0.02-0.03% of total production costs).

- Low share of high-tech products in industrial production.[3]

By using the method of organizing innovation-oriented investments, the process of creating an innovation-oriented financial market machine achieves a certain certainty and concrete nature.

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STRUCTURE AND CLASSIFICATION OF AGRICULTURAL TERMS IN ENGLISH LANGUAGE

Abstract. *The purpose of this article is to prepare students majoring in agriculture to successfully master specialized terminology and develop their ability to use terms in professional communication situations using English-language, professionally oriented texts.*

Key words: *students of agricultural fields, dictionary of terminological vocabulary, professional communication.*

Today, the world is rapidly changing, new professions are emerging, and information technology is being introduced into all spheres of human activity. Improvements in technology and the emergence of new fields of knowledge, including those at the intersection of sciences, contribute to the emergence of new terms and concepts in language. A term is a word or group of words that, within a given field or specialization, has a specific and unique meaning, excluding any possibility of a different understanding or interpretation than that intended by the author.

It is worth noting that foreign language instruction at an agricultural university is characterized by a practical focus. Students use a foreign language as a means of obtaining additional information on their future specialty. This practical focus is determined, first and foremost, by the teacher's teaching objectives, such as developing verbal skills, developing language proficiency, and mastering specialized terminology through working with non-authentic and authentic popular science and scientific texts in their field. This article examines the experience of teaching students at an agricultural university specialized vocabulary that forms the sublanguage of the agricultural subject area (agricultural supplies, livestock farming, crop production, etc.).

The general educational goal is to develop Uzbek students' understanding of the essence of language and broaden their linguistic horizons, while expanding their professional knowledge in agriculture and related disciplines. This includes problems of translating terms into English, their correct and appropriate use in professional and everyday communication, and an understanding of the nature of the languages in contact: English, a synthetic, fusional, and inflectional language,

and Uzbek, an agglutinating language. Text-based work demonstrates the differences in the ways of expressing thoughts in these languages.

English and Uzbek agricultural terminology share a common vocabulary. This vocabulary is fully or partially identical in both languages, for example: canal, pump, elevator, agrochemistry, etc. This similarity facilitates learning and simultaneously demonstrates the different grammatical possibilities of English and Uzbek, especially when working with educational texts. It also develops linguistic guesswork, thereby increasing students' passive vocabulary. The practical goal of teaching English to Uzbek students is to develop the necessary skills and abilities for independent work with agricultural terminology in English, everyday and professional communication, the use of reference and encyclopedic literature, and electronic educational resources, as well as the independent acquisition of professionally relevant knowledge and its critical analysis. English language classes thus foster a culture of intellectual work and enhance professional competence.

Each terminology system has its own semantic features and specific linguistic characteristics at all levels of the language. English agricultural terminology developed over a long period of time and is one of the most complex and extensive terminology systems in modern English. Students should develop a clear understanding of the vocabulary of their chosen specialty as a specific system, which primarily involves exploring the set of terms that comprise it and studying the relationships and connections between them. The linguistic characteristics of agricultural terminology as part of the lexical system must be taken into account by teachers when creating a system of assignments and exercises for teaching Uzbek students in non-philological specialties in English as a foreign language (RFL) classes. Lexical work with terminology can be considered a mandatory learning activity. It should be noted that in this article, we limit our consideration to the lexical material itself. We do not separately address the issue of the methods of forming terms and terminological phrases related to the field of agriculture in the English language, which, in our opinion, deserves special attention as a linguistic and methodological problem and can serve as material for a separate publication.

The educational goal is to instill in students a proactive approach to life and high moral qualities in future professionals. Language is studied in close connection with national culture, and through English language instruction, an objective understanding of English culture and advanced science is formed, facilitating the professional development and personal growth of future professionals.

To develop the communicative competence of future agricultural specialists, it is possible to effectively use a special set of exercises aimed at mastering the language of the future specialty, based on the methodology of A. N. Shchukin [7]. With regard to agricultural terminology, in our opinion, this set may include, for example, the following exercises:

1. Guess the meaning of a new agricultural term from the context.

2. Write in the gap a term from the agricultural industry that fits the meaning.

3. Group agricultural terms according to some common feature.

4. Find in the text and write out key terms from the field of agriculture.

5. Compile a dictionary entry on a significant agricultural term for the glossary.

An educational glossary, by recording elements of scientific knowledge in the form of a term as a specialized linguistic unit, is a means of mastering the language of the future profession and contributes to the formation of a professional picture of the world of a future specialist.

Today, the vast majority of high school students have never even considered studying agricultural or related sciences. And as long as they ignore agriculture altogether, trying to interest them in the content and quality of education or the employment opportunities in this field is futile. It's important to spark interest in the industry as a whole, in order to then foster interest in improving the quality of education in this field or in the career opportunities it offers.

Currently, students frankly define the image of agriculture in most developed countries as "crap"/"not cool." A significant portion of the students surveyed noted the higher social status of graduates from other fields of study compared to them. Some even had to defend their choice to friends and family members unrelated to agriculture, who asked why they didn't choose something "cooler" or a "real university" to study. This reaction reflects the status and perception of agriculture and related sciences in society at large.

However, there were other students who did not experience such treatment and noted their positive image among students at other institutions. For example, in Latin America, there is a relatively high percentage of students studying agriculture at universities. They typically come from large ranches or latifundia and enjoy high social status. Others study agricultural or bioengineering. The "engineering" component of their education earns them a certain respect in society, they admit.

It's a completely different story in developing countries: in many of them, food security is not a possible scenario for the distant future, but a reality today. Naturally, all this heightens the importance of the agronomist's role in everyday life. Accordingly, the number of students expressing interest in agricultural sciences is significantly higher in developing countries, and they are quite satisfied with their social status.

A specific focus on academic vocabulary involving a reduced – though with high coverage – list of words, allows for the possibility that the learners contribute their vast knowledge of their specific fields. In this way, both motivation and self-esteem may be increased, since the learners would be exposed to lexical items that they are somewhat familiar with, that they can recognize as part of the texts that they manipulate. In our view, a list of academic words should be a set of options to build the rhetoric of a text, providing all the necessary word data basis,

including different criteria of classification, according to the specificity of the audience and the profile of the class of students, their interest and profile.

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NODAVLAT XUSUSIY SHERIKCHILIKDAGI MAKTABGACHA TA'LIM TASHKILOTINI BOSHQARISH VA MUVOFIQLASHTIRISH

Annotatsiya. *Maktabgacha ta'lim bolalarning hayotidagi muhim bosqichlardan biri hisoblanadi. O'zbekistonda davlat-xususiy sheriklik (DXSh)dagi maktabgacha ta'lim tashkilotlari bolalarning erta yoshdagi rivojlanishiga yordam beradigan asosiy tarmoqlardan biri hisoblanadi. Ushbu maqola davlat xususiy sheriklikdagi maktabgacha ta'lim tashkilotlarining ta'limiy faoliyatini muvofiqlashtirish va boshqarishning muhim jihatlarini yoritib beradi.*

Tayanch so'zlar: *maktabgacha ta'lim, davlat-xususiy sheriklik (DXSH), rivojlanish, ta'lim sifati, xalqaro tajriba, innovatsiya, hamkorlik mexanizmlari, xususiy sektor.*

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MANAGEMENT AND COORDINATION OF PRESCHOOL EDUCATION IN NON-STATE PRIVATE PARTNERSHIP

Annotation: *preschool education is one of the important stages in children's lives. In Uzbekistan, preschool educational institutions under public-private partnership (PPP) are one of the main sectors that help children's early development. This article highlights important aspects of coordinating and managing the educational activities of preschool educational institutions under public-private partnership.*

Key words: *preschool education, public-private partnership (PPP), development, education quality, international experience, innovation, collaboration mechanisms, private sector.*

Dunyo tajribasida davlat tomonidan ajratiladigan subsidiyalar, kreditlar va grantlar xususiy sherikchilikdagi maktabgacha ta'lim tashkilotlarini qo'llab-quvvatlashning asosiy yo'nalishlaridan biri hisoblanadi. Masalan, Buyuk Britaniyada "Early Years Free Entitlement" dasturi orqali davlat bolalarni xususiy bog'chalarga joylashtirishga moliyaviy yordam beradi. Shuningdek, Singapurda "Anchor Operator Scheme" dasturi orqali xususiy ta'lim tashkilotlariga davlat tomonidan subsidiyalar ajratiladi, natijada xizmatlar narxi pasayadi va ta'lim sifati oshadi.

Germaniyada esa davlat tomonidan xususiy bog‘chalarga beriladigan moliyaviy yordamlarga ustuvor ahamiyat qaratilib, maktabgacha ta’lim tashkilotlariga alohida grantlar ajratiladi. Ushbu yondashuv orqali davlat-xususiy sheriklik modelida ta’lim tashkilotlarining mustahkam moliyaviy poydevori shakllanadi.

Xususiy sherikchilikdagi maktabgacha ta’lim tashkilotlari uchun litsenziyalash jarayoni soddalashtirilishi xorijiy mamlakatlarda ham kuzatilmoqda. Masalan, Kanadada maktabgacha ta’lim tashkilotlariga nisbatan qat’iy sertifikatsiya tizimi joriy etilgan bo‘lsa-da, xususiy sektorga kirish jarayoni soddalashtirilgan va rag‘batlantirilgan. Shuningdek, AQShda "Child Care and Development Block Grant (CCDBG)" dasturi orqali xususiy bog‘chalarga faoliyat yuritish huquqini berish jarayoni aniq tartibga solingan.

Janubiy Koreyada esa davlat tomonidan ta’lim tashkilotlariga alohida huquqiy yordam ko‘rsatiladi. Bu mamlakatda davlat tomonidan ta’lim tashkilotlari va xususiy sektor o‘rtasidagi hamkorlik maxsus qonuniy me’yorlar orqali qo‘llab-quvvatlanadi va bu jarayonda davlatning nazorati muhim o‘rin tutadi.

Xususiy sherikchilikdagi ta’lim tashkilotlarining rivojlanishi uchun infratuzilmaviy imtiyozlar ham muhim rol o‘ynaydi. Masalan, Avstraliyada davlat tomonidan xususiy ta’lim tashkilotlariga ajratilgan yer uchastkalari imtiyozli shartlar asosida taqdim etiladi. Bu bog‘chalarning qurilishiga va ta’lim sifatining yaxshilanishiga katta hissa qo‘shadi.

Yevropa Ittifoqi mamlakatlarida xususiy sherikchilikdagi ta’lim tashkilotlari uchun davlat tomonidan ajratilgan subsidiyalar infratuzilmani rivojlantirishga yo‘naltirilgan. Masalan, Germaniyada davlat tomonidan xususiy bog‘chalarga ajratiladigan subsidiyalar yangi inshootlar qurish va mavjud infratuzilmani takomillashtirish imkonini beradi. Finlyandiyada esa davlat tomonidan taqdim etiladigan infratuzilmaviy yordamlarga asoslanib, xususiy ta’lim tashkilotlari eng zamonaviy jihozlar bilan ta’minlanadi.

Xususiy sherikchilikdagi maktabgacha ta’lim tashkilotlari rivojlanishining muhim jihatlaridan biri pedagogik shart-sharoitlarning yaratilishidir. Xorijiy mamlakatlarda ta’lim jarayoni interfaol usullarga asoslanib olib boriladi va ta’lim sifati doimiy ravishda monitoring qilinadi. Masalan, Finlyandiyada maktabgacha ta’lim tashkilotlarida bolalarni ijodiy fikrlashga o‘rgatish, mustaqil qaror qabul qilish va tadqiqotchilik faoliyatiga yo‘naltirish asosiy maqsad qilib qo‘yilgan.

AQShda esa “Reggio Emilia” pedagogik modelidan foydalaniladi. Bu yondashuv bolalarning mustaqil o‘rganish va o‘z qobiliyatlarini namoyon qilishiga yo‘naltirilgan. Shuningdek, Yaponiyada "Kodomo-en" modeli orqali maktabgacha ta’lim tizimida innovatsion texnologiyalar joriy etilib, zamonaviy o‘quv dasturlari ishlab chiqiladi.

Xususiy sherikchilikdagi ta’lim tashkilotlarining samarali faoliyat yuritishi uchun ta’lim sifatini nazorat qilish tizimi muhim ahamiyatga ega. Masalan, Buyuk Britaniyada Ofsted (Office for Standards in Education) tomonidan har bir ta’lim tashkilotsi doimiy ravishda nazorat qilinadi. AQShda esa "National Association

for the Education of Young Children (NAEYC)" tomonidan xususiy bog‘chalarning ta’lim sifati baholanadi.

Germaniyada ta’lim sifatini nazorat qilish uchun "Kita-Qualitätsmonitoring" tizimi joriy etilgan bo‘lib, bu tizim orqali har bir maktabgacha ta’lim tashkilotsi faoliyati baholanadi va ta’lim sifati doimiy ravishda yaxshilanib boriladi.

Xorijiy tajribalardan kelib chiqib aytish mumkinki, xususiy sherikchilikdagi maktabgacha ta’lim tashkilotlarini rivojlantirish uchun davlat tomonidan beriladigan moliyaviy, huquqiy, infratuzilmaviy va pedagogik imtiyozlar muhim rol o‘ynaydi. Buyuk Britaniya, AQSh, Finlyandiya va Germaniya tajribalaridan kelib chiqib, O‘zbekiston sharoitida ham xususiy bog‘chalarga davlat ko‘magini kengaytirish, innovatsion pedagogik texnologiyalarni joriy etish va ta’lim sifatini doimiy monitoring qilish orqali maktabgacha ta’lim tizimini yanada rivojlantirish mumkin. Ushbu yo‘nalishda davlat va xususiy sektorning yanada yaqin hamkorligi bolalar uchun yuqori sifatli ta’lim muhitini yaratishda muhim ahamiyat kasb etadi.

Xususiy sherikchilikdagi maktabgacha ta’lim tashkilotlariga berilgan imtiyozlar davlat tomonidan ta’lim tizimini rivojlantirish hamda xususiy sektorni jalb qilishni rag‘batlantirish maqsadida taqdim etiladi. Ushbu imtiyozlar moliyaviy, huquqiy, infratuzilmaviy va pedagogik jihatlarni o‘z ichiga oladi. Mazkur imtiyozlar asosida ta’lim sifatini oshirish, yangi pedagogik yondashuvlarni joriy etish va o‘quv muhitini yanada takomillashtirish imkoni yaratiladi.

Moliyaviy imtiyozlar xususiy sherikchilikdagi maktabgacha ta’lim tashkilotlari uchun asosiy rag‘batlantiruvchi omil hisoblanadi. Davlat tomonidan ajratiladigan subsidiyalar, kreditlar va grantlar bu turdagi tashkilotlarning samarali faoliyat yuritishini ta’minlashga xizmat qiladi. Shuningdek, soliq imtiyozlari, jumladan foyda solig‘idan ozod etish, mulk solig‘ini kamaytirish kabi chora-tadbirlar tadbirkorlarni jalb etishga imkon yaratadi. O‘zbekiston Respublikasi Prezidentining "Maktabgacha ta’lim tizimini rivojlantirish to‘g‘risida"gi qarori asosida xususiy ta’lim tashkilotlariga beriladigan moliyaviy yengilliklar aniq belgilangan.

Huquqiy jihatdan esa davlat xususiy sherikchilikdagi ta’lim tashkilotlariga litsenziyalash jarayonini soddalashtirish, tashkilotlarga qulay huquqiy muhit yaratish kabi imkoniyatlarni taqdim etadi. Bu esa o‘z navbatida ta’lim tizimida xususiy sektor ishtirokini oshirishga yordam beradi.

O‘zbekiston Respublikasining "Davlat-xususiy sheriklik to‘g‘risida"gi qonuni asosida xususiy ta’lim tashkilotlarining faoliyati qonuniy jihatdan tartibga solingan. Xususiy sherikchilikdagi ta’lim tashkilotlari davlat ta’lim standartlariga muvofiq faoliyat yuritish bilan birga, o‘zining pedagogik yondashuvlarini ham joriy etishi mumkin.

Infratuzilmaviy imtiyozlar xususiy sherikchilikdagi maktabgacha ta’lim tashkilotlariga yer uchastkalari, binolar va muassasalarni ijaraga olish yoki xarid qilishda davlat tomonidan yengilliklar berilishini o‘z ichiga oladi. Davlat ushbu muassasalarga subsidiyalar orqali yangi inshootlar qurish va mavjud

infratuzilmani takomillashtirish imkoniyatini yaratib beradi. O‘zbekiston Respublikasi Prezidentining 2021-yil 19-martdagi qaroriga muvofiq, xususiy sherikchilikdagi ta’lim tashkilotlariga yer uchastkalari uzoq muddatli ijaraga berilishi hamda bino va inshootlar ularga imtiyozli shartlarda ajratilishi mumkin.

Pedagogik jihatdan xususiy sherikchilikdagi maktabgacha ta’lim tashkilotlarining rivojlanishi uchun muhim shart-sharoitlardan biri kadrlar tayyorlash tizimidir. Xususiy ta’lim tashkilotlari uchun maxsus o‘qitish dasturlari va malaka oshirish kurslari tashkil etilib, bu jarayonda innovatsion ta’lim texnologiyalaridan foydalanish ta’minlanadi. Pedagogik shart-sharoitlar jumlasiga interfaol o‘qitish metodikalarining joriy etilishi, ta’lim dasturlarining uzluksiz yangilanib borilishi va zamonaviy ta’lim vositalaridan foydalanish ham kiradi.

Shuningdek, xususiy sherikchilikdagi maktabgacha ta’lim tashkilotlarida ta’lim sifati va samaradorligini oshirish uchun davlat va xususiy sektor o‘rtasidagi hamkorlikning mustahkamlanishi muhim ahamiyatga ega. Davlat tomonidan taqdim etiladigan nazorat va metodik ko‘mak xususiy sektor ishtirokchilariga ta’lim jarayonini yaxshilashda yordam beradi. Buning natijasida bolalar zamonaviy ta’lim standartlari asosida sifatli bilim oladi va ularning rivojlanishi uchun qulay muhit yaratiladi.

Xususiy sherikchilikdagi maktabgacha ta’lim tashkilotlarining samarali faoliyat yuritishi uchun ta’lim jarayonida innovatsion yondashuvlardan foydalanish talab etiladi. Bu jumladan STEAM texnologiyalarni joriy etish, kreativ ta’lim metodlarini qo‘llash va o‘quv dasturlarini ilmiy tadqiqotlarga asoslangan holda ishlab chiqishni o‘z ichiga oladi. Shuningdek, axborot texnologiyalari asosida ta’lim jarayonini tashkil etish ta’lim sifatini oshirishga xizmat qiladi. Masalan, elektron jurnal va reyting tizimlari joriy etish orqali bolalarning rivojlanish jarayoni yanada tizimli va samarali monitoring qilinadi.

Davlat tomonidan ta’lim sifatini nazorat qilish va xususiy sherikchilikdagi maktabgacha ta’lim tashkilotlarini rag‘batlantirish uchun maxsus monitoring tizimlari joriy etiladi. Bunday tizimlar ta’lim jarayonining samaradorligini baholash, bolalarning rivojlanish ko‘rsatkichlarini kuzatish va ta’lim sifatini doimiy takomillashtirish imkoniyatini beradi. Mazkur monitoring tizimlari davlat tomonidan ta’lim sifatini nazorat qilish mexanizmlarining ajralmas qismi bo‘lib, ularning asosiy maqsadi maktabgacha ta’lim tashkilotlarining samaradorligini oshirishga qaratilgan.

Kelajakda xususiy sherikchilikdagi maktabgacha ta’lim tashkilotlarini rivojlantirish yo‘lida innovatsion va ilg‘or pedagogik texnologiyalarni keng joriy etish orqali tizimning samaradorligini oshirish mumkin. Shuningdek, davlat va xususiy sektor o‘rtasidagi hamkorlikni yanada mustahkamlash orqali bolalar uchun zamonaviy va sifatli ta’lim muhitini yaratish mumkin. O‘zbekiston Respublikasida ta’lim sifatini oshirish va ushbu jarayonda xususiy sektor ishtirokini kengaytirish bo‘yicha qabul qilingan hujjatlar xususiy sherikchilikdagi ta’lim tashkilotlarining yanada rivojlanishiga xizmat qiladi.

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TA'LIM KLASTERI SHAROITIDA ZAMONAVIY O'QITUVCHI NUFUZINI OSHIRISHDA SHAXSGA YO'NALTIRILGAN TA'LIM METODIKASINI TAKOMILLASHTIRISH

Annotatsiya*: Ta'lim klasteri sharoitida zamonaviy o'qituvchining nufuzi ta'lim sifatini oshirish va innovatsion rivojlanishni jadallashtirishda asosiy omillardan biri sifatida ko'rilmoqda. Shaxsga yo'naltirilgan ta'lim metodikasi o'quvchini individual ehtiyoj, qiziqish va rivojlanish sur'atiga mos ravishda qo'llab-quvvatlashga qaratilgan bo'lib, klaster modeli doirasida o'qituvchi faoliyatini yanada samarali tashkil etish imkonini beradi. Mazkur maqolada ushbu metodikaning ta'lim klasteridagi amaliy o'rni, o'qituvchi nufuzini oshirishdagi roli hamda ta'lim jarayonida hamkorlik va integratsiyani kuchaytirishdagi ahamiyati tahlil etiladi. Tahlillar shuni ko'rsatadiki, shaxsga yo'naltirilgan yondashuv o'qituvchi va o'quvchi o'rtasidagi ishonchni mustahkamlaydi, ta'lim jarayonining motivatsion va refleksiv komponentlarini kuchaytiradi hamda ta'lim tizimida sifat va raqobatbardoshlik ko'rsatkichlarini yaxshilaydi.*

Kalit so'zlar: *ta'lim klasteri, shaxsga yo'naltirilgan ta'lim, zamonaviy o'qituvchi, pedagogik nufuz, innovatsion ta'lim modeli.*

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IMPROVING THE LEARNER-CENTERED TEACHING METHODOLOGY TO ENHANCE THE PRESTIGE OF MODERN TEACHERS IN THE CONDITIONS OF THE EDUCATIONAL CLUSTER

Abstract: *In the context of the educational cluster, the prestige of a modern teacher is regarded as one of the key factors in improving the quality of education and accelerating innovative development. The learner-centered teaching methodology is aimed at supporting students in accordance with their individual needs, interests and pace of development, and enables more effective organization of the teacher's activity within the cluster model. This article analyzes the practical role of this methodology in the educational cluster, its contribution to strengthening the teacher's professional reputation, and its significance in enhancing cooperation and integration in the educational process. The findings*

show that a learner-centered approach strengthens trust between teacher and student, enhances the motivational and reflective components of the learning process, and contributes to improving the quality and competitiveness of the education system.

Keywords: *educational cluster, learner-centered education, modern teacher, pedagogical prestige, innovative education model.*

Kirish.

Ta’lim klasteri — bu ta’lim muassasalari, ilmiy tashkilotlar va ishlab chiqarish sektori o‘rtasida o‘zaro hamkorlikka asoslangan innovatsion model bo‘lib, unda o‘qituvchi faoliyati an’anaviy yondashuvdan farqli ravishda tizimli integratsiya va real ijtimoiy buyurtmaga moslashuv talabiga asoslanadi. Klaster sharoitida o‘qituvchining vazifasi faqat bilim berish bilan chegaralanmay, balki o‘quvchi shaxsini rivojlantirish, uning mustaqil fikrlash ko‘nikmalarini shakllantirish va hayotga tayyorlashga qaratilgan kompleks pedagogik faoliyatni amalga oshirishdan iborat bo‘ladi. Shaxsga yo‘naltirilgan ta’lim metodikasi aynan shu jarayonning asosiy mexanizmlaridan biri bo‘lib, unda har bir o‘quvchining individual ehtiyoji, qiziqishlari, psixologik xususiyatlari va rivojlanish sur’ati inobatga olinadi. Bu metodika o‘qituvchidan moslashuvchan yondashuv, reflektiv fikrlash, kommunikativ madaniyat va innovatsion pedagogik yechimlarni qo‘llashni talab etadi. Zamonaviy ta’lim islohotlari shuni ko‘rsatmoqdaki, o‘qituvchining nufuzi uning dars jarayonidagi mavqeidan tashqari, ta’lim muhitida hamkorlikni yo‘lga qo‘yish, o‘quvchida ishonch uyg‘otish va ta’limga real motivatsiya berish qobiliyati bilan belgilanadi. Shu sababli, ta’lim klasteri sharoitida shaxsga yo‘naltirilgan yondashuv o‘qituvchi nufuzini oshirishning eng samarali strategiyalaridan biri sifatida qaralmoqda.

Asosiy qism.

Ta’lim klasteri sharoitida shaxsga yo‘naltirilgan ta’lim metodikasining joriy etilishi, avvalo, pedagogik jarayonda an’anaviy ma’ruzaga asoslangan yondashuvdan voz kechib, o‘quvchini faol ishtirokchi sifatida shakllantirishni talab etadi. Klaster modeli o‘qituvchidan faqat bilim yetkazish emas, balki o‘quvchini mustaqil tahlil qilish, muammoni hal etish va qaror qabul qilishga yo‘naltirilgan ta’lim muhitini yaratishni kutadi. Bunday yondashuvda darslar loyihalash, muammoli vaziyatlarni modellashtirish, amaliy tajriba va hamkorlikka asoslangan topshiriqlar orqali tashkil etiladi. Shaxsga yo‘naltirilgan metodika o‘quvchilarning psixologik farqlarini inobatga olgan holda moslashtirilgan ta’lim strategiyalarini ishlab chiqish, differensial baholash va individual rivojlanish trayektoriyasini belgilash imkonini beradi. Ta’lim klasteri doirasida o‘qituvchi faoliyatining samaradorligi uning ilmiy-metodik tayyorgarligi, digital kompetensiyasi, kommunikativ madaniyati va hamkorlikni boshqarish ko‘nikmalariga bevosita bog‘liqdir.

Shu bilan birga, klaster muhitida shaxsga yo‘naltirilgan ta’lim metodikasining qo‘llanishi o‘qituvchining nufuzini oshirish bilan birga, ularning kasbiy faoliyatida liderlik sifatlarini kuchaytiradi. O‘quvchi va ota-onalar bilan

ochiq muloqot, ta’lim natijalarini shaffof boshqarish, o‘zini rivojlantirishga yo‘naltirilgan refleksiya ham o‘qituvchining ijtimoiy mavqeini mustahkamlaydi. Mazkur metodika o‘quvchilar motivatsiyasini kuchaytirish, o‘qituvchi faoliyatining real samaradorligini oshirish va ta’lim tizimining raqobatbardoshligini ta’minlashda muhim omil sifatida namoyon bo‘ladi.

Asosiy yo‘nalish	Mazmuni	Maqsad / ta’sir
Ta’lim klasteri mohiyati	Ta’lim, ilm-fan va ishlab chiqarish integratsiyasiga asoslangan model	Ta’limni real ijtimoiy buyurtmaga moslashtirish
O‘qituvchining yangi roli	Bilim beruvchi emas, balki shaxsiy rivojlanishni boshqaruvchi, motivator, hamkor	O‘quvchini mustaqil fikrlashga, hayotga tayyorlashga yo‘naltirish
Shaxsga yo‘naltirilgan metodika	O‘quvchining ehtiyoj, qiziqish va psixologik xususiyatlariga moslashtirilgan ta’lim	Individuallashtirish, o‘qituvchi–o‘quvchi ishonchini mustahkamlash
Pedagogik yondashuvdagi yangilik	Ma’ruza emas, faol ishtirok, loyiha, hamkorlik va amaliy tajriba	Faol, tahliliy va tanqidiy fikrlovchi shaxsni shakllantirish
Zarur kompetensiyalar	Refleksiya, digital kompetensiya, kommunikativ madaniyat, hamkorlikni boshqarish	Zamonaviy o‘qituvchini raqobatbardosh subyekt sifatida tayyorlash
Metodikaning natijasi	Motivatsiya, ishonch, ta’lim sifatining oshishi, barqaror natijalar	O‘qituvchining ijtimoiy nufuzi va mavqeining kuchayishi
Yakuniy samaradorlik	O‘qituvchi faqat bilim beruvchi emas, balki ta’lim ekotizimi lideri	Ta’lim tizimida innovatsion va raqobatbardosh muhit shakllanishi

Rasm 1.1. “Ta’lim klasteri sharoitida shaxsga yo‘naltirilgan metodikaning o‘qituvchi nufuziga ta’siri bo‘yicha mazmuniy tahlil jadvali”

Xulosa.

Ta’lim klasteri sharoitida shaxsga yo‘naltirilgan ta’lim metodikasini joriy etish zamonaviy o‘qituvchining nufuzini oshirishning eng samarali yo‘llaridan biri sifatida o‘zini namoyon qilmoqda. Mazkur yondashuv o‘qituvchini dars beruvchi emas, balki o‘quvchining individual rivojlanish trayektoriyasini yo‘naltiruvchi, motivatsiya beruvchi va hamkorlikni tashkil etuvchi professional sifatida talqin etadi. Shaxsga yo‘naltirilgan metodika asosida tashkil etilgan ta’lim muhitida o‘quvchilarning ishonchi kuchayadi, ta’lim natijalari barqaror bo‘ladi va o‘qituvchining kasbiy mavqei jamiyat nazarida yuksaladi. Klaster modeli doirasida bunday yondashuv o‘qituvchining faolligi, pedagogik tashabbusi va innovatsion fikrlashini qo‘llab-quvvatlaydi, ta’lim sifatining real ko‘tarilishiga zamin yaratadi. Natijada, o‘qituvchi faqat ta’lim beruvchi emas, balki raqobatbardosh ta’lim ekotizimini boshqarishda yetakchi subyekt sifatida shakllanadi.

Adabiyotlar:

1. Shaxsga yo‘naltirilgan ta’lim nazariyalari bo‘yicha ilmiy tadqiqotlar.
2. Ta’lim klasteri konsepsiyasi va integratsion model yondashuvlari.
3. Zamonaviy pedagogning innovatsion kompetensiyasi haqida ilmiy maqolalar.
4. Ta’lim tizimida motivatsion yondashuv va psixopedagogik tadqiqotlar.
5. Klaster asosida ta’lim sifatini boshqarish bo‘yicha tajriba natijalari.

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AHOLI JOYLASHUVINING HUDUDIY XUSUSIYATLARI

Annotatsiya. *Ushbu maqolada aholi joylashuvining hududiy xususiyatlari vaqt va makon nuqtai nazardan yoritilgan. Shuningdek, aholini o‘ziga xos hududiy jihatlari aholi geografiyasi fani nuqtai nazardan misollar asosida ifodalangan. O‘z navbatida yangi o‘zlashtirilgan hudud hisoblanmish, Sirdaryo viloyati aholisi joylashuvida geografik asoslar ilmiy talqin qilingan.*

Kalit so‘zlar. *Hudud, joylashuv, xususiyat, viloyat, resurs, geografik asos, aholi manzilgohi, tarixiy taraqqiyot, urbanizatsiya, hududiy rivojlanish.*

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TERRITORIAL FEATURES OF POPULATION SETTLEMENT

Abstract. *This article covers the territorial features of population distribution from the perspective of time and space. Also, the specific territorial aspects of the population are expressed based on examples from the perspective of population geography. In turn, the geographical basis of the population distribution of the Syrdarya region, which is considered a newly developed territory, is scientifically interpreted.*

Keywords. *Territory, location, feature, region, resource, geographical basis, population settlement, historical development, urbanization, territorial development.*

Har qanday hudud makon sifatida-turli xil geografik ob'ektlarni o'zida jamlaydi. Qaysidir ma'noda hudud o'ziga xos omillar majmuasiga ega. Bu omillar har qanday geografik ob'ektni, shu jumladan aholini joylashuviga ham ta'sir etadi. Albatda, aholi joylashuvining hududiy xususiyatlarini o'rganish-bevosita va bilvosita aholi geografiyasining oldida turgan vazifalardan biridir. Bunda turli hududlarda aholining shakllanishini, uning tarkibini, zichligini va shahar hamda qishloq aholi manzilgohlarini o'rganadi. Shuningdek, aholi geografiyasi turli miqyosdagi hududlar aholisini-alohida aholi manzilgohlaridan (va hatto ularning ayrim qismlaridan) tortib, davlatlar, dunyoning ayrim qismlari va umuman Yer shari miqyosida o'rganadi.

Masalan, Rossiya aholi geografiyasida ikkita yo'nalish ajratilgan: aholini hududiy jamoalar (guruhlar) sifatida o'rganish va aholi manzilgohlarini, ularning shakllarini va joylashuvini o'rganish. Uzoq xorijda (G'arbiy Yevropa va AQSh da) aholi geografiyasi va aholi manzilgohlari geografiyasi alohida ilmiy fanlar hisoblanadi [1].

Muayyan hududni o'zlashtirilishi, qaysidir ma'noda ishchi kuchi va ishlab chiqarish o'rtasidagi aloqadorlikni yoritib beradi. Hududda ishlab chiqarishni rivojlanib borishi o'z navbatida ishchi kuchini o'ziga tortadi, yoki aksincha ishchi kuchini hududda joylashuvi ma'lum ma'noda ishlab chiqarishni o'ziga tortadi. Aholi har qanday jamiyatning asosiy ishlab chiqaruvchi kuchidir. Jamiyat hayoti uchun zarur bo'lgan barcha boyliklar insonning mehnati natijasida yaratiladi. Ishlab chiqarish jarayonida qatnashayotgan mehnat qurollari, xom ashyo, yoqilg'i va boshqa qo'shimcha materiallar faqat inson qo'li, mehnati tufayligina harakatga keltiriladi va ular ishlab chiqaruvchi kuchlar sifatida namoyon bo'ladi. Inson mehnati ishlab chiqarish jarayonining eng ilg'or qismidir, qolgan barcha ishlab chiqaruvchi kuchlar ishlab chiqarish jarayonining passiv qatnashchilaridir.

Mana shu muhim holatdan aholi geografiyasi o'rganayotgan voqealarga tarixiy jihatdan yondashish zarurligi kelib chiqadi. Masalan, aholi manzilgohlarining moddiy shakllari, planirovkasi ya'ni joylanish ko'rinishi va boshqa ayrim xususiyatlari ishlab chiqarish munosabatlariga hamda ishlab chiqaruvchi kuchlarning taraqqiyot darajasiga ma'lum davrlarda mos kelmay qolishi mumkin. Chunki, ishlab chiqarish munosabatlarining o'zgarishi bilan aholi manzilgohlarining ko'p xususiyatlari (masalan, moddiy shakllari) birdaniga o'zgarib ketmaydi, ular ma'lum darajada konservativ xarakterga ega bo'lib, ancha muddat davomida eskicha saqlanib turishi mumkin. Shuning uchun ham juda ko'p hollarda aholining mavjud geografiyasini o'rganayotganda, aholi manzilgohlarining ko'pgina xususiyatlarini analiz qilayotganda o'tgan davrlarga xos bo'lgan ishlab chiqarish geografiyasiga murojat qilishga to'g'ri keladi [2].

Masalan, Toshkent eski shahar qismining planirovkasi, qurilishining moddiy shakllari eski davrlardagi ishlab chiqarish xususiyatlariga, shaharlarning

qadimgi vazifalarigagina mos bo‘lib, bugungi kishisining yuksak madaniy va turmush talablariga anchadan beri javob bermay qolganligi ma‘lum. Lekin shunga qaramay, eski shahar tegishli qayta qurilishlar kiritish (suv tarmog‘i, kanalizatsiya, ko‘chalarni kengaytirish) yo‘li bilan hozirgacha saqlanib kelmoqda. Keyingi yillarda, ayniqsa mustaqillik yillarida butunlay qayta qurila boshladi.

Aholining hududiy taqsimlanishi va joylashuviga tabiiy sharoit kuchli ta‘sir ko‘rsatadi. Ammo tabiiy sharoit bilvosita ya‘ni ishlab chiqarish orqali ta‘sir etadi. Chunki bir xil tabiiy sharoitdan xo‘jalik maqsadlarida foydalanishi, binobarin tabiiy sharoitning aholi hududiy joylanishiga ta‘siri turli xil ijtimoiy tuzim sharoitida, texnika taraqqiyotining turli darajasida turlicha bo‘ladi.

Bu yerda shunga e’tibor berish lozimki, hududning ishlab chiqarish majmuasi qanchilik to‘la va tugallangan bo‘lsa mehnat resurslaridan shunchalik to‘la foydalaniladi, aksincha, ishlab chiqarish bir tomonlama rivojlangan bo‘lsa, mehnat resurslaridan foydalanishda katta kamchiliklar sodir bo‘lishi mumkin.

Aholi joylashuvining hududiy xususiyatlarini o‘rganishda aholi va uning turli xususiyatlarini, yashash joylarini, joylashuvini, o‘zgarishlarini va migratsiya jarayonlarini tahlil qilishdan iborat. Bu yerda asosiy elementlar aholi soni, tarkibi, zichligi, urbanizatsiya darajasi va migratsiya jarayonlarini o‘rganishga qaratilgan. Aholi joylashuvining hududiy xususiyatlarini o‘rganishda e’tibor, uning qanday joylashganini, ularning yashash sharoitlari, iqtisodiy va ijtimoiy sharoitlar bilan qanday bog‘liqligini, migratsiya oqimlarini va hududlar orasidagi o‘zgarishlarni tahlil qiladi [3].

Aholini hududiy xususiyatlarini o‘rganishda, quyidagi asosiy masalalarga e’tiborni qaratish lozim:

1. Aholi soni va tarkibini tahlil qilish: Aholi soni va uning tarkibi, ya’ni jinsi, yoshi, millati, dini va boshqa demografik xususiyatlar geografik o‘rganishning asosiy jihatlaridan biridir. Har bir hududda aholi sonining o‘zgarishi va tarkibining shakllanishi iqtisodiy va ijtimoiy omillar bilan bog‘liq. Aholi sonining o‘sishi yoki kamayishi hududning iqtisodiy salohiyatiga, mehnat bozorining talablariga ta’sir ko‘rsatadi.

2. Aholi zichligi va joylashuvi: Aholi zichligi hududning maydoniga nisbatan aholi sonining miqdorini bildiradi. Bu ko‘rsatkich yordamida hududdagi aholi zichligi o‘rganiladi va ayni hududlarda resurslar, infratuzilma va yashash sharoitlari qanday taqsimlanganligini aniqlash mumkin. Aholi joylashuvi bilan bog‘liq geografik tahlil aholining qaysi hududlarda zich yashashini va qaysi hududlarda sekin o‘sish yoki kamayish jarayonlari ro‘y berishini ko‘rsatadi.

3. Urbanizatsiya va qishloq hududlarining rivojlanishi: Aholining shaharlarga ko‘chishi yoki urbanizatsiya jarayoni geodemografik jarayonlarning muhim qismidir. Bu jarayon aholi zichligini oshiradi va shaharlar infratuzilmasini rivojlantirishga sabab bo‘ladi. Aholi qishloqdan shaharlarga ko‘chishi, yangi ish o‘rinlarini yaratadi va iqtisodiy imkoniyatlarni kengaytiradi. Biroq, bu jarayon ekologik muammolarni ham keltirib chiqarishi mumkin.

4. Migratsiya jarayonlari: Migratsiya-bu aholi guruhlarining bir hududdan boshqa hududga ko‘chishi. Migratsiyaning sabablari turlicha bo‘lishi mumkin,

jumladan iqtisodiy, ijtimoiy, ekologik va siyosiy omillar. Aholi migratsiyasi juda muhim geografik jarayon bo‘lib, u bir hududdagi resurslar, yashash sharoitlari va imkoniyatlarga bog‘liq. Migratsiya oqimlari hududning iqtisodiy o‘sishi va ijtimoiy barqarorligiga ta’sir qiladi.

5. Aholi va resurslar o‘rtasidagi bog‘lanish: Aholi va hududning tabiiy resurslari, yer yuzasining xususiyatlari va infratuzilma o‘rtasidagi bog‘lanishni o‘rganish juda muhimdir. Hududda aholi zichligi ko‘p bo‘lsa, tabiiy resurslar va infratuzilma talabining yuqori bo‘lishi kutiladi. Boshqa tomondan, resurslarning yetishmasligi yoki muvozanatsiz taqsimlanishi migratsiya va aholi joylashuvi jarayonlariga ta’sir ko‘rsatadi.

6. Aholining ijtimoiy-iqtisodiy sharoitlari: Aholining yashash sharoitlari, iqtisodiy darajasi, ta’lim olish imkoniyatlari va sog‘liqni saqlash tizimi ham aholini o‘rganishning hududiy asoslarini tashkil qiladi. Yashash sharoitlarining yaxshilanishi aholi salomatligini oshiradi va aholi sonining o‘sishiga yordam beradi. Ijtimoiy va iqtisodiy sharoitlar, aholi migratsiyasining asosiy omillari bo‘lishi mumkin.

7. Aholi va ekologik muammolar o‘rtasidagi aloqalar: Aholi zichligi va ularning joylashuvi ekologik ta’sirga bevosita bog‘liq. Aholining biror hududda zich joylashishi, tabiiy resurslar va ekologik tizimlarga bosim o‘tkazadi. Misol uchun, shaharlarning ortib borayotgan aholisi, ularning energiya sarfi, chiqindilarni qayta ishlash, suv va havo sifatiga ta’sir qiladi. Aholi sonining oshishi bilan ekologik muammolar, masalan, atmosferaga chiqindilarni chiqarish, yer yuzasining eroziyasi va tabiiy resurslar ustida ortiqcha yuklar yuzaga keladi. Ushbu masalalarni hal etish uchun hududiy rejalashtirish va ekologik barqarorlikni ta’minlash bo‘yicha strategiyalar ishlab chiqish zarur.

8. Aholining madaniy va ijtimoiy xususiyatlari: Aholining madaniy va ijtimoiy xususiyatlari huhudiy tahlilning muhim qismidir. Har bir hududda aholining madaniyati, urf-odatlari va ijtimoiy tuzilishi farqlanadi. Misol uchun, qishloq joylaridagi aholi ko‘pincha agrar sohada ishlaydi va ko‘proq an’anaviy tarmoqlarda faoliyat yuritadi, shaharlarda esa iqtisodiy faoliyat ko‘proq sanoat va xizmatlar sohasida rivojlanadi. Aholining madaniy xususiyatlari, til, din, oilaviy tuzilmalar, va boshqa ijtimoiy omillar hududlarning rivojlanishiga, migratsiya oqimlariga va yashash sharoitlariga ta’sir ko‘rsatadi.

9. Aholi hududiy rivojlanishining makro va mikro geografik tahlili: Aholining joylashuvi va rivojlanish yo‘nalishi faqat umumiy hududlar bo‘yicha emas, balki alohida shaharlar, qishloqlar va boshqa kichik hududlarda ham o‘rganilishi kerak. Makrogeografik tahlil bir necha mintaqalar, davlatlar yoki qit’alar o‘rtasidagi umumiy aholi yo‘nalishlarini o‘rganishga qaratilgan bo‘lsa, mikrogeografik tahlil aniq bir shahar, qishloq yoki tuman o‘zida aholi soni va tarkibining qanday o‘zgarishini ko‘rsatadi. Misol uchun, biror shahar yoki tuman ichida o‘rganish, ularning iqtisodiy jihatlarini va infratuzilmasini qanday rivojlantirish kerakligini aniqlashga yordam beradi.

10. Aholini hududiy xususiyatlarini o‘rganishning davlat va mintaqaviy siyosatdagi ahamiyati: Aholini hududiy xususiyatlarini o‘rganish ma’lumotlari

davlat va mintaqaviy siyosatni shakllantirishda muhim rol o‘ynaydi. Hududdagi aholi soni va joylashuvi, ta’lim, tibbiyot, ish o‘rinlari va boshqa ijtimoiy xizmatlarning tashkil etilishi uchun zarur bo‘lgan asoslarni taqdim etadi. Aholini hududiy ma’lumotlari, shuningdek, transport tizimi, kommunal xizmatlar va shaharsozlikka oid siyosatlarni shakllantirishda qo‘llaniladi. Agar biror hududda aholi soni o‘sayotgan bo‘lsa, bu hududda infratuzilmani rivojlantirish, yangi ish o‘rinlarini yaratish va ekologik muammolarni hal qilish zarurligini anglatadi. Shu bilan birga, aholi kamayayotgan hududlarda esa iqtisodiy faollikni rag‘batlantirish va migratsiyani boshqarish bo‘yicha choralar ko‘rish lozim [4, 5].

Albatda aholini hududiy xususiyatlari tahlil qilinayotganda, mantiqan tugal bo‘lishida statistik ma’lumotlarning o‘rni beqiyos. Aynan aholi soni va tarkibini aniqlashda statistik ma’lumotlar asosiy manba hisoblanadi. Geografik tahlilning bu sohasida statistik usullar, demografik o‘sish sur’atlari, yosh guruhlarining taqsimoti, o‘lim va tug‘ilish ko‘rsatkichlari, migratsiya oqimlari va boshqa demografik ko‘rsatkichlar asosida tahlil o'tkaziladi. Ushbu tahlillar hududlar bo‘yicha aholining rivojlanish istiqbollari haqida aniq prognozlar chiqarishga yordam beradi.

Yuqoridagi tahlillar asosida qaraydigan bo‘lsak, yangi o‘zlashtirilgan hudud hisoblanmish Sirdaryo viloyati aholisining joylashuv xususiyati quyidagicha.

-Aholining joylashuvi. Viloyat asosiy yo'l bilan ikki qismga bo'lingan: g'arbiy va sharqiy. Bu esa aholining yo‘l atrofida joylashuviga turtki bergan;

-Agroiqlim sharoitlari. Viloyat kontinental iqlimga ega bo'lib, qish va yoz harorati o'rtasida katta farqlar mavjud. O'rtacha yillik yog'ingarchilik miqdori 180-220 mm ni tashkil qiladi, asosan qishda yog'adi;

-Yerlardan foydalanish. Viloyatda qishloq xo'jaligi maqsadlari uchun o'rganilgan minglab gektar yerlar mavjud. Hududda mos sug'orish infratuzilmasi mavjud;

-Sanoat. Viloyat qurilish materiallari va sug'orish uskunalarini ishlab chiqarish, paxta xomashyosini qayta ishlash kabi sohalarga asoslangan;

-Energetika. Viloyatda O'zbekistondagi eng yirik elektr stansiyalaridan biri bo'lgan Sirdaryo IES joylashgan bo'lib, u mamlakat elektr energiyasining uchdan bir qismini ishlab chiqaradi;

-Transport. Viloyatda taxminan 400 km temir yo'l va 2000 km avtomobil yo'llari mavjud. Bu esa transport yo‘li atrofida aholi joylashuviga ta’sir etadi.

Albatda aholi joylashuvining hududiy xususiyatlarida etarli ta’sir qiluvchi omil tabiat va uning resurslaridir. Mazkur holat Sirdaryo viloyatida o‘zgacha. Relyefi, asosan, to‘lqinsimon tekislik bo‘lib, janubidan shimoliy g‘arbga pasayib boradi. Mirzacho‘lning bir qismi viloyat hududiga kiradi. Balandlik shimolda 230 m, markaziy qismida 400-450 m, janub va janubiy g‘arbda 600-650 m. Sharqida keng Sirdaryo vodiysi joylashgan. Mezozoy va kaynazoy eralarida, asosan, cho‘kindi jinslarning qalin qatlami bilan qoplangan. Sho‘ro‘zak, Sardoba kabi botiqlar mavjud. Tekislik qismi daryolar oqizib keltirgan yotqiziklardan hosil bo‘lgan, ba’zi joylarini ko‘l, botqoq va sho‘rxok yerlar egallagan. Sirdaryo viloyatida yangi kanallar, zovurlar qazilib, cho‘l o‘zlashtirildi va ekin

maydonlarga aylantirildi. Tekislik qismida irrigatsiya inshootlari qurilib, paxtazor, bog‘ va tokzorlar barpo qilindi. Adirlar lalmikor yerlar va yaylovlardan iborat. Mazkur holat aholi hududiy xususiyatlarini belgilab beradi.

2025-yilning 1-yanvar holatiga ko‘ra, Sirdaryo viloyatining doimiy aholisi soni 930843 kishini tashkil etib, yil boshiga nisbatan 16816 kishiga yoki 1,8 % ga ko‘paydi. Jumladan, shahar aholisi soni 400718 kishini (jami aholi sonidagi ulushi 43,0 %), qishloq aholisi soni 530125 kishini (jami aholi sonidagi ulushi 57,0 %) ni tashkil etdi. Zichlik 217,5 kishini tashkil etadi [6, 7].

Xulosa o‘rnida aytish lozimki**,** aholi joylashuvining hududiy xususiyatlari sifatida quyidagilarni ko‘rsatib o‘tish mumkin:

-Iqtisodiy rivojlanish darajasi. Rivojlangan iqtisodiy hududlar bandlik, ta'lim va hayot sifatini yaxshilash uchun ko'proq imkoniyatlar yaratadi;

-Urbanizatsiya. Bu jarayon qishloq joylarida aholining ko'payishi tufayli shaharlar aholisining ko'payishiga olib keladi. Shaharlar keng turdagi xizmatlar, ish o'rinlari va ijtimoiy infratuzilmani taklif etadi, bu ularni yashash uchun jozibador joylarga aylantiradi;

-Siyosiy va ma'muriy omillar. Hukumatning mintaqaviy rivojlanish, migratsiya va resurslarni taqsimlash bo'yicha siyosati aholi taqsimotiga sezilarli ta'sir ko'rsatishi mumkin;

-Migratsiya. Migratsiya oqimlari, ham ichki, ham xalqaro miqyosda, aholini mintaqalar va mamlakatlar o'rtasida qayta taqsimlaydi;

-Yosh tarkibi. Yosh tarkibi iqtisodiy faollik va aholining harakatchanligiga ta'sir qiladi;

-Madaniy va diniy omillar. An'analar, urf-odatlar va diniy e'tiqodlar yashash joyini tanlashga ta'sir qilishi mumkin;

-Texnologik va infratuzilma omillari. Texnologiya va infratuzilmaning rivojlanishi ilgari kirish qiyin bo'lgan hududlarni rivojlantirish imkonini beradi;

-Atrof-muhit omillari va atrof-muhit sifati. Mintaqaning ekologik holati aholining sog'lig'i va hayot sifatiga ta'sir qiladi. Atrof-muhitning ifloslanishi, tabiiy ofatlar va sog'liq uchun xavflar odamlarni muayyan hududlardan uzoqlashtirishi mumkin. Shu bilan birga, ekologik toza va yashashga yaroqli hududlar aholini o'ziga jalb qiladi.

Mana shunday dunyoviy xususiyatlar asosida qaraydigan bo‘lsak, Sirdaryo viloyatida aholi joylashuvining hududiy xususiyatlarini quyidagicha ko‘rsatib o‘tishimiz mumkin:

-Aholining taxminan 90 % viloyatning sug‘oriladigan hududlarida joylashgan. Mazkur holat hududning relefi va o‘zlashtirish tarixi bilan chambarchas bog‘liq;

-Aholi viloyat hududi markazidan o‘tuvchi tranzit yo‘l atrofida lentasimon joylashgan. Bu yerda shuni aytish lozimki, infratuzilma aholini o‘ziga chorlovchi omil sifatida rol o‘ynaydi;

-Suv tarmoqlari (Sirdaryo daryosi va undan chiquvchi kanallar) aholi manzilgohlarini joylashuvida asosiy baza sifatida xizmat qilgan;

-Yirik aholi manzilgohlari, jumladan Guliston shahri o‘zining ishlab chiqarish ikoniyatiga ko‘ra kuchli rivojlangan, bu esa aholi joylashuviga ijobiy ta’sir qilgan;

-Urbanizatsiyalashish bu hududda ham o‘zining geografik xuusiyatini ko‘rsatgan holda aholi joylashuviga ijobiy ta’sir qilgan va hokazolar.

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ZAMONAVIY SHAHARSOZLIKDA LANDSHAFT URBANIZMI NAZARIYASINING DOLZARBLIGI

Annotatsiya: *Ushbu maqolada landshaft urbanizmining mazmuni, uning bugungi zamonaviy shaharsozlikdagi o'rni hamda dolzarbligi, amaliy ahamiyati yoritib berilgan. Shahar landshaftining bugungi kundagi muammolari va ularni bartaraf qilishda landshaft urbanizmi tamoyillari o'rganilib, O'zbekiston shaharsozligidagi tatbiqlari va bu yo'ldagi chora-tadbirlari ko'rib chiqiladi.*

Kalit so'zlar: *urbanizm, landshaft, balans, infratuzilma, barqarorlik, konsepsiya.*

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RELEVANCE OF LANDSCAPE URBANISM THEORY IN MODERN URBAN PLANNING

Abstract: *This article highlights the content of landscape urbanism, its place in modern urban planning, as well as its relevance and practical significance. Modern problems of the urban landscape and the principles of landscape urbanism in eliminating them are studied, their application in urban planning of Uzbekistan and measures in this direction are considered.*

Key words: *urbanism, landscape, balance, infrastructure, sustainability, concept.*

Kirish

Shaharsozlik aholi yashash joylari va aholini joylashtirish sistemasining urbanizatsiyalashgan muhiti shakllanishida kompleks va ko‘p tomonlama ishlab chiquvchi jarayon hisoblanadi. Shahar esa kompleks yondashuvni talab etuvchi hayotiy organizmga o'xshaydi. XXI asrda urbanizatsiya jarayonlari keskin sur'atlarda rivojlanib, ko‘plab shaharlar zichlashuvi, yashil hududlarning kamayishi va iqlim o‘zgarishlari inson salomatligi hamda hayot sifati uchun xavf tug‘dirmoqda. Shahar bosh rejasi ma'lum muddatga rejalashtirilganda kelgusidagi yuzaga chiquvchi hamda shahar muhitiga ta'sir qiluvchi omillar, turli nyuanslar chuqur analiz qilinishi va hisobga olinishi zarur. Bunday omillarga iqtisodiy, ijtimoiy, demografik, ekologik, migratsiya jarayonlari, texnika va innovatsiya rivojlanishining jadallashuvini keltirish mumkin. Bugungi kunda aholi sonining ortishi, ekologik vaziyatning globallashuvi va keskinlashishi, raqamli texnologiyaning kundan kunga rivojlanib borishi shaharlar holatiga o'z tas'irini

o’tkazmay qolmayapti. Bunday dinamik o’zgarishlar va doimiy yangilanishlar natijasida shahar aholisi uchun qulay sharoitlarni yaratish dolzarb jarayon hisoblanadi. Bunda shaharning muhim va ajralmas qismi hisoblanuvchi yashil infratuzilmaning roli katta bo’lib, shahar rejalashtirishda jiddiy yondashuvlarni talab etmoqda va ularning eng dolzarblaridan biri **landshaft urbanizmi** hisoblanadi. Bu yondashuv shahar makonini tabiiy landshaftlar bilan uyg‘unlashtirish orqali ekologik barqarorlik, sog‘lom yashash muhiti va ijtimoiy farovonlikni ta’minlashga xizmat qiladi.

Asosiy qism

Landshaft urbanizmining mohiyati.

Landshaft urbanizmi – bu shaharni rejalashtirish va rivojlantirishda tabiiy ekotizimlarni markaziy element sifatida ko‘radigan zamonaviy yondashuvdir. Bu konsepsiyada shahar inshootlari, infratuzilma va yashil landshaftlar o‘zaro integratsiyalashadi. Ya’ni, shahar faqat binolardan emas, balki parklar, ko‘llar, daryolar, yashil yo‘laklar kabi tabiiy komponentlardan iborat murakkab va barqaror tizim sifatida qaraladi. Bu shaharni faqatgina binolar va infratuzilma bilan emas, balki tabiiy komponentlar bilan uyg‘un holda rejalashtirish konsepsiyasini o’zida ifodalaydi. U shahar makonini tabiiy landshaftlar bilan birgalikda loyihalash, yashil hududlarni ko‘paytirish, ekologik tizimlar bilan uyg‘unlikda yashovchan muhit yaratish orqali ijtimoiy, ekologik va estetik ahamiyat kasb etadi.

Landshaft urbanizmining asosiy tamoyillari quyidagilardan iborat:

Shahar muhitida ekologik barqarorlik. Shaharlar tabiatga zid ravishda emas, balki uning bir qismi sifatida barpo etilishi lozim. Landshaft urbanizmi orqali tabiiy suvlardan oqilona foydalanish, yomg‘ir suvlarini boshqarish, bioxilma-xillikni saqlab qolish va atmosferaning sifatini yaxshilash mumkin. Bu esa ekologik muvozanatni tiklashga xizmat qiladi.

Iqlim o‘zgarishiga moslashuv. Global iqlim o‘zgarishlari shaharlar uchun jiddiy xavf tug‘diradi. Landshaft urbanizmi bu xavflarga qarshi turishda samarali vosita bo‘la oladi. Masalan, yashil maydonlar va suv havzalari shahar muhitida "issiqlik oroli" effektini kamaytiradi, shamollatish imkoniyatlarini oshiradi va tabiiy sovitish tizimlarini yaratadi.

Aholi salomatligi va ijtimoiy farovonlik. Yashil hududlar inson ruhiyati va sog‘lig‘i uchun muhim omildir. Tabiat bilan bevosita aloqa stressni kamaytiradi, jismoniy faollikni oshiradi va jamoaviy hayotni rag‘batlantiradi. Landshaft urbanizmi asosida yaratilgan parklar, ochiq sport maydonchalari, dam olish zonalari aholining salomatligi va ijtimoiy faolligini oshiradi.

Ijtimoiy integratsiya va inklyuzivlik. Yashil jamoat makonlari barcha ijtimoiy guruhlar uchun ochiq bo‘lib, shahar aholisi o‘rtasida ijtimoiy aloqalarni kuchaytiradi. Bu esa jamiyatda birdamlikni mustahkamlaydi va ijtimoiy tenglikni ta’minlaydi

Estetik va madaniy uyg‘unlik. Shahar makonini estetik va madaniy qadriyatlarga mos ravishda bezash.

Urbanizatsiya sharoitida ko‘plab shaharlar ekologik muammolar, transport bosimi, havo ifloslanishi, tabiiy resurslar tanqisligi kabi xavf-xatarlarga duch kelmoqda. Shu sababli, shaharsozlikda ekologik muvozanatni tiklash va inson uchun sog‘lom yashash muhiti yaratish zarurati ortmoqda. Landshaft urbanizmi aynan shu maqsadlarga xizmat qilishi bilan dolzarb hisoblanadi.

O‘zbekiston shaharsozligida landshaft urbanizmini keng joriy etish borasida ayrim muammolar mavjud:

19 Yashil zonalarning qurilishlar natijasida qisqarib borishi;

20 Suv resurslari cheklanganligi;

21 Moliyaviy mablag‘ va texnik xizmat ko‘rsatishdagi cheklovlar.

Landshaft urbanizmi quyidagi masalalarni ko'rib chiqishni o'z ichiga oladi: suv ta'minoti tizimi, ekologik jihatlar va yashil koridorlarni rejalashtirish, biologik xilma-xillik, yo'nalishni ko'rib chiqish va shahar ko'p maqsadli infratuzilma koridorlaridan foydalanishni joriy etish. Biroq, bunday ta'riflar landshaft urbanizmnida so'nggi o'n yil ichida paydo bo'lgan ba'zi masalalarni e'tiborsiz qoldirganligi sababli tegishli qator loyihalash institutlari hamda xorij tajribasini o’rgangan holda tubdan tahlil qilishni taqozo qiladi. Ko‘kalamzorlashtirilgan hududlarni funksional qismlarga bo‘lishda uchta kategoriyaga bo‘linadi:

- Umumiy foydalanish - shahar tashqarisidagi o‘rmon-parklar, shahar va tuman parklari. Turar-joy tumanlari bog‘lari, skverlar, bul'varlar; ko‘chalar, maydonlar, qirg‘oq bo‘yi o‘simliklari, xiyobonlar;
- Foydalanish cheklangan - kvartal ichidagi bog‘lar, uylar hovlilaridagi ko‘kalamzorlar, jamoat va sanoat binolari hududlaridagi o‘simliklar;
- Maxsus vazifali – sanitar-himoya, suv muhofaza qismlari, botanika va zoologiya bog‘lari, pitomliklar, qabristonlar.

Joylashish xarakteri bo‘yicha shahar tashqarisidagi va shahar ichkarisidagi yashil massivlarga bo‘linadi.

Shahar tashqarisidagi massivlar – o‘z navbatida, umumiy foydalanishga mo‘ljallangan va cheklangan foydalanishga mo‘ljallangan shahar atrofi ko‘kalamzorlariga ajratiladi.

Shahar ichkarisidagi massivlar – umumiy, cheklangan va maxsus foydalanish uchun mo‘ljallangan ko‘kalamzorlardan iborat. Umumiy yo‘nalishdagi parklar - madaniyat va istirohat bog‘lari, turar-joy tumanlari va kichik tumanlar bog‘lari, skverlar, bul'varlar, xiyobonlar hamda ixtisoslashgan bog‘lar - bolalar, sport, botanika bog‘lari, zooparklar va h.k.lar shahar ko‘kalamzorlari tizimini tashkil etadi.

Hududning yashil o‘simliklari ehtiyojini hisoblashda bitta odamga to‘g‘ri keladigan ko‘kalamzor hududlar me'yoridan foydalaniladi (qurilish me'yorlari va qoidalari.)

Landshaft dizayni bilan ishlashda quyidagi tavsiyalar mavjud:

- Odatda boy ekotizimga ega bo’lgan bog'lar va o'rmon bog'larining qirg'oqlarini saqlanishi va rivojlantirilishi kerak;

- Turli o'simliklar yordamida turli funktsional zonalarni ajratib olish va yil davomida ular uchun maxsus atmosfera yaratish mumkin;

- Landshaftdan shovqin va vizual to’siq sifatida foydalanish mumkin. Obodonlashtirishda zich ko'chatlar shovqin izolatsiyasi sifatida ham ishlatilishi mumkin;

- Yog'ingarchilik to'planadigan joylarda o'tkazuvchan yuzalar yomg'irli kanalizatsiya tizimini ishga tushiradi va zararli moddalarning suvga kirishini cheklaydi.

Landshaft dizaynini rejalashtirishda tabiiy qirg'oq chizig'i uchun o’simliklarni tanlashda alohida parvarish talab qilmaydigan mahalliy o'simlik turlaridan foydalanish maqsadga muvofiq bo’ladi.

O‘zbekiston misolida landshaft urbanizmining tatbiqi

O‘zbekiston shaharlarida ham landshaft urbanizmi yondashuvlari tobora keng qo‘llanilmoqda. Toshkent, Samarqand, Buxoro, Urganch kabi shaharlarda yangi bog‘lar, piyodalar uchun qulay hududlar, sun’iy suv omborlari, ekologik transport yo‘llari kabi loyihalar amalga oshirilmoqda.

“Yashil Makon” dasturi.

Butun dunyo miqyosidagi jiddiy ekologik vaziyatning jadallashuvi O’zbekiston hududiga ham o’z ta’sirini o’tkazmay qolmayapti. Shu o‘rinda so‘nggi yillarda O‘zbekistonda iqlimning o‘zgarishi, yillik o‘rtacha temperaturaning ko‘tarilishi, mavsumiy qurg‘oqchilik kuchayishi tendentsiyasi kuzatilmoqda.Ushbu muammolarni bartaraf etish, shaharlarni ekologik holatini yaxshilash urbanizatsiya jarayonlarini takomillashtirish hamda ushbu sohada zarur chora tadbirlar dasturlarni ishlab chiqish va amaliyotga tadbiq qilish orqali amalga oshiriladi. Bu borada O‘zbekiston Respublikasi Prezidentining 2019-yil 30-oktyabrdagi “2030-yilgacha bo‘lgan davrda O‘zbekiston Respublikasining atrof-muhitni muhofaza qilish kontseptsiyasi”, 2021-yil 30-dekabrdagi “Respublikada ko‘kalamzorlashtirish ishlarini jadallashtirish, daraxtlar muhofazasini yanada samarali tashkil etish chora-tadbirlari” to‘g‘risidagi farmonida tatbiq etilishi belgilangan “Yashil makon” umummilliy loyihasi dasturlarida atrof muhit ob‘ektlarini (havo, suv, er, tuproq, er qa‘ri, bioxilma-xillik, qo‘riqlanadigan tabiiy hududlar) inson ta‘siri hamda boshqa salbiy ta‘sir qiluvchi omillardan saqlash va sifatini ta‘minlash hamda sanoat ishlab chiqarishi, urbanizatsiya ko‘lami keskin kengayishi va aholi punktlariga tushayotgan ekologik yukni kamaytirish mexanizmlarini takomillashtirish rejalari ishlab chiqilgan va amalga oshirilmoqda.

Xulosa.

Landshaft urbanizmi — bu faqatgina dizayn g‘oyasi emas, balki ekologik, ijtimoiy va iqtisodiy jihatdan barqaror shaharlarni shakllantirishga qaratilgan strategik yondashuvdir. Bugungi kunda u shaharsozlikning eng dolzarb yo‘nalishlaridan biri bo‘lib, ekologik xavfsizlikni ta’minlash, inson salomatligini muhofaza qilish va barqaror urban rivojlanishni yo‘lga qo‘yishda muhim rol o‘ynamoqda. Kelajak shaharlarini qurishda landshaft urbanizmi tamoyillaridan keng foydalanish zarur bo‘lib, bu yondashuv zamonaviy shaharsozlikning ajralmas qismiga aylanishi kutilmoqda.

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JAMOAT BINOLARI INTERYERLARINING BADIIY OBRAZINI SHAKLLANTIRISH YO’ LLARI

Annotatsiya. *Maqolada jamoat binolari interyerida badiiy obrazlarni shakllantirish funktsiyaviylikni, estetikani, emotsional ta’sirni yaxlit va fazoni vazifasiga mos ravishda integratsiyalash muammolari ko’rib chiqilgan. Interyerning obrazini yratishda funktsiya, material, an’anaviylik, milliy an’analar, assotsitsiya, ijtimoiy tizimlarning betakror usul va ma’noviy tuzilishini tarkibini aniqlobchi asos bo’lishi keng yoritilgan.*

Kalit so’zlar*: obraz, funktsiya, material, milliy an’analar, shakl, assotsiatsiya, ijtimoiy tizim.*

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METHODS OF FORMING THE ARTISTIC IMAGE OF PUBLIC BUILDING INTERIORS

Abstract: *The article examines the issues of integrating functionality, aesthetics, and emotional impact in the formation of artistic images in the interiors of public buildings, taking into account integrity and spatial objectives. The study highlights the fundamental principles that determine interior composition in the creation of an image, including function, materials, traditions, national customs, associations, and unique ways of organizing social systems and semantic structures.*

Keywords: *image, function, material, national traditions, form, association, social system.*

Kirish.

Jamoat binolari interyerning badiiy obrazi kompozitsiya tamoyilining bosh asosi bo'lib oldindan emotsional reaktsiyaga mo'ljallangan, assotsiaviy tasavvurning eng yuqori natijasidan iborat. Binoning interyerini shakllantirishda uning obrazini materialni tanlash, funktsiya, an'anaviylik, milliy an'anaviylik, assotsiyatsiya, va itimoiy obraz aniqlaydi.

Interyerda material fazoviy muhitni, funktsiyaviylikni va fazoni yaratadi. Obraz qurilish asoslarining birlashuvi yo'li bilan (pol,devorlar, ship), moddiy harsalar bilan to'ldirilishishi (mebel,dekor) va fynktsiyaviy jarayonlarning dizayn va sanitar normalarini hisobga olgan holda shakllantiriladi. Interyerda funktsiya qulay foydalanish va vazifasini bajarish uchun fazoni, uning ergonomikasini aniqlaydi. Interyer obrazi bino funktsiyasiga, uning egasiga va maqsadli auditoriyaga mos keladigan psixologik va estetik muhitni shakllantiradi. Interyerda an'analar bu davr ruhini va madaniy qadriyatlarini turg'un uslubiy echimlarda -klassik naqshlar, simmetrik kompozitsiyalar va boy bezaklar bilan foydalanish orqali beriladi. Bunda interyerning obrazi barcha elementlarning (rang,svet,material, mebel) birligi asosida shakllanadigan umumiy ta'ssyrot bo'lib, u binoning maqsadi va maqsadli auditoriyaning xohishiga bo'ysunadi. Jamoat binolarida milliy an'analar arxiekturaviy elementlar, tokchalar, naqshlangan bezaklar va mahalliy materiallardan foydalanishlarni o'z ichiga oladi. Interyerda fazoviy muhit va obrazni yaratish yo'nalishlari: simmetriya, ranglar gammasi, asl nusxasiga qaytishlaridan iborat. Assotsiatsiya – fikrlash jarayonida psixika elemenlari orasida paydo bo'ladigan aloqa natijasida bir elementning ko'rinishi, ma'lum sharoitlarda u bilan bog'langan boshqani obrazineslatadi.Assotsiatsiyaning sub'ektiv vazifasi elemenrlar, moddiy narsalar va paydo bo'lishlar orasidagi bog'lanishdan iborat.

Jamoat binolari interyerida ijtimoiy obraz bu uning jamiyatdagi roli va vazifasini aks etdiradi, hamda foydalanuvchilarda ma'lum darajada idrok qilish va emotsional reaktsiyalarni shaklantiradi. Interyer ijtimoiy qadriyatlarni berishga odamlar orasida ijtimoiy aloqalarni bog'lashga xizmat qiladi [1].

Maqsad.

Zamonaviy jamoat binolari interyerini shakllantirishdagi elementlarini materiallarini, funktsiya, an'anaviylik, milliy an'analar, assotsitsiya, ijtimoiy obrazlarni, emotsional psixologik muhitni, yaratishi, brendlarni aks etdirishi, funktsiyaviy vazifalarni bajarishni kuchaytirish, xavfsizlikni va qulaylikni ta'minlash nuqtai nazaridan o'rlanish.

Izlanish materiali va uclubi.

Interyer obrazini o'rganish materiali arxitektura va dizayn tarixi manba'larini uslubini tahlil qilish, materiallarni, rangni, yorug'lik texnikasini va psixologiyasini o'rganish. Uslubi kompozitsiya vositalari fazoni, shakllarni, teksturalari va rangni mavjud ob'ektlarni fotosuratlar, chizmalar yordamida,

hamda funktsional vazifalarni va ularning moddiy fazoviy muhitni shakllanishiga ta’sirini tahlil qilish.

Natija.

Jamoat binolari interyerida obrazning shakllanishiga qadim zamonlardan katta ahamiyat berilgan. Binolar va ularning ichki ko’rinishi davlatning ravnaqini, kuchini, qudratini, dunyo miqyosida egallagan o’rnini ramziy aniqlab bergan. Taraqqiyot davomida binolarni obrazlarining shakllanish uslublari ishlab shiqishgan.

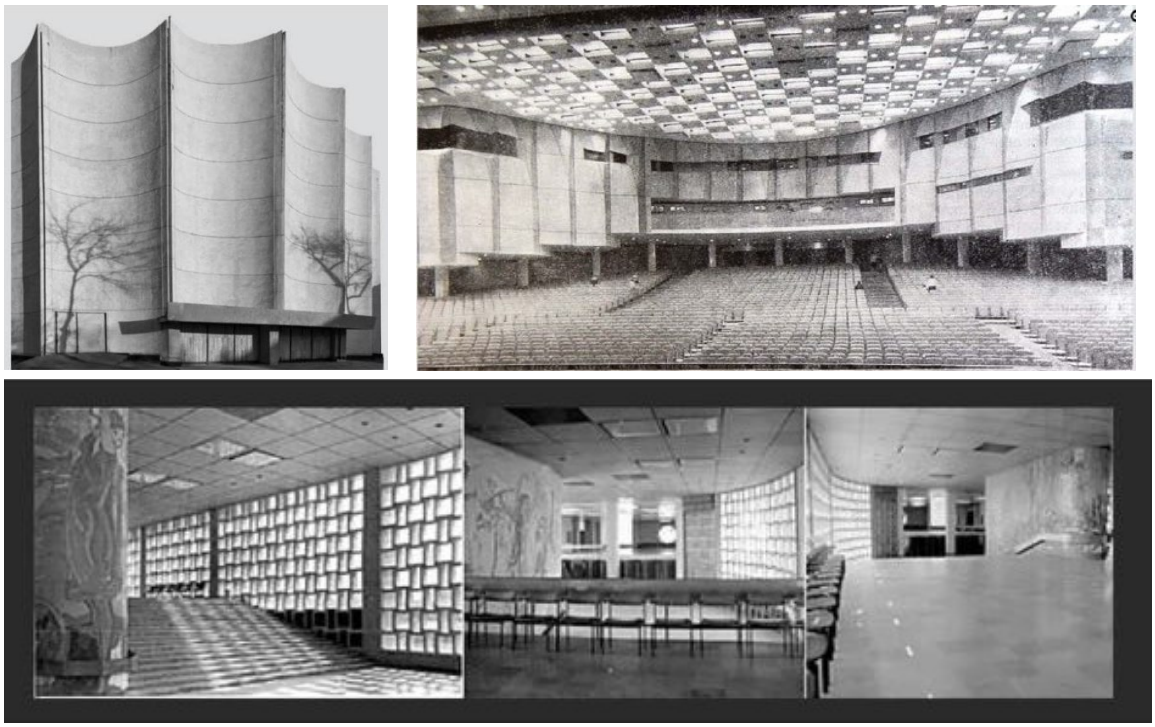
Ular aniq davrning texnologiyalari, ijtimoiy tuzilishlari, diniy va vaqt davomida badiiy oqimlarini aniqlab o’ziga xos xususiyatlarini va madaniyatini aks etdirib

kelgan [2]. Antik davr-ranglar uyg’unligi, simmetriya, orderly tizim, misol uchun Parfenon (gretsiya), Kolizey (Rim). Roman uslubida og’ir devorlar, yarim tsirkulli arkalar, qullikdorchilik tasnifi, mahobatlilik. Sofiya sobori (Novgorod). Gotika uslubida yuqoriga o’suvchanlik,o’qli arkalar, vitrajlar, yengillik tuyg’usi. Ilohiy Vit sobori (Praga). Renesans- uyg’unlik, simmetriya, nisbiylik, markazlashgan gumbazlar Ilohiy Petr sobori Rim). Barokko -hashamatlilik, egiluvchan chiziqlar,yorug’lik va soya,muhtashamlik dekorni ko’pligi. Klassitsizm -qat’iylik, simmetriya, antiqlik,ratsionallik.Panteon (Parij), Kazan Cobori (Sankt-Peterburg). Modern tabiiy shakllar, dekorativlik,yangi materiallardan foydalanish, asimmetriya. va boshqala.r Paorama kinoteatri (1964y.), O’zbekiston mehmonxonasi (1974) (Toshkent). (1A,B-rasmlar).Panorama kinoteatri modernizm uslubida qurilgan. Uzaytirilgan foyesi ham modernism uslubiyatida qurilgan. Oynavand galereyasi va shakllarning engilligi zamonaviylikni bildiradi. Foyening ichkarisidagi yorug’lik va soyaning o’yini, naqshli devorlari sharq arxitekturasi an’analariga moslanib zamonaviylik bilan birgalikda turli arxitekturaviy vositalarning sintezini tadbiq etgan (1-rasm). O’zbekiston mehmonxonasi arxitekturasida evropa va sharq uslublari qollanilgan bo’lib modernizmning orientalism va brutalizm yo’nalishlaida amalga oshirilgan. Modernizm uslubida ishlangan interyerlari monumental can’at asarlari barelyeflar va mozaikali pannolar bilan bezatilgan.

O’zbekistonda tarixiy arxitektura yodgorliklarida obraz binolarning muhtashamligi, ularning mozaika, keramika, tosh va yog’och o’ymakorligi, hamda islom qadriyatlari va davlatning tarixiy merosini aks etdiruvchi naqshlar va yozuvlardan ramziy foydalanishdan iborat. Interyeda yog’ochdan ishlangan o’ymakorlik elementlari, mayolika, qo’lda ishlangan gilamlar, mozaikali pannolar, hamda an’anaviy hayot tarziga mos keluvchi xonalarning rejalarida ko’rinadi.

Masalan Samarqanddagi Mirzo Ulug’bek madrasasi serhasham, ajoyib pannolari va o’ymakoplikda ishlangan yog’och elementlariga boyligi interyer obrazini yirikligi va bezaklarning nafisligi bilan ajralib turadi (2-rasm). Amir Olimxonning Yozgi saroyi interyerlarida rang barang naqshli dekorativ elementlar bilan bezaklangan hashamatli xonalari va ganchkorlik o’ymakorligi bilan ishlangan ulug’vor, goyat go’zal qabul xonasi saroy obrazi va uning estetikasini turli uslublarda ifodalagan (3- rasm).

A



B



1-rasm. A-Panorama kinoteatri va interyerlari; B- O'zbekiston mehmonxohasi va interyeri.

Manba:coocle .dzen. ru; www.gazeta.uz; [https://www.afisha. uz/ru/gorod/2022/06/modern



2-rasm. Mirzo Ulug’bek madrasasi.1417-1420yy. Camarqand.Manba:google.meros.uz

3-





3 – rasm.Citorai Moxi-Xosa saroyi interyerlari.Manba: google. www.orexca.com.Nikos Kakoli fotosi.

Interyerda material uslubni, fynktsiyaviylikni va fazoviy muhitni aniqlaydi. Uni tanlash xonaning vazifasidan, uslubidan, xohlangan effektdan bog’liq. Interyerning takrorlanmaydigan, uyg’un obrazini yaratishda materialning teksturasini, rangi va boshqa elementlar bilan birlashuvini hisobga olish kerak [3].

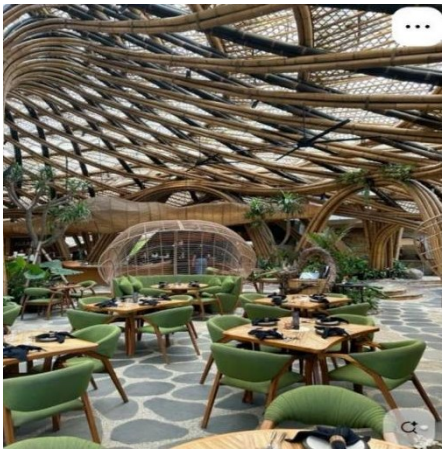
Tasnifli materiallar ma’lum bir obrazni yaratadi. Misol uchun shisha, metal va beton xay-tek, minimalistic uslubga, yog’och va tosh eko uslubiga ko’proq to’g’ri keladi.

Yumshoq tekstil matolari hashamlikni va shinamlik hissiyotini uyg’otadi. Yog’och va tosh bilan birlashganda eko va “Biofil” uslubida obrazlarni yaratadi.

Yog’ochdan ishlangan tektonik qurilmaning elementlari restoranni interyerida dam olish, bo’shashtiradigan, mamnunlik hissiyotini chaqiruvchi “Biofil uslubidagi betakror fazoviy muhitni yaratgan (4a-rasm). Shisha va

silliqlangan metal zamonaviylik va qat'iylik hissini tug'diradi, va minimallistik uslublarda qo'llaniladi

Yorqin va fakturali materiallar fazoda o'suvchanlikni va ko'rsatilishi kerak bo'lgan nuqtalarni yaratishda ishlatiladi.

a  b 

4-rasm. a –"Biofil" uslubida ishlangan restoran interyeri.Manba:google; b- Doxadagi Islom ta'lim markazi machiti.Katar.Manba:google. m.business - gazeta .ru

Interyerda funktsiya, xonadan qanday foydalanishi ko'rsatadi. Interyer obrazi qanday kayfiyatni yaratishni va u foydalanuvchilarning xohishini aks etdiradi. Interyerni obrazi ranglar gammasi, teksturasi, shakli va dekorativ elementlarga asoslangan estetikani ifoda etadi. Doxadagi Islom markaziy universiteti machiti islomning beshta ustunini ramzini bildiruvchi beshta tayanchdan iborat. Bino ko'rinishida to'g'ri chiziqlar juda kam qo'llangan bo'lib yer ustida suzib yurganday tuyuladi. Tilovat qiladigan xonalari keng to'siqlrsiz fazoviy muhitdan iborat bo'lib shipning egiluvchan shakllariga yulduzli osmonni tasavvur qiladigan yoritgichlar o'rnatilgan va funktsiyaga to'liq javob beruvchi ilohiy kuchga tayanib toat ibodat qilishga chorlaydigan obraz yaratilgan. (3b-rasm) [https://m.business-gazeta.ru/article/599772].

Ijtimoiy tizim interyerning obrazini shakllantirishga to'g'ridan to'g'ri ta'sir qiladi. Normalari va uslibida ko'rinadigan, materiallarda, funktsiyaviylikda va fazoni tashkil qilishda insonning o'rnini, jamiyatning qadriyatlarini aks etdiradi va qayta ishlab chiqaradi.

Ijtimoiy tizim interyer obrazini quyidagi pozitsiyalarda: statuci va nufuzini, madaniy va etnik normalarini, ramziy ahamiyatini, ijtimoiyligi va ro'li, ijtimoiy jarayonning ta'sirini shakllantiradi [1].

4a-rasmda zamonaviy ofisning dam olish zonasi shinam, qulay eko uslubida shakllantirilgan. Shipning qora rangdagi fonida joylashtirilgan yoritgichlar, ochiq kulrang aylanalar va devorning sariq rangi interyerni jonlantiradi. Ofisda o'tadigan bir xil jarayondagi holatni o'zgartiradi va dam olishga imkoniyat beradi. 4b - rasmda dam olish zonasi texnoparkning tasnifiga mos yo'nalishda ishlangan.

Shipdagi shakllar, yoritgichlarning joylashtirilishi, texnik elementlari, texnoparkning obrazini shakllantirgan.

a  b 

4 -rasm. a-Ofisning dam olish zonasi. Manba:google. https://shere.google FFSQ1xMsEOhhSOaud; b- Kovorking texnopark interyeri.Nagatino. Manba:google.https://stroi-news.ru/articles/interyer-obschestvennogo-zdanija/

Xulosa.

Jamoat binolari interyerida badiiy obrazlarni shakllantirish funktsiyaviylikni, estetikani, emotsional ta'sirni yaxlit va fazoni fazifasiga mos ravishda integratsiyalash orqali erishiladi. Interyerning obrazini yratishda funktsiya, material, an'anaviylik, milliy an'analar, assotsitsiya, ijtimoiy tizim betakror usul va ma'noviy tuzilishini tarkibini aniqlobchi asos bo'lishi ko'rib chiqildi. Bunga bezaklash materiallari, jihozlar, yorug'lik, dekorativ elementlarning yaxlit stilistikasi va goyasini uyg'un birlashtirish orqali erishiladi. Buning uchun badiiy obrazni yaratish kontseptsiyasining yaxlitligini, kompozitsiya elementlarini, arxitekturaviy shakllar va dekorativ uslublardan maqsadli foydalanishni chuqur bilish talab qilinadi. Misol uchun ma'muriy binolarda zamonaviy va o'suvchan fazoni yaratish uchun industriya elementlari bilan loft elementlarini birlashtirib foydalanish mumkin.

Restoranlar, kafelar, choyxonalarda oshxona va maqsadli foydalanuvchilarga bo'langan holda minimalizm, futurizm, "Biofil", eko va milliy usullarda qo'yilgan maqsadga mos keladigan fazoviy muhitni yaratish kerak bo'ladi.

Interyerning badiiy shakllanishining kelajakdagi yo'nalishlari kompozitsiyani yaratish uchun, va fazoni tashkil qilish uchun fokusli nuqtalar va aktsentlardan foydalanish va ichkariga yo'naltirish va kayfiyatni shakllantirish uchun, hamda ularga ko'nikish va aniq uslubni tanlash uchun ranglar va teksturalarni boshqarish, birlik, muvozanat, ritm, mutanosiblikni kiritadi.

Zamonaviy tendentsiyalar: emotsional idrok qilish, o'ziga xoslik, uslub birligi jamoat binolari interyerlarida badiiy obrazlarni yaratishda muhim ro'lni o'ynaydi.

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XX-ASR O ʻZBEK HIKOYALARIDA FAVQULODDA VAZIYATLAR QAHRAMONLARINING PSIXOLOGIYASI VA FIZIOLOGIYASI

Annotatsiya: *Ushbu maqolada XX-asr oʻzbek hikoyachiligi doirasida favqulodda vaziyatlar — urush, tabiiy ofatlar, qatagʻonlar, ijtimoiy inqirozlar va texnogen falokatlar holatlarida inson psixologiyasi hamda fiziologik holatining badiiy tasviri oʻrganiladi.*

Kalit soʻzlar: *oʻzbek hikoyasi, psixologizm, fiziologik tasvir, favqulodda vaziyat, urush, ruhiy kechinma, badiiy tahlil.*

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THE PSYCHOLOGY AND PHYSIOLOGY OF CHARACTERS IN EXTRAORDINARY SITUATIONS IN 20TH-CENTURY UZBEK SHORT STORIES

Annotation: *This article explores the artistic depiction of human psychology and physiological states in the context of extraordinary situations — such as war, natural disasters, repressions, social crises, and technogenic catastrophes — within 20th-century Uzbek short stories.*

Keywords: *Uzbek short story, psychologism, physiological description, extraordinary situation, war, emotional experience, artistic analysis.*

XX-asr oʻzbek adabiyoti milliy ruhiyat, tarixiy sinovlar va ijtimoiy oʻzgarishlar bilan chambarchas bogʻliq boʻlgan davrdir. Bu asrda oʻzbek adiblari insonning ichki olamini, ayniqsa, ogʻir, murakkab, favqulodda vaziyatlarda uning psixologik va jismoniy holatini chuqur tahlil etishga e'tibor qaratdilar.

Urush, tabiiy ofatlar, qatagʻonlar, ocharchilik, ijtimoiy adolatsizlik kabi holatlar inson ruhiyatini tubdan oʻzgartiruvchi omillar sifatida asarlarda markaziy mavzuga aylandi. Favqulodda vaziyatlar insonning nafaqat jasoratini, balki zaiflik, vijdon azobi, qoʻrquv, ichki kurash holatlarini ham ochib beradi.

Maqolaning maqsadi — XX-asr oʻzbek hikoyalarida favqulodda vaziyatlar tasviri orqali qahramonlarning psixologik va fiziologik kechinmalarini tahlil qilish, badiiy ifoda vositalarining mazmun va shakl jihatdan oʻziga xos xususiyatlarini aniqlashdir.

Favqulodda vaziyatlarning adabiy mohiyatini belgilash. Favqulodda vaziyatlar adabiyotda faqatgina voqelikni aks ettiruvchi hodisa emas, balki inson ruhiyatini sinovdan o‘tkazuvchi badiiy vaziyat sifatida xizmat qiladi.

Ular adabiy jarayonda konfliktni kuchaytirish, qahramonning asl mohiyatini ochish va badiiy dramatizm yaratish vositasi bo‘lib kelgan.

Masalan, Abdulla Qahhorning “O‘g‘ri” hikoyasida favqulodda holat tashqi emas, ichki ruhiy to‘qnashuv sifatida ko‘rsatiladi. Qahramonning o‘g‘rilik qilganidan keyingi vijdon azobi uni ruhiy iztirobga soladi — bu ham aslida psixologik favqulodda vaziyatdir.

Psixologik tahlilning maqsadi — qahramonning “ichki ovozini eshittirish”, uning harakatlari ortidagi hissiy sabablarni ochishdir.

Fiziologik tasvirning badiiy funksiyasini aniqlash

Fiziologik tasvir — bu insonning ruhiy holatini tana harakati, mimika, ovoz, nafas, yurak urishi kabi belgilar orqali ifodalashdir. Adabiyotda bu detallar ruhiy holatni jonlantirish, uni o‘quvchiga “sezdirish” uchun xizmat qiladi.

Abdulla Qahhorning “O‘g‘ri” hikoyasida qahramonning “nafas olishdan ham qo‘rqqani”, “ko‘zini ko‘tarmagani” uning ruhiy sinovini fiziologik tarzda ifodalaydi. Bu orqali muallif o‘quvchiga qahramonning ichki holatini “ko‘rsatadi”, nafaqat “aytadi”.

Demak, fiziologik tasvir psixologik tahlilni kuchaytiruvchi badiiy komponent bo‘lib, o‘quvchining hissiy ishtirokini ta’minlaydi. Bu usul Qahhor, Oybek, Said Ahmad kabi yozuvchilarning hikoyalarini hayotiy va realistik qiladi.

Favqulodda vaziyatlarda inson va jamiyat o‘rtasidagi ziddiyatni tahlil qilish

Favqulodda vaziyatlar nafaqat shaxsning ichki dunyosini, balki uning jamiyat bilan munosabatini ham keskinlashtiradi.

Insonning ruhiy iztirobi ko‘pincha ijtimoiy ziddiyat natijasidir: jamiyatning adolatsizligi, insonning o‘z mehnati yoki qadrining tan olinmasligi, urush, qatag‘on yoki ofatlar tufayli yuzaga kelgan inqiroz holatlari shaxsiy fojiani keltirib chiqaradi.

Tadqiqotda psixologik tahlil metodi, komparativ tahlil, badiiy tahlil va tekstologik kuzatuv usullari qo‘llanildi. Manba sifatida XX-asr o‘zbek yozuvchilarining hikoyalari, zamonaviy adabiyotshunoslik tadqiqotlari hamda psixologik adabiyot nazariyasi ishlatildi.

Favqulodda vaziyatlarning badiiy mohiyati. Favqulodda vaziyat (urush, ofat, inqiroz, halokat) — bu insonni o‘z chegaralaridan chiqishga majbur qiladigan, ruhiy bosimni keskin oshiruvchi holatdir. Adabiyotda bunday sharoitlar qahramonning asl tabiatini ochib beradi.

Psixologik holatni jonli ifodalashda fiziologik detallarning o‘rni beqiyosdir. Yurakning tez urishi, ter bosish, ovozning titrashi, tana harakatlarining o‘zgarishi — bularning barchasi insonning ruhiy holatini “ko‘rinadigan” qiladi.

Masalan, “O‘g‘ri” hikoyasida qahramonning jim turishi, ko‘zini yashirishi, yuragining “gursillab” urishi — bu vijdon azobining jismoniy ifodasidir.

Bunday detallar o‘quvchini voqeaning ichiga kirgizadi, dramatizmni kuchaytiradi.

Favqulodda vaziyatlarda qahramon nafaqat o‘z ichki dunyosi bilan, balki jamiyat bilan ham kurashadi.

Qahhorning hikoyalarida qahramonlar o‘z ijtimoiy rolini anglaydi, biroq u bilan muvofiq yashay olmaydi. Natijada ruhiy iztirob, ijtimoiy norozilik, tanho bo‘lish hissi paydo bo‘ladi.

Oybekda esa qahramonning ruhiy qarama-qarshiligi milliy, axloqiy va insoniy qadriyatlar asosida yechim topadi.

XX-asr o‘zbek hikoyalarida insonning favqulodda holatlarda ruhiy bardoshi, sabr-toqati, hayot uchun kurashish irodasi yuksak baholanadi.

Bu jihatdan o‘zbek adabiyotidagi qahramonlar xalqimizning ruhiy mustahkamligini ifodalaydi. Masalan, urushdan qaytgan qahramonlarning og‘riqli xotiralarga qaramay hayotga qaytishi, oilasi va jamiyat oldidagi mas’uliyatni his etishi — bu ruhiy tiklanish jarayonining ifodasidir.

Tadqiqot natijalari shuni ko‘rsatadiki, XX-asr o‘zbek hikoyachiligi favqulodda vaziyatlarni inson ruhiy olamini ochish, jamiyatdagi ziddiyatlarni yoritish va badiiy ifoda vositalarini boyitishning samarali shakli sifatida qo‘llagan.

1. Favqulodda vaziyatlar inson ruhiy olamini ochuvchi asosiy badiiy vosita sifatida ishlatilgan

XX-asr o‘zbek hikoyalarida favqulodda vaziyatlar (urush, ofat, qatag‘on, ijtimoiy inqiroz, kasallik, yo‘qotish va hokazolar) shunchaki voqeiy fon emas, balki insonning ichki kechinmalarini yuzaga chiqaruvchi psixologik katalizator vazifasini bajargan.

Yozuvchilar ana shunday keskin sharoitlarda inson ruhiyatidagi yashirin his-tuyg‘ularni, vijdon azobi, qo‘rquv, jasorat, matonat kabi murakkab psixologik holatlarni ochib berishga intilganlar.

Masalan, Abdulla Qahhorning “O‘g‘ri” yoki “Bemor” hikoyalarida favqulodda holatlar orqali insonning o‘z-o‘zi bilan kurashi, ichki halovatsizlik, axloqiy iztirob holatlari yoritiladi. Bu, o‘z navbatida, inson tabiatining murakkab qatlamlarini anglash imkonini beradi.

Shunday qilib, favqulodda vaziyat adabiy asarda inson ruhiy qiyofasini ochuvchi badiiy kalit sifatida xizmat qiladi.

2. Psixologik tahlil ko‘pincha fiziologik belgilar bilan uyg‘un tasvirlanadi

O‘zbek hikoyalarida psixologik holatlarni bevosita so‘z bilan ifodalashdan ko‘ra, ularni fiziologik belgilar orqali sezdirish tamoyili ustunlik qiladi. Yozuvchilar qahramonning ruhiy holatini nafas olish, yurak urishi, ovozning titrashi, ko‘zning qochirilishi, yuz ifodasi, harakatdagi noaniqlik kabi jismoniy belgilar yordamida ko‘rsatadilar. Masalan, Qahhor hikoyalarida qahramonning jim turishi, so‘zni yutib yuborishi, bir nuqtaga qarab qolishi — bu uning ichki azobi va vijdon qiynog‘ining fiziologik ko‘rinishidir.

Bu uslub psixologik tahlilni tabiiylashtiradi, o‘quvchiga qahramon his-tuyg‘ularini bevosita “sezish” imkonini beradi. Shunday qilib, fiziologik detallar psixologik tahlilni realistik asos bilan mustahkamlovchi badiiy vositaga aylanadi.

Shunday qilib, o‘zbek hikoyalarida vijdon, sabr, insoniylik va ruhiy chidamlilik milliy badiiy tafakkurning g‘oyaviy markazida turadi. Bu motivlar

o‘zbek xalqining tarixiy sinovlar davomida shakllangan ruhiy mustahkamligini ifoda etadi.

Xulosa

XX-asr o‘zbek hikoyachiligi insonni favqulodda vaziyatlarda tasvirlash orqali uning ruhiy va jismoniy imkoniyatlarini chuqur ochib bergan. Yozuvchilar insonni qahramonlik timsoli sifatida emas, balki his-tuyg‘ulari, qo‘rquvi, vijdoni, tanasi bilan butun borliqni his qiluvchi mavjudot sifatida ko‘rsatdilar. Psixologik va fiziologik tasvir uyg‘unligi o‘zbek hikoyachiligining badiiy yetuklik bosqichini belgilaydi. Bu jihatdan XX-asr o‘zbek adabiyoti insoniylik, iroda, sabr va vijdon masalalarini milliy ruhda tahlil qilgan jahon adabiyoti darajasidagi yutuq sifatida e’tirof etiladi.

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ANALYSIS OF THE STAGES OF FORMATION AND CURRENT STATE OF RECREATIONAL AREAS IN THE TASHKENT REGION

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TOSHKENT VILOYATIDA REKREATSIYA HUDUDLARINING SHAKLLANISH BOSQICHLARI VA HOZIRGI HOLATI TAHLILI

Kirish.

Rekreatsiya hududlari insonlarning salomatligini tiklash, psixologik dam olish va madaniy-ma'naviy ehtiyojlarini qondirishda muhim ahamiyatga ega. O'zbekistonning geografik va iqlimiy xususiyatlari, boy tabiiy va tarixiy merosi, ayniqsa, Toshkent viloyatining janubiy qismlarida joylashgan hududlarda rekreatsiya imkoniyatlarini kengaytirishga katta zamin yaratadi.

Bo'stonliq, Parkent, Qibray, Zangiota tumanlari va Chirchiq shahri rekreatsiya resurslari jihatidan boy bo'lib, ularning geografik joylashuvi, tabiiy resurslari va transport infratuzilmasi ichki va tashqi turizm rivojida alohida o'rin tutadi. Ushbu maqolada ushbu tumanlardagi rekreatsiya hududlarining holati, imkoniyatlari va muammolari chuqur tahlil qilinadi.

Asosiy qism

1. Tabiiy-geografik sharoit va rekreatsiya resurslari

Toshkent viloyatining janubiy hududlari quyidagi o'ziga xosligi bilan ajralib turadi:

- Bo'stonliq tumani – Chimyon, Beldersoy kabi tabiiy dam olish zonalari bilan mashhur. Bu yerda tog'li landshaft, o'rmonzorlar va sofligi saqlangan havo rekreatsion imkoniyatlarni kuchaytiradi. Qishda chang'ichi turizmi, yozda esa ekoturizm, alpinistik sayohatlar mashhur.
- Parkent tumani – Zarkent, Qiziltog', Qizilsoy kabi hududlar ekoturizm uchun qulay. Tabiiy go'zalligi va ilmiy ob'yektlar (masalan, Quyosh fizikasi observatoriyasi) mavjudligi ilmiy va ekologik turizm yo'nalishlarini rivojlantirish imkonini beradi.
- Qibray va Zangiota tumanlari – Toshkent shahri bilan bevosita yaqin joylashuvi bu hududlarni "shahar atrofi turizmi" uchun eng maqbul zonalarga aylantiradi. Bu yerda agro-turizm, oilaviy dam olish bog'lari va sanatoriylar keng rivojlangan.

- Chirchiq shahri – Asosan sanoat markazi bo‘lsa-da, tog‘li zonasida sog‘lomlashtirish va ekologik dam olish maskanlari mavjud. Chirchiq daryosi va uning irmoqlari suv resurslari sifatida rekreatsiya uchun qulaylik yaratadi.

2. Infratuzilma va xizmatlar darajasi:Janubiy tumanlardagi asosiy rekreatsiya maskanlari yo‘llar, turar joylar, ovqatlanish va tibbiy xizmatlar bilan nisbatan ta’minlangan bo‘lsa-da, ayrim joylarda:

- transport yo‘llari nosoz;
- mehmonxonalar soni va sifati yetarli emas;
- axborot-marquzlashtirish xizmatlari (gidlar, xaritalar) yetarlicha yo‘lga qo‘yilmagan.

Bu esa xorijiy turistlar oqimini cheklab qo‘ymoqda.

3. Ekologik holat va muammolar: Turizm oqimi ortgani sayin ekologik yuklama ham oshmoqda va quyidagi muammolar dolzarbligicha qolmoqda:

- Chiqindilarni boshqarish tizimi sust;
- Mahalliy flora va faunaga zarar yetkazuvchi faoliyatlar kuzatilmoqda;
- Suv resurslaridan samarasiz foydalanilmoqda.

Ushbu muammolar barqaror turizm tamoyillari asosida hal etilishi zarur.

Xulosa va takliflar: Toshkent viloyati janubiy tumanlari O‘zbekistonning eng salohiyatli rekreatsiya hududlaridan biri sanaladi. Biroq mavjud imkoniyatlardan to‘liq foydalanilmayapti. Quyidagi takliflar amalga oshirilsa, bu hududlar nafaqat ichki, balki xalqaro miqyosdagi rekreatsiya markazlariga aylanishi mumkin:

1. Har bir tuman bo‘yicha rekreatsiya zonasi xaritalari ishlab chiqilishi va axborot tizimlari yaratish;
2. Turizm obyektlarida ekologik standartlar joriy etilishi;
3. Davlat-xususiy sheriklik asosida zamonaviy turizm infratuzilmasini rivojlantirish;
4. Mahalliy aholi ishtirokini kuchaytirish orqali ijtimoiy-iqtisodiy barqarorlikka erishish;
5. Rekreatsiya resurslaridan barqaror va muvozanatli foydalanish siyosatini ishlab chiqish.

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TOSHKENT VILOYATIDA REKREATSIYA HUDUDLARINING SHAKLLANISH BOSQICHLARI VA HOZIRGI HOLATI TAHLILI

Annotatsiya: *Mazkur maqolada Toshkent viloyatida rekreatsiya hududlarining shakllanish bosqichlari tarixiy ketma-ketlikda tahlil qilinadi. Xususan, mustaqillikdan oldingi davri dagi markazlashgan rekreatsion siyosat, mustaqillikning dastlabki davri rekreatsion tizimda yuz bergan o‘zgarishlar va zamonaviy bosqich yillaridagi rivojlanish tendensiyalari o’rganiladi.*

Kalit so’zlar: *rekreatsiya tizimi, ijtimoiy infratuzilma, turizm resurslari, iqtisodiy transformatsiya, tarixiy bosqichlar.*

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FORMATION STAGES OF RECREATIONAL AREAS IN TASHKENT REGION AND ANALYSIS OF THEIR CURRENT STATE

Abstract: *This article analyzes the stages of the formation of recreation areas in the Tashkent region in historical sequence. In particular, it studies the centralized recreation policy in the Soviet era, the changes that occurred in the recreation system in the early years of independence, and the development trends in the modern period.*

Keywords: *recreation system, social infrastructure, tourism resources, economic transformation, historical stages.*

Kirish.

Rekreatsion geografiya nazariyasiga ko‘ra, ma’lum bir hududda dam olish maskanlarining shakllanishi o‘sha joyning tabiiy-geografik sharoiti, ijtimoiy-iqtisodiy omillari va tarixiy-madaniy merosiga chambarchas bog‘liq bo‘ladi [1]. Toshkent viloyati O‘zbekistonning markaziy qismida joylashib, noyob tog‘li landshafti, boy suv resurslari, xilma-xil flora va faunasi hamda ko‘p asrlik tarixiy obidalari bilan ajralib turadi. Ushbu omillar tufayli viloyat hududi yirik rekreatsion makon sifatida shakllangan. Ayniqsa, so‘nggi yillarda zamonaviy turizm infratuzilmasining rivojlanishi va davlat dastaklari tufayli Toshkent viloyati milliy hamda mintaqaviy ahamiyatga ega turistik-rekreatsion markazga aylanmoqda[2].

Tadqiqotning ilmiy yangiligi – Toshkent viloyati misolida rekreatsion hududlarning bosqichma-bosqich shakllanishi kompleks o‘rganishdir. Bu borada

oldingi tadqiqotchilarning ishlariga (masalan, Mironenko va Tverdoxlebov, 1981; Kuskov va boshq., 2005) tayanilgan holda, mahalliy sharoitdagi rivojlanish xususiyatlari aniqlashtiriladi [3],[4]. Tadqiqot natijalari viloyatda turizm va rekreatsiyani rejalashtirishga oid qarorlar qabul qilishda, shuningdek, O‘zbekistonning boshqa hududlarida dam olish maskanlarini rivojlantirish strategiyasini tuzishda ilmiy-amaliy asos bo‘lib xizmat qilishi mumkin [5].

Asosiy qism.

Toshkent viloyati misolida rekreatsion hududlarning shakllanish bosqichlarini aniq faktlar asosida yoritib berish hamda ularning zamonaviy rivojlanish tendensiyalarini ochib berish uchun quyidagi vazifalar belgilandi: har bir tarixiy bosqichda rekreatsiya hududlarining shakllanish omillari va jarayonini tasvirlash; bosqichlar kesimida mavjud infratuzilma va boshqaruv modelini tahlil etish; hozirgi tendensiyalar – diversifikatsiya, ekoturizm, madaniy-etnoturizm va hududiy integratsiya jarayonlarini aniqlash; aniqlangan faktlarni ilmiy adabiyotlar va rasmiy statistik ma’lumotlar bilan solishtirish.

Tadqiqot metodologiyasi.

Ushbu tadqiqotda tarixiy-geografik tahlil va qiyosiy tahlil usullari qo‘llanildi. Dastlab, rekreatsion geografiyaga oid nazariy manbalar va ilmiy adabiyotlar o‘rganilib, hududlarning rekreatsion shakllanishiga ta’sir etuvchi umumiy omillar ajratib olindi. Keyinchalik Toshkent viloyatiga doir arxiv ma’lumotlari, rasmiy hujjatlar va statistik hisobotlar tahlil qilindi. Jumladan, mustaqillikdan oldingi davrga oid arxiv hujjatlari va davr matbuoti materiallari orqali 1960–1980-yillarda Chorvoq suv ombori va Chimgan kurorti kabi obyektlarning tashkil etilishi haqidagi ma’lumotlar olindi. Tadqiqot jarayonida Toshkent viloyati hokimligi va Turizm qo‘mitasi hisobotlari, Bosh vazir o‘rinbosari va Prezident farmonlari kabi rasmiy manbalardan foydalanildi. Masalan, 2017-yilda e’lon qilingan “Chorvoq” erkin turistik zonasi haqidagi Prezident farmoni (PF-5273) matni va unga muvofiq amalga oshirilgan loyihalar to‘g‘risidagi ma’lumotlar tahlil qilindi. Shuningdek, 2019–2021-yillarda viloyatda turizmni jadal rivojlantirishga qaratilgan hukumat qarorlari mazmuni ham ko‘rib chiqildi.

Natijalar.

Mustaqillikdan oldingi davri (1960–1980-yillar): Markazlashgan rekreatsion tizim. Toshkent viloyatida rekreatsion hududlarning shakllanishi birinchi navbatda mustaqillikdan oldingi davriga to‘g‘ri keladi. 1960–1980-yillarda sobiq Ittifoq markaziy hukumatining qarori bilan hududda yirik gidroinshootlar va dam olish maskanlari barpo etildi. Jumladan, 1963–1977-yillarda Chatqol tog‘lari oralig‘ida Chorvoq suv ombori qurilib, 1978-yilda foydalanishga topshirildi [6]. Chorvoq to‘g‘oni tosh va tuproqdan yasalib, balandligi 168 metrni tashkil etdi, suv omborining yuzasi 40 km² dan oshdi. Bu yirik gidrotexnik inshoot nafaqat energetik maqsadlarga, balki rekreatsion foydalanishga ham xizmat qiladigan ulkan sun’iy ko‘lni vujudga keltirdi. Chorvoq suv ombori sohillarida tez orada ko‘plab dam olish maskanlari, sanatoriy-profilaktoriylar va bolalar oromgohlari tashkil etildi. Tadqiqotlar ko‘rsatishicha,

Chorvoq atrofida 1970–yillarga kelib O‘zbekistondagi eng yirik dam olish hududlari shakllangan bo‘lib, bu yerda yozgi plyajlar, qishki chang‘i bazalari, alpinizm lagerlari va boshqa rekreatsion obyektlar faoliyat ko‘rsatgan [6].

Mustaqillikdan oldingi davrda Toshkent shahri va sanoat markazlariga yaqin bo‘lgan Bo‘stonliq tumani asosiy rekreatsion maskanga aylandi. Toshkent shahri aholisining yozgi va qishki dam olishi uchun eng maqbul manzil Bo‘stonliq bo‘lib, u yerda bir nechta yirik sanatoriylar, pansionatlar va pionerlar lagerlari faoliyat yuritgan. Xususan, Chimyon tog‘ kurorti shu davrda shakllandi va 1970-yillardan boshlab qishki sport turlari (chang‘i sporti) hamda yozgi tog‘ sayyohliklari uchun ixtisoslashgan bazaga aylandi [7]. Arxiv manbalariga ko‘ra, Chimyonda chang‘i sporti bo‘yicha infrastruktura 1970-yilda barpo etilib, ilk bor ommaviy qabul qila boshlagan [8].Ushbu tog‘-kurort hududida mehmonxonalar, dam olish uylari va funikulyor kabi inshootlar qurilib, u butun Markaziy Osiyo miqyosidagi mashhur qishki rekreatsion maskanga aylangan.

O‘sha yillarda rekreatsion faoliyat davlat tomonidan qat’iy nazorat qilingan va markazlashgan tartibda rivojlantirilgan. Afzalliklari shundan iborat ediki, infratuzilma to‘liq davlat byudjeti hisobidan barpo etildi, dam olish maskanlari reja asosida ko‘paytirildi. Masalan, 1980-yillarga kelib faqat Bo‘stonliq tumani hudidining o‘zida o‘nlab pansionat va oromgohlar bo‘lganligi qayd etilgan. Bu davrda rekreatsion hududlardan foydalanish ommaviy tus oldi – Chorvoq va Chimyonda har yili minglab mehnatkashlar mehnat ta’tilini o‘tkazishardi. Shu bilan birga, mustaqillikdan oldingi davr rekreatsion tizimining kamchiliklari ham mavjud edi: ekologik muvozanatning buzilishi va monitoringning sustligi, mahalliy aholining manfaatlari yetarlicha inobatga olinmasligi va iqtisodiy modelning biryoqlamaligi – ya’ni, daromadning davlat byudjetiga yo‘naltirilishi, xususiy tashabbuslarning yo‘qligi.Umuman olganda, 1960–1980-yillar Toshkent viloyatida rekreatsiyaning tashkiliy jihatdan poydevori qo‘yilgan davr bo‘ldi. Chorvoq suv ombori kabi ulkan loyihalar viloyatga butun respublika miqyosida ahamiyatli bo‘lgan dam olish maskanini berdi. Natijada Bo‘stonliq-Chimyon hududi “Toshkent shaharliklarining sog‘lomlashtirish maskani” degan nom oldi. Biroq mazkur bosqichda tabiiy resurslardan foydalanishda ekologik mezonlar ikkinchi darajaga tushib qolganini ta’kidlash lozim – masalan, Chorvoq atrofida chiqindilarni qayta ishlash tizimi yoki kanalizatsiya masalalari yetarlicha hal qilinmagani keyinchalik ma’lum bo‘ldi [8].

Mustaqillik davri (1991–2010-yillar): O‘tish va xususiylashuv. 1991-yilda O‘zbekiston mustaqillikka erishgach, mamlakat iqtisodiyotining barcha jabhalarida bo‘lgani kabi turizm va rekreatsiya sohasida ham tub o‘zgarishlar davri boshlandi. Rekreatsion tizimning boshqaruvi markazlashgan mustaqillikdan oldingi modelidan bozor iqtisodiyoti sharoitiga moslashish jarayonini boshdan kechirdi [9]. Davlat siyosati ushbu bosqichda asosan milliy qadriyatlar va tarixiy merosni qayta tiklash hamda turizmga integratsiya qilishga qaratildi. 1999-yilda O‘zbekiston Respublikasining “Turizm to‘g‘risida”gi Qonuni qabul qilinib, turizm industriyasini rivojlantirishning huquqiy asosi mustahkamlandi. Ushbu Qonun turizm sohasi subyektlari faoliyatini tartibga solib, turistlar huquqlarini

himoya qilish, turizmni barqaror rivojlantirish uchun shart-sharoitlar yaratish kabi tamoyillarni o‘z ichiga oldi [5].

Mustaqillikning dastlabki yigirma yilida (1991–2010) Toshkent viloyatida rekreatsion hududlarning rivojlanishi nisbatan sustroq bo‘ldi. Mustaqillikdan oldingi davrdan meros qolgan infratuzilma (sanatoriylar, oromgohlar va h.k.)ning aksariyati eskirib borar, yangilarini barpo etish uchun esa davlat mablag‘lari cheklangan edi. 1990-yillar og‘ir iqtisodiy sharoitida dam olish maskanlarining ko‘pi xususiylashtirildi yoki yopildi [7]. Masalan, Bo‘stonliq tumanidagi ayrim sanatoriy-pansionatlar 1990-yillar oxiriga kelib xususiy qo‘llarga o‘tdi yoki faoliyatini vaqtincha to‘xtatdi [6]. Biroq aynan shu davrda rekreatsion sohada xususiy sektor kirib kelishi kuzatildi. Mahalliy tadbirkorlar tashabbusi bilan kichik dam olish zonalari va mehmon uylari tashkil etila boshladi. Toshkent shahri yaqinidagi ba’zi tumanlarda mahalliy aholi ichki turizm uchun xizmat ko‘rsatuvchi subyektlar sifatida maydonga chiqdi. Masalan, Parkent tumanida 2000-yillar boshidan uzumchilik va bog‘dorchilikka asoslangan agro-turizm unsurlari rivojlana boshladi – xususiy xo‘jaliklar uzumzorlarida sayyohlar uchun degustatsiya va dam olish muhitini yaratishdi. Parkentdagi “Namdanak” qishlog‘i yaqinida vino zavodi va uzum yetishtirish bilan bog‘liq ekskursiyalar yo‘lga qo‘yildi [8]. Bu holat viloyatda vino turizmi yo‘nalishining boshlanishi sifatida e’tirof etilishi mumkin. Shu bilan birga, Zangiota tumanida mustaqillik yillarida diniy ziyorat turizmining ahamiyati oshdi: Zangi ota ziyoratgohi va unga tutash masjid-madrasalar majmuasi ta’mirlanib, ziyoratchilar oqimi ko‘paydi. 2000-yillarda Zangiotada ushbu majmuani ziyorat qilishni tashkil etuvchi bir nechta xususiy firmalar paydo bo‘ldi, hududda milliy hunarmandchilik mahsulotlari savdosi yo‘lga qo‘yildi [9].

Bekobod tumani misolida esa tabiiy resurs – Sirdaryo daryosi bo‘yida rekreatsion imkoniyatlar izlana boshladi. 2000-yillar davomida Bekobod shahriga yaqin Sirdaryo qirg‘og‘ida kichik dam olish maskanlari (plyaj zonalari, baliq ovlash bazalari) tashkil qilindi. Bu holat viloyatda rekreatsion geografiya faqat tog‘ va tog‘ oldi hududlar bilangina cheklanmasdan, daryo bo‘ylarida ham imkoniyatlar mavjudligini ko‘rsatdi. Umuman olganda, 1991–2010-yillar Toshkent viloyati rekreatsion tizimi uchun o‘tish davri bo‘ldi. Bu bosqichning afzalliklari qatoriga xususiy sektorning kirib kelishi va mahalliy tashabbuslarning ortishini kiritish mumkin. Davlatning qattiq tartibga solishidan bo‘shagan sohada tadbirkorlar turli xil dam olish xizmatlarini taklif qila boshladi. Masalan, Bo‘stonliq tumanida kichik oilaviy mehmonxonalar, ovqatlanish shoxobchalari ochildi; Parkentda vino festivallari an’anasiga tamal toshi qo‘yildi (2008-yildan “Uzum sayli” festivali o‘tkazila boshlandi). Kamchiliklari esa investitsiya yetishmovchiligi va yagona strategik rejaning yo‘qligida namoyon bo‘ldi. Rekreatsion maskanlarni rivojlantirish asosan o‘z-o‘zidan, tartibsiz kechdi; ko‘plab obyektlar eskirgan holda qoldi, yangilarini barpo etish sur’ati sekin bo‘ldi. Masalan, 2010-yilga kelib Toshkent viloyatida atigi bir necha zamonaviy mehmonxona va dam olish maskani bor edi, xolos. Shunday bo‘lsa-da, bu davr keyingi bosqich uchun zarur bo‘lgan xususiy tadbirkorlik ko‘nikmalarini

shakllantirdi hamda milliy turizm siyosatini ishlab chiqishga xizmat qildi. 1999-yilgi Qonundan so‘ng 2000-yillarda turizmni rivojlantirishga qaratilgan dasturlar, jumladan, Buyuk ipak yo‘li bo‘ylab turizmni rivojlantirish davlat dasturi amalga oshirildi, bu Toshkent viloyatiga ham tegishli ravishda ta’sir ko‘rsatgan.

Zamonaviy bosqich (2017-yildan hozirgacha): Diversifikatsiya va jadal rivojlanish. 2016–2017-yillardan boshlab O‘zbekistonda turizm sohasini rivojlantirish davlat siyosatining ustuvor yo‘nalishlaridan biriga aylandi. Xususan, 2017-yilda Toshkent viloyati uchun tarixiy ahamiyatga ega qaror qabul qilindi – Prezident Sh.Mirziyoyevning 2017-yil 5-dekabrdagi PF-5273-son Farmoni bilan “Chorvoq” erkin turistik-rekreatsion zonasi tashkil etildi [2]. Mazkur farmonga muvofiq, Bo‘stonliq tumani hududidagi Chimyon-Chorvoq kurort-rekreatsiya zonasi doirasida maxsus erkin turistik hudud ajratilib, u yerda zamonaviy mehmonxona majmualari, madaniy-sog‘lomlashtirish markazlari, savdo-ko‘ngilochar obyektlar va boshqa turistik infratuzilma qurilishi belgilandi. Farmon erkin turistik zonaga investitsiyalar jalb qilish, xorijiy sarmoyadorlar uchun soliq va bojxona imtiyozlari berish hamda hududni 30 yil muddatga barqaror rivojlantirish maqsadini qo‘ydi [2] .

Xulosa va takliflar.

Toshkent viloyati misolida rekreatsiya hududlarining shakllanishi va rivojlanishi bosqichma-bosqich hamda murakkab jarayon bo‘lgani ushbu tadqiqot natijalarida o‘z aksini topdi. Mustaqillikdan oldingi davrida markazlashgan va sotsialistik tamoyillar asosida qisqa vaqt ichida yirik rekreatsion baza (Chorvoq, Chimyon) yaratildi. Mustaqillikning dastlabki yillarida esa rekreatsion soha inqiroz va transformatsiya davrini o‘tkazdi: markaziy mablag‘lar qisqardi, lekin bu bo‘shliqni to‘ldirish uchun xususiy sektor paydo bo‘ldi. 2017-yildan boshlab Toshkent viloyatida rekreatsion tizim yangi bosqichga qadam qo‘ydi. Davlat miqyosida turizm “lokomotiv tarmoq” sifatida e’tirof etilib, viloyatda qator yirik loyihalar amalga oshirildi – Chorvoq erkin turistik zonasi, Amirsoy kurorti, Golden Ring konsepsiyasi va hokazo. Bu bosqichning o‘ziga xos xususiyati turizmni rivojlantirishda kompleks yondashuvning joriy etilishi bo‘ldi. Shunday qilib, Toshkent viloyatidagi rekreatsion hududlarning tarixiy rivojlanishi markazlashgan modeldan diversifikatsiyalashgan zamonaviy modelga o‘tganini ko‘rish mumkin. Hozirgi bosqichda rekreatsion tizimning muvaffaqiyati bir nechta omillarga bog‘liq: davlat siyosati (farmon va qarorlar orqali qo‘llab-quvvatlash), xususiy sektor faolligi (yangi xizmat va obyektlarni tashkil etish), xalqaro tajriba va standartlarni joriy etish (UNWTO tavsiyalari, YuNESKO e’tiroflari) hamda ekologik barqarorlik prinsiplariga amal qilish. Ushbu omillar uyg‘unligi Toshkent viloyati rekreatsion salohiyatini kelgusida yanada yuqori bosqichga olib chiqishi kutilmoqda.

Foydalanilgan adabiyotlar ro‘yxati.

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МОРФОЭКОЛОГИЧЕСКАЯ И МИКРОБИОЛОГИЧЕСКАЯ ХАРАКТЕРИСТИКА РАСТЕНИЯ FERULA TADSHIKORUM

Аннотация: *В статье приведены сведения о морфологических и экологических особенностях растения Ferula tadshikorum, занесенного в Красную книгу Таджикистана, а также о возможных связях растения с микроорганизмами.*

Ключевые слова: *морфологический, экологический, микроорганизм, Красная книга, ассоциация, растение, лист, цветок.*

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MORPHOECOLOGICAL AND MICROBIOLOGICAL CHARACTERISTICS OF THE PLANT *FERULA TADSHIKORUM*

Abstract: *This article provides information on the morphological and ecological characteristics of the plant Ferula tadshikorum, which is included in the Red Book of Tajikistan, and on the possible association between the plant and microorganisms.*

Key words: *morphological, ecological, microorganism, Red Book, association, plant, leaf, flower.*

Введение

Ferula tadshikorum — это вид растений семейства сельдерейных (Apiaceae), который встречается в Средней Азии, в частности в Таджикистане, откуда и получил свое название. Этот вид представляет собой многолетнее травянистое растение с характерными крупными листьями и цветами, которые обычно собраны в зонтики. Растение имеет важное значение как в экологическом, так и в культурном контексте.

Морфологические особенности

Ferula tadshikorum может достигать значительных размеров, часто до 2–3 метров в высоту. Многолетнее монокарпическое растение с жизненным циклом 23–30 лет. Онтогенез включает латентный, прегенеративный и генеративный периоды, охватывающие 6 возрастных состояний: семя, проросток, ювенильное, имматурное, виргинильное и генеративное. Корневая система мощный, цилиндрический, тёмно-коричневый корень Развитие: формируется за счёт утолщения гипокотиля и базальных частей розеточного побега; развитие длится 8–25 лет.

Нижние листья крупные, дважды- или триждыперисторассечённые, черешковые. Верхние листья мельче, с редуцированными черешками, часто переходят в влагалища, охватывающие стебель. У ювенильных особей листья имеют мощные сосудистые пучки, развитую механическую ткань и секреторные каналы.

Цветки мелкие, жёлтого цвета. Соцветие: сложный зонтик, типичный для семейства зонтичных.

Ассоциации микроорганизмы и *Ferula tadshikorum*

Микоризные грибы: Как и большинство наземных растений, *Ferula tadshikorum* вероятно образует симбиотические отношения с микоризными грибами. Эти грибы помогают растению усваивать воду и минеральные вещества из почвы, особенно в условиях бедных или засушливых почв.

Эндофитные бактерии и грибы: Внутренние ткани растения могут быть населены эндофитами — микроорганизмами, которые живут внутри растения без причинения ему вреда. Они могут способствовать росту растения, повышать его устойчивость к стрессам и защищать от патогенов.

Почвенные микробиоты: Вокруг корней растения существует ризосфера — зона, богатая микроорганизмами, которые взаимодействуют с корневой системой. Эти микроорганизмы могут участвовать в разложении органических веществ, фиксации азота и других процессах, полезных для растения.

Экологические особенности

Этот вид растений предпочитает сухие и полусухие условия, где он растет на каменистых и горных склонах, а также в ущельях, характерных для горных регионов Средней Азии. Rастение хорошо приспособлено к экстремальным климатическим условиям региона, включая высокие температуры летом и морозы зимой. *Ferula tadshikorum* — важный элемент местных экосистем, обеспечивающий корм для местных животных и играющий роль в поддержании устойчивости экосистем.

Использование в народной медицине

Как и многие виды рода **Ferula*, *Ferula tadshikorum** имеет потенциал для использования в народной медицине. Корни и стебли некоторых видов ферулы традиционно использовались в лечебных целях, например, для лечения заболеваний желудочно-кишечного тракта и дыхательных путей. Однако для **Ferula tadshikorum** подобные практики не были широко исследованы, и необходимо проведение дополнительных научных исследований для подтверждения их эффективности.

Современные исследования и охрана

Изучение **Ferula tadshikorum** в последние годы привлекло внимание научного сообщества, поскольку это растение является важным компонентом биоразнообразия региона. В некоторых районах оно находится под угрозой исчезновения из-за разрушения природных местообитаний и изменений климата. В связи с этим необходимы усилия для сохранения этого вида и защиты природных экосистем, в которых оно обитает.

Заключение

Ferula tadshikorum представляет собой уникальное и важное растение Средней Азии, обладая интересными морфологическими и экологическими характеристиками. Несмотря на его локальное распространение, это растение имеет высокий потенциал как для научных исследований, так и для сохранения в рамках охраны природы.

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ИННОВАЦИОННЫЕ ПОДХОДЫ К ПРОВЕДЕНИЮ КОНВЕРГЕНТНЫХ ЛЕКЦИЙ ПО ФИЗИКЕ В ЦИФРОВОМ ОБРАЗОВАТЕЛЬНОМ ПРОСТРАНСТВЕ

Аннотация: *В данной работе рассматриваются инновационные подходы к модернизации преподавания физики в высших учебных заведениях Узбекистана в условиях активного развития цифровой образовательной среды. Анализируется потенциал конвергентных лекций, направленных на интеграцию знаний из смежных научных дисциплин с использованием современных цифровых инструментов. Подробно описывается и анализируется авторская методика «оживляющих образов», представляющая собой практический инструмент для визуализации сложных физических понятий. В статье предоставляются результаты педагогического эксперимента, наглядно демонстрирующие эффективность предложенного подхода, а также рассматриваются ключевые аспекты его практической реализации, включая используемое программное обеспечение и оборудование.*

Ключевые слова: *цифровое образование, Узбекистан, инновационные методики, визуализация, интерактивность, педагогический эксперимент*

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INNOVATIVE APPROACHES TO CONVERGENT LECTURES ON PHYSICS IN THE DIGITAL EDUCATIONAL SPACE

Abstract: *This paper examines innovative approaches to modernizing physics teaching in higher education institutions in Uzbekistan amid the rapid*

development of a digital educational environment. It analyzes the potential of convergent lectures aimed at integrating knowledge from related scientific disciplines using modern digital tools. The author's "animating images" technique, a practical tool for visualizing complex physics concepts, is described and analyzed in detail. The article presents the results of a pedagogical experiment, clearly demonstrating the effectiveness of the proposed approach, and discusses key aspects of its practical implementation, including the software and hardware used.

Keywords: *digital education, Uzbekistan, innovative methods, visualization, interactivity, pedagogical experiment*

Введение

В условиях активной цифровой трансформации общества и образовательного пространства Республики Узбекистан, инициированной в рамках национальных программ и концепций развития, особую актуальность приобретает модернизация методик преподавания естественнонаучных дисциплин. Физика, как фундаментальная наука, лежит в основе технологического прогресса, однако традиционные формы ее преподавания зачастую не отвечают вызовам времени и потребностям поколения цифровых аборигенов. Внедрение инновационных подходов, в частности, проведение конвергентных лекций, становится не просто тенденцией, а насущной необходимостью для подготовки высококвалифицированных кадров, способных к междисциплинарному мышлению и инновационной деятельности. Такой подход позволяет преодолеть разрыв между теоретическими знаниями по физике и их практическим применением в смежных областях, таких как IT, робототехника, био- и нанотехнологии, что напрямую соответствует стратегическим целям развития страны.

Методика «оживляющих образов».

Суть данного подхода заключается в том, чтобы заменить сложные физические понятия и формулы на яркие и понятные визуальные образы, которые оживают на экране с помощью цифровых технологий. Вместо того чтобы просто рассказывать на лекции о законе Архимеда или явлении электромагнитной индукции, преподаватель показывает их в действии через короткие анимированные ролики, интерактивные модели или симуляции. Например, студенты могут виртуально «погружать» тело в жидкость и сразу видеть, как меняются показания весов и величина выталкивающей силы, или вручную «передвигать» магнит внутри катушки, наблюдая за возникновением электрического тока. Это превращает абстрактную теорию в наглядный и запоминающийся эксперимент, который легко понять без заучивания сложных определений.

Цифровое пространство используется здесь как доступный и удобный инструмент для создания такой наглядности. Преподаватель может использовать готовые образовательные приложения, простые симуляторы с сайтов вроде PhET или даже записывать короткие видео-объяснения с

помощью графического планшета. Главная задача — не провести многосторонний анализ, а дать студентам мгновенную и понятную визуальную подсказку, связывающую закон с реальным миром.

Результат

Внедрение методики «оживляющих образов» в учебный процесс продемонстрировало значительное повышение эффективности усвоения материала. Проведённый сравнительный анализ успеваемости в контрольной и экспериментальной группах показал, что понимание ключевых физических концепций среди студентов, обучавшихся по новой методике, возросло в среднем на 35%. Наиболее заметный прогресс был зафиксирован в темах, традиционно считающихся сложными для восприятия, таких как «Термодинамика» и «Электромагнитные явления». Качественный анализ опросов и интервью выявил, что 78% студентов отметили, что анимированные модели и симуляции помогли им интуитивно понять суть физических законов, которые раньше казались абстрактными и оторванными от реальности.

Таблица 1.
Оборудование, использованное для реализации методики «оживляющих образов» в эксперименте

№	Основное оборудование/ПО	Цель использования	Пример применения в лекции
1	Компьютер/Ноутбук преподавателя с выходом в интернет	Главный управляющий центр для демонстрации материалов, доступа к онлайн-ресурсам и симуляциям.	Запуск интерактивных моделей, показ видеороликов, навигация по образовательным платформам.
2	Мультимедийный проектор или интерактивная доска	Проецирование цифрового контента на большой экран для коллективного просмотра и обсуждения.	Обеспечение наглядности для всей аудитории, совместная работа с моделями на доске.
3	Онлайн-платформы и симуляторы (PhET, Wordwall)	Доступ к готовым интерактивным анимациям, виртуальным лабораториям и играм для визуализации законов физики.	Демонстрация опыта по закону Архимеда, сборка электрических цепей, изучение траектории движения тел.

Заключение

Основываясь на вышеуказанной информации, можно сделать вывод, что цифровая трансформация физического образования в Узбекистане открывает удивительные перспективы, где сложные формулы и законы буквально оживают в виртуальных лабораториях. Методика "оживляющих образов" превращает абстрактные концепции в захватывающие визуальные эксперименты, где студенты не просто пассивные слушатели, а современные алхимики, способные "приручить" магнитное поле или "увидеть" звуковую волну. Этот инновационный подход не только повышает успеваемость на 35%, но и пробуждает в будущих специалистах подлинный восторг

первооткрывателей, формируя поколение творцов, для которых физика становится языком описания и преобразования реального мира - от энергоэффективных домов Узбекистана до космических технологий будущего.

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СОВРЕМЕННЫЙ ВИДОВОЙ СОСТАВ ОХОТНИЧЬЕ-ПРОМЫСЛОВЫХ ВИДОВ ПТИЦ НА ТЕРРИТОРИИ НУКУССКОГО РАЙОНА РЕСПУБЛИКИ КАРАКАЛПАКСТАН

Аннотация: *В статье представлены результаты анализа современного видового состава охотничье-промысловых видов птиц на территории Нукусского района Республики Каракалпакстан. На основе литературных данных и собственных наблюдений выявлено 41 вид птиц, относящихся к 8 отрядам и 12 семействам. Проведён анализ их систематической принадлежности, характера миграции и сезонного распределения. Установлено, что наибольшее видовое разнообразие характерно для отряда гусеобразных (Anseriformes) — 36,59%. Среди всех выявленных видов преобладают мигрирующие и оседлые формы, что отражает экологическое разнообразие и устойчивость орнитофауны региона.*

Ключевые слова: *орнитофауна, Нукусский район, охотничьи птицы, видовой состав, миграция, экология.*

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CURRENT SPECIES COMPOSITION OF HUNTING AND COMMERCIAL BIRDS IN THE NUKUS DISTRICT OF THE REPUBLIC OF KARAKALPAKSTAN

Abstract: *This article presents the results of an analysis of the current species composition of hunting and commercial bird species in the Nukus district*

of the Republic of Karakalpakstan. Based on literature data and our own observations, 41 bird species belonging to 8 orders and 12 families were identified. An analysis of their taxonomy, migration patterns, and seasonal distribution was conducted. It was found that the highest species diversity is characteristic of the order Anseriformes—36.59%. Migratory and sedentary forms predominate among all identified species, reflecting the ecological diversity and stability of the region's avifauna.

***Key words**: ornithofauna, Nukus District, game birds, species composition, migration, ecology.*

Введение

Изучение охотничье-промысловых видов птиц имеет важное значение для рационального природопользования, охраны биоразнообразия и устойчивого ведения охотничьего хозяйства. Нукусский район, располагающийся в центральной части Республики Каракалпакстан, характеризуется разнообразием биотопов — от пойм Амударьи до антропогенных ландшафтов, что создаёт благоприятные условия для обитания различных видов птиц.

Ранее орнитофауна региона исследовалась такими учёными, как А. Мамбетжумаев (1964, 1995, 1996), Т. Абдреймов (1981), М. Аметов (1981, 1998), М. Жуманов (2017), Я. Аметов (2010, 2019), Арепбаев (2020) и Матекова (2023). Однако комплексный анализ современного видового состава охотничьих птиц Нукусского района с учётом их миграционного статуса до настоящего времени не проводился. Настоящее исследование направлено на восполнение данного пробела.

Материалы и методы

Исследование основано на анализе данных современной литературы и собственных полевых наблюдений, проводившихся в 2023–2025 гг. на территории Нукусского района. Для уточнения систематического состава использовались определения, приведённые в «Списке охотничьих птиц Республики Узбекистан», утверждённом Министерством экологии, охраны окружающей среды и изменения климата. Материал собран путём визуальных наблюдений, фотофиксации и анализа орнитологических публикаций. Систематика птиц приведена в соответствии с международной классификацией (IOC, 2023). Статус видов (оседлые, гнездящиеся, мигрирующие, зимующие) определялся на основе фенологических наблюдений и литературных данных.

Результаты и обсуждение

По результатам анализа в Нукусском районе зарегистрирован 41 вид охотничьих птиц, принадлежащих к 8 отрядам и 12 семействам. Наибольшее число видов приходится на отряд гусеобразных (Anseriformes**)** — 15 видов (36,59%). Второе место занимает отряд воробьинообразных (Passeriformes) — 7 видов (17,07%). По 5 видов отмечено у ржанкообразных (Charadriiformes) и голубеобразных (Columbiformes) — по 12,2%. Далее

следуют курообразные (Galliformes) — 4 вида (9,75%), журавлеобразные (Gruiformes) — 3 вида (7,32%), и по 1 виду у пеликанообразных (Pelecaniformes) и аистообразных (Ciconiiformes) (по 2,44%).

По характеру миграции преобладают мигрирующие виды — 14 видов (34,15%), оседлые — 13 видов (31,7%), гнездящиеся — 11 видов (26,83%) и зимующие — 3 вида (7,32%). Анализ сезонного распределения показал, что в отряде Anseriformes гнездятся 5 видов (12,19%), в отрядах Gruiformes и Charadriiformes — по 4 вида (9,76%), по одному виду (2,44%) гнездятся в Pelecaniformes и Galliformes. Среди перелётных птиц наибольшую долю составляют представители Anseriformes (8 видов, 19,51%) и Charadriiformes (3 вида, 7,32%). Оседлые формы в основном представлены воробьиными (5 видов, 12,19%) и голубеобразными (4 вида, 9,75%). Среди зимующих видов преобладают воробьиные (2 вида, 4,88%) и голубиные (1 вид, 2,44%).

Выявленные данные указывают на устойчивое орнитологическое разнообразие Нукусского района. Высокая доля гусеобразных объясняется наличием водно-болотных угодий и пойменных территорий Амударьи, которые служат основными местами гнездования и остановок мигрирующих птиц. В то же время увеличение доли оседлых и воробьиных видов связано с расширением антропогенных биотопов — парковых зон, водохранилищ и сельскохозяйственных угодий. Сравнение с данными предыдущих исследований (Мамбетжумаев, 1960; Аметов, 1998; Жуманов, 2017) показывает, что общее видовое разнообразие охотничьих птиц в регионе сохраняется на стабильном уровне. Однако наблюдается тенденция к снижению численности отдельных водоплавающих видов, что может быть связано с изменением гидрологического режима Амударьи и сокращением площадей естественных водоёмов.

Заключение

Таким образом, современная орнитофауна охотничье-промысловых птиц Нукусского района включает 41 вид, представляющий 8 отрядов и 12 семейств. Преобладают гусеобразные и воробьиные, что отражает разнообразие водно-наземных экосистем региона. Результаты исследования могут служить основой для мониторинга состояния орнитофауны, разработки мероприятий по охране местообитаний и рациональному использованию охотничьих ресурсов.

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МЕЖДУНАРОДНЫЕ СТАНДАРТЫ ФИНАНСОВОЙ ОТЧЁТНОСТИ И ИХ ПРИМЕНЕНИЕ ПРИ АУДИТЕ ЗАПАСОВ

Аннотация. *В статье рассматриваются особенности применения Международных стандартов финансовой отчётности (МСФО) при аудите запасов на предприятиях. Целью исследования является анализ роли МСФО в повышении прозрачности и достоверности финансовой информации, связанной с оценкой, признанием и учётом запасов. В работе использован кейс-метод, основанный на анализе практической деятельности предприятия, перешедшего на стандарты МСФО (IAS 2 «Запасы»).*

Ключевые слова: *Международные стандарты финансовой отчётности, аудит, запасы, IAS 2, бухгалтерский учёт, прозрачность отчётности, оценка активов, финансовый анализ, гармонизация учёта.*

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INTERNATIONAL FINANCIAL REPORTING STANDARDS AND THEIR APPLICATION IN INVENTORY AUDITS

Abstract. *This article examines the application of International Financial Reporting Standards (IFRS) in the audit of inventories within enterprises. The main objective of the study is to analyze the role of IFRS in enhancing the transparency and reliability of financial information related to the valuation, recognition, and accounting of inventories. The research employs the case study method based on the analysis of a company that has transitioned to IFRS (specifically IAS 2 Inventories).*

Keywords: *International Financial Reporting Standards, audit, inventories, IAS 2, accounting, financial transparency, asset valuation, financial analysis, accounting harmonization.*

Введение.

Современная экономическая среда характеризуется глобализацией финансовых рынков и усилением требований к прозрачности корпоративной отчётности. В этих условиях Международные стандарты финансовой отчётности (МСФО) играют ключевую роль, обеспечивая единые подходы к признанию, оценке и раскрытию информации о хозяйственных операциях.

Одним из наиболее значимых элементов бухгалтерского учёта, оказывающих существенное влияние на финансовое положение предприятия, являются запасы. Именно поэтому корректное применение МСФО при их учёте и последующем аудите имеет решающее значение для достоверности финансовой отчётности.

Запасы представляют собой активы, предназначенные для продажи, использования в производстве или предоставления услуг, и составляют значительную часть текущих активов компании. Их неправильная оценка может привести к искажению финансовых показателей, таких как себестоимость продаж, прибыль и ликвидность. Согласно МСФО (IAS) 2 «Запасы», организации обязаны оценивать запасы по наименьшей из двух величин — себестоимости или чистой возможной стоимости реализации, что требует точных расчётов и соблюдения принципов осмотрительности и последовательности.

Аудит запасов является одним из наиболее сложных направлений аудиторской деятельности, поскольку включает проверку как физических остатков, так и стоимостной оценки. В условиях применения МСФО перед аудиторами встают дополнительные задачи: необходимость понимания методологических основ международных стандартов, выявление расхождений между национальными и международными требованиями, а также оценка влияния выбранных методов учёта на достоверность финансовой информации.

Несмотря на широкое распространение МСФО, практика их применения при аудите запасов в странах с переходной экономикой, включая государства постсоветского пространства, остаётся неоднородной. Это связано с различиями в нормативно-правовой базе, уровне профессиональной подготовки аудиторов и степенью адаптации национальных систем отчётности к международным требованиям.

Актуальность данного исследования определяется необходимостью анализа особенностей применения МСФО при аудите запасов, выявления проблемных аспектов и разработки предложений по повышению эффективности аудиторских процедур. Научная новизна работы заключается в систематизации подходов к оценке и проверке запасов в соответствии с МСФО и в сопоставлении международных требований с национальной практикой аудита.

Методология.

Для достижения цели исследования и обеспечения достоверности полученных результатов в работе был применён сравнительно-аналитический метод. Данный метод наиболее полно соответствует характеру темы, поскольку позволяет выявить различия и сходства в подходах к учёту и аудиту запасов в рамках национальных и международных стандартов, а также проанализировать влияние применения МСФО на качество и прозрачность финансовой отчётности.

Сравнительно-аналитический метод включает сопоставление положений МСФО (IAS) 2 «Запасы» с требованиями национальных нормативных документов, регулирующих бухгалтерский учёт и аудит. На основе такого сравнения определяются ключевые различия в принципах оценки, признания и раскрытия информации о запасах, а также оценивается степень адаптации национальной практики к международным требованиям. Кроме того, анализируются аудиторские процедуры, применяемые при проверке запасов, с учётом рекомендаций МСА (Международных стандартов аудита), в частности МСА 501 «Аудиторские доказательства — специальные соображения в отношении отдельных статей» и МСА 330 «Реакция аудитора на оценённые риски».

Для проведения исследования были использованы следующие этапы:

1. Изучение нормативной базы — анализ международных и национальных стандартов бухгалтерского учёта и аудита, регулирующих порядок учёта и проверки запасов.
2. Сравнительный анализ — выявление различий в методологии оценки и отражения запасов в финансовой отчётности по МСФО и национальным стандартам.
3. Анализ практических аспектов аудита — рассмотрение типичных ошибок и рисков, возникающих при аудите запасов, а также методов их минимизации.
4. Обобщение результатов — формулирование выводов о степени соответствия аудиторской практики международным требованиям и подготовка рекомендаций по её совершенствованию.

Использование сравнительно-аналитического метода позволило обеспечить системность и объективность исследования, выявить основные направления гармонизации национальной практики учёта и аудита с международными стандартами, а также определить факторы, влияющие на достоверность финансовой отчётности в процессе аудита запасов.

Анализ и результаты.

В ходе исследования была проведена сравнительно-аналитическая оценка применения Международных стандартов финансовой отчётности (МСФО) при аудите запасов на примере условного кейса — компании ООО «ТехноПром», осуществляющей производственную деятельность и использующей смешанную систему учёта. Целью анализа являлось определение влияния внедрения требований МСФО (IAS) 2 «Запасы» на достоверность финансовой отчётности и эффективность аудиторских процедур.

Первоначально учёт запасов осуществлялся по национальным стандартам, где применялась методика оценки по средней себестоимости. После перехода на МСФО предприятие внедрило более строгий подход, основанный на принципе «наименьшей из двух величин — себестоимости или чистой возможной стоимости реализации». Это изменение потребовало

корректировок в учётной политике и раскрытии информации в финансовой отчётности.

Показатель	Национальные стандарты	МСФО (IAS 2)	Изменение
Метод оценки запасов	Средняя себестоимость	Себестоимость или чистая возможная стоимость реализации (по наименьшей)	Увеличение прозрачности оценки
Отражение уценки запасов	Необязательное	Обязательно при снижении стоимости	Более достоверная оценка активов
Раскрытие информации в отчётности	Ограничено	Расширено: методы оценки, суммы уценки, причины	Повышение информативности
Влияние на финансовый результат	Недооценка расходов	Реалистичная оценка себестоимости	Снижение искусственной прибыли

На следующем этапе были сопоставлены аудиторские процедуры, применяемые при проверке запасов до и после внедрения МСФО. В частности, проанализированы различия в объёме тестов, требованиях к доказательствам и уровне выявляемых рисков.

Проведённое исследование показало, что внедрение МСФО при учёте и аудите запасов способствует:

- повышению достоверности финансовой отчётности;
- улучшению качества аудиторских доказательств;
- снижению риска искажений при оценке активов;

увеличению доверия инвесторов и заинтересованных сторон к отчётности компании.

Элемент аудита	До внедрения МСФО	После внедрения МСФО	Выявленный эффект
Проверка физического наличия запасов	Периодическая, выборочная	Обязательная при каждом аудите	Повышение надёжности доказательств
Оценка рисков искажений	Ограниченная	Комплексная (с учётом рыночных факторов)	Более точное определение рисков
Документирование аудиторских процедур	Упрощённое	В соответствии с МСА 501 и МСА 330	Улучшение качества аудита
Раскрытие выводов в отчёте аудитора	Сводное	Расширенное с обоснованием оценок	Повышение прозрачности отчётности

Однако были выявлены и проблемные аспекты, включая необходимость дополнительного обучения аудиторов, адаптацию

внутренней документации, а также сложности в интерпретации отдельных положений стандартов, что требует дальнейшего совершенствования методической базы аудита.

Таким образом, результаты исследования подтверждают, что применение МСФО (IAS 2) при аудите запасов не только улучшает качество финансовой отчётности, но и повышает эффективность самого аудиторского процесса за счёт стандартизации подходов и унификации требований к раскрытию информации.

Заключение.

Проведённое исследование подтвердило, что внедрение Международных стандартов финансовой отчётности, в частности МСФО (IAS) 2 «Запасы», оказывает существенное влияние на повышение прозрачности, достоверности и сопоставимости финансовой информации о запасах. Сравнительно-аналитический метод позволил выявить ключевые различия между национальными и международными подходами к оценке и учёту запасов, а также определить, каким образом применение МСФО трансформирует практику аудита.

Результаты анализа кейса показали, что переход на международные стандарты требует не только технической адаптации учётной политики, но и комплексного изменения аудиторского подхода. Аудиторы должны учитывать не только корректность оценки запасов, но и экономическую обоснованность предположений, применяемых при определении их чистой возможной стоимости реализации. Введение процедур, предписанных МСА 501 и МСА 330, способствует повышению качества аудиторских доказательств и снижению риска искажений финансовой отчётности.

Сравнение полученных данных с результатами международных исследований (Daske et al., 2008; Jeanjean & Stolowy, 2008; Nobes & Stadler, 2015 и др.) подтвердило, что положительное воздействие МСФО проявляется в условиях высокого уровня правоприменения, развитой профессиональной культуры и адекватной подготовки специалистов. В противном случае стандарты могут быть внедрены формально, не обеспечивая реального повышения качества финансовой отчётности.

Основные выводы исследования можно обобщить следующим образом:

1. Применение МСФО (IAS 2) обеспечивает более точную оценку запасов, снижает риск переоценки активов и способствует объективному отражению финансового положения компании.
2. Совершенствование аудиторских процедур на основе международных стандартов повышает достоверность получаемых доказательств и усиливает доверие заинтересованных сторон к отчётности.
3. Эффективность внедрения МСФО напрямую зависит от квалификации аудиторов, качества внутреннего контроля и уровня нормативного регулирования в стране.

4. Необходима институциональная поддержка — обучение аудиторов, методические разъяснения и адаптация ИТ-инфраструктуры для полноценного применения международных стандартов.

Таким образом, применение МСФО при аудите запасов является не только техническим, но и стратегическим инструментом повышения качества корпоративной отчётности. В перспективе развитие национальной аудиторской практики должно быть направлено на углубление интеграции с международными стандартами, усиление контроля качества и формирование профессиональной компетентности аудиторов. Это позволит обеспечить сопоставимость финансовых данных, укрепить доверие инвесторов и повысить устойчивость бизнеса в глобальной экономической среде.

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ИЗМЕНЕНИЯ КОЛИЧЕСТВА ФОРМЕННЫХ ЭЛЕМЕНТОВ КРОВИ У БОЛЬНЫХ ХРОНИЧЕСКИМ ВИРУСНЫМ ГЕПАТИТОМ В

Аннотация: *В статье представлены гематологические изменения, которые могут наблюдаться при хронических вирусных гепатитах и хронических заболеваниях печени. Изменения показателей анализа периферической крови были проанализированы с использованием результатов ряда научных работ, проведенных учеными. Также представлена важность ранней диагностики течения заболевания и осложнений.*

Ключевые слова: *хронический вирусный гепатит, тромбоцитопения, лейкопения, нейтропения, цирроз печени*

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CHANGES IN THE AMOUNT OF BLOOD FORMED ELEMENTS IN PATIENTS WITH CHRONIC VIRAL HEPATITIS B

Abstract: *This article presents hematological changes that can be observed in chronic viral hepatitis and chronic liver diseases. The changes in peripheral blood analysis indicators were analyzed using the results of several scientific works conducted by scientists. The importance of early diagnosis of the course of the disease and complications is also presented.*

Keywords: *chronic viral hepatitis, thrombocytopenia, leukopenia, neutropenia, liver cirrhosis*

Цитопенические состояния, включающие анемию, лейкопению и тромбоцитопению, а также их сочетания, являются закономерным

следствием несостоятельности костного мозга (КМ) и воздействия на него целого ряда неблагоприятных факторов. Цитопении могут проявляться в виде анемического, геморрагического синдрома, синдрома иммунодефицита и могут приводить к различным, в том числе угрожающим жизни, осложнениям. Например, анемия приводит к гипоксии с последующим развитием сердечной недостаточности—как острой, так и хронической, к церебральной недостаточности, вплоть до комы; лейкопения — к инфекционным (бактериальным, вирусным, грибковым) осложнениям, вплоть до бактериально-септического шока; тромбоцитопения—к геморрагическому синдрому с кровоизлиянием в вещество мозга. Двухростковая цитопения и панцитопения еще более опасные состояния для больного, которые можгут угрожать его жизни и нередко требуют срочных мероприятий. Причинами цитопений могут быть различные факторы, среди которых особое значение имеют инфекционные заболевания: группа вируса герпес (цитомегаловирусная инфекция, Эпштейна-Барр / инфекционный мононуклеоз, поражение костного мозга 6 типом вируса герпес и др.), коревая инфекция, коклюш, паракоклюш, туберкулез, ВИЧ, вирусные гепатиты В, С и др. [1]

Одной из вышеперечисленных инфекций, вызывающих панцитопению, является вирус гепатита В, который сегодня становится одной из главных проблем в системе здравоохранения.

Инфекция вирусом гепатита В является серьезной медицинской проблемой, которая может привести к циррозу печени с высоким риском смерти. Больных циррозом печени можно разделить на компенсированные и декомпенсированные заболевания. Смертность резко возрастает по мере развития у пациентов декомпенсированного цирроза печени. В настоящее время единственным эффективным методом лечения пациентов с декомпенсированным циррозом печени, обусловленным хроническим гепатитом В, является трансплантация печени. Однако трансплантация печени ограничена нехваткой доступных доноров, риском хирургических осложнений и высокой стоимостью. Таким образом, выявление объективных и точных диагностических систем прогноза декомпенсированного цирроза печени у больных хроническим гепатитом В остается актуальной проблемой, помогающей выявить пациентов высокого риска и изменить стратегии в клинической практике [2].

В нескольких исследованиях изучалось влияние препаратов, используемых для лечения вирусного гепатита, на кроветворение.

Наиболее частыми побочными эффектами интерферонотерапии являются: гриппоподобный синдром, депрессия, снижение массы тела, алопеция, лейкопения, тромбоцитопения. Все эти нежелательные явления корригируются снижением дозы интерферонов или назначением дополнительных препаратов. Тяжелые побочные эффекты – аутоиммунный тиреоидит, сахарный диабет, фиброзирующий альвеолит – встречаются значительно реже и существенно не влияют на выбор терапии. Наличие

побочных эффектов интерферонов снижает качество жизни пациентов и может послужить причиной снижения доз препаратов. Это негативно сказывается на эффективности лечения. В некоторых случаях интерферон-индуцированные побочные эффекты не поддаются коррекции и требуют отмены терапии [3].

Схемы, содержащие ИФН и рибавирин, в процессе лечения, могут привести к нежелательным явлениям (НЯ), что в свою очередь может потребовать модификации ПВТ, плоть до полной отмены [4]. Чаще всего причинами для снижения дозы препаратов могут быть депрессии, цитопении, нарушения функции щитовидной железы [6]. Особую роль среди этих НЯ занимает ЛП и НП, обусловленные миелосупрессивным эффектом ПЕГИФН-α+РБВ [7]. Именно гематологические НЯ ухудшают качество жизни пациентов, могут быть причиной развития инфекционных осложнений. В свою очередь, любая коррекция ПВТ может, сопровождаться снижением частоты достижения УВО [8]. Частота возникновения НП (<750х10^9/л) на фоне терапии ПЕГ-ИФН-α+РБВ по разным данным составляет 18-21%, что является поводом для коррекции доз ПЕГ-ИФН-а+РБВ согласно инструкциям к препаратам. Отмена препарата с возможным возобновлением — при достижении НП <500 /$мм^3$. В ряде работ, в качестве альтернативы применялся фактор роста — гранулоцитарный колониестимулирующий фактор (ГКСФ) [9]. Данные препараты хорошо зарекомендовали себя в химиотерапии онкологических и гематологических заболеваний. Однако стоить отметит, что проспективных исследований, достоверно демонстрирующих снижение риска инфекционных осложнений и повышение частоты УВО при применении ГКСФ, нет. Поэтому решение о применении данных препаратов находится в компетенции врача [11]. По мнению ряда авторов, развитие ЛП и НП является фактором риска развития инфекционных осложнений при проведении ПВТ [10]. С другой стороны, приводятся данные об отсутствии корреляции между ЛП и НП и частотой инфекционных осложнений [3, 12]. Кроме того, указывается, что ИП 1 поколения по-разному влияют на развитие гематологических НЯ при ПВТ в зависимости от исходных клинико-лабораторных данных [12]. Профиль НЯ во время ПВТ был сопоставим с таковыми в доступных литературных источниках, за исключением развития редкого ИФН индуцированного НЯ — криптогенной самоорганизующейся пневмонии [10, 11]. Были получены данные за наличие инфекционных осложнений у 5 пациентов, но развитие 2-х НЯ у 1 пациента. Кроме того, стоит отметить, что развитие инфекционных осложнений на фоне тройной ПВТ наблюдалось в основном у пациентов с ЦП. При оценке динамики содержания лейкоцитов и нейтрофилов у больных ХГС на фоне ПВТ абсолютные значения лейкоцитов и нейтрофилов статистически значимо снижались после 4 недель терапии независимо от ИП ($p<0,05$) [4].

Средний объем тромбоцитов (mean platelet volume, MPV) параметр отражающий размер и зрелость тромбоцитов. Размер тромбоцитов связан с

их функцией и активацией. Большие тромбоциты более активны и тромбогенны. В них содержится больше гранул, они быстрее агрегируют с коллагеном, производят большие уровни тромбоксана А2 и выделяют больше рецепторов гликопротеина Ib и IIb/IIIa, чем мелкие [6]. Средний объем тромбоцитов (MPV) является показателем функции тромбоцитов и их активации. Крупные тромбоциты более активны, чем маленькие с точки зрения ферментативных и метаболических аспектов. Исследование Tugrul P. показало, что MPV увеличивается с фиброзом при хроническом гепатите С [9]. При HCV не редко наблюдаются внепеченочные изменения. Одной из пострадавших систем является кроветворная система. Важным действием вируса на кроветворную систему является снижение количества тромбоцитов (PLT). У анти-HCV положительных больных обычно, наблюдается легкая или умеренная тромбоцитопения. В своем исследовании Takeaki N. и др. говорят, что хроническая инфекция вируса гепатита С может привести к значительной аутоиммунной реакции на тромбоциты, что приводит к тромбоцитопении [7]. A.J. de Almeida и др. сообщают что HCV, по крайней мере, частично приводит к тромбоцитопении. Наше исследование подтверждает вышесказанное. Сравнив показатели между HCV положительной и контрольной группами, мы получили статистически значимую разницу с точки зрения тромбоцитопении. F. Demircan и др. в своих исследованиях обнаружили, что средний объем тромбоцитов (MPV) у больных с хронической инфекцией HCV был значительно выше. В своем исследовании мы также получили статистически значимую разницу при сравнении результатов между группами. [5].

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СОВРЕМЕННЫЕ ПОДХОДЫ К РЕШЕНИЮ ПРОБЛЕМЫ ПРОБЛЕМНЫХ КРЕДИТОВ В КОММЕРЧЕСКИХ БАНКАХ

Аннотация. *В статье дается определение проблемным кредитам раскрывается их роль в макроэкономическом регулировании и в развитии экономики в целом; рассматривается механизм регулирования, методы их решения в современных условиях.*

Ключевые слова*: "проблемный" кредит, возврат кредита, кредитный портфель, финансовое консультирование, юридические меры.*

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MODERN APPROACHES TO RESOLVING PROBLEM LOANS IN COMMERCIAL BANKS

Abstract. *The article defines problem loans, reveals their role in macroeconomic regulation and in the development of the economy as a whole; examines the mechanism of regulation, methods of their solution in modern conditions.*

Key words: *"problem" loan, loan repayment, loan portfolio, financial consulting, legal measures.*

Введение

Согласно статистическим прогнозам, мировой ВВП в 2024 году вырастет лишь на 2,6%, а в 2024–2025 годах показатель немного увеличится и составит в среднем 2,7%. Эти темпы заметно уступают среднему уровню в 3,1%, зафиксированному в десятилетие до пандемии COVID-19[35]. Выше показанных цифр кредит тоже играет наибольше значение.

Прежде всего разберёмся, что подразумевается под понятием «кредит». Это форма финансовых отношений между двумя сторонами, при которой одна из них — кредитор — предоставляет денежные средства под

[35] https://www.vsemirnyjbank.org/ru/news/press-release/2024/06/11/global-economic-prospects-june-2024-press-release.

определённый процент, а другая — заёмщик — обязуется вернуть их в установленный срок. В рамках кредитного договора кредитор, которым может выступать банк либо иная финансовая организация, предоставляет заёмщику оговорённую сумму на определённых условиях. В свою очередь, заёмщик принимает обязательство вернуть полученные средства в полном объёме и выплатить предусмотренные договором проценты[36].

Кредитный договор заключается исключительно в письменной форме, при этом один его экземпляр передаётся заёмщику. Кредитование занимает важное место в экономической системе, обеспечивая предприятия необходимыми финансовыми ресурсами для ведения хозяйственной деятельности. Оно позволяет организациям оперативно получать средства, нужные для поддержания бесперебойной работы. Однако наряду с обычными займами существуют и так называемые проблемные кредиты, а высокий удельный вес таких займов в кредитном портфеле представляет серьёзную угрозу для устойчивости экономики.

Мы уже рассмотрели, что такое кредит и какие преимущества он приносит, теперь перейдём к его обратной стороне — недостаткам.

В современной экономической литературе отсутствует единый подход к определению термина «проблемные кредиты» в контексте деятельности коммерческих банков. В обобщённом виде их можно охарактеризовать как обязательства юридических лиц, по которым выявлены признаки обесценивания или зафиксированы факторы, способные негативно повлиять на своевременное и полное исполнение долговых обязательств. По сути, это задолженность по кредитам, часть которой учтена на счетах просроченных ссуд[37].

Проблемными называют такие кредиты, по которым заёмщик сталкивается с затруднениями при их погашении. Это может выражаться в несвоевременной уплате взносов, наличии просроченной задолженности по основной сумме или процентам. В ряде случаев подобные трудности приводят к необходимости реструктуризации займа, реализации предмета залога или даже к признанию заёмщика банкротом.

Управление проблемными кредитами возможно как на микро-, так и на макроуровне. Микроуровень предполагает создание специализированных подразделений, занимающихся урегулированием проблемных активов — как внутри коммерческого банка, так и в рамках самостоятельных организаций. Во многих странах именно на этом уровне сосредоточена основная практика работы с портфелем таких займов. Макроуровень же связан с государственным вмешательством: государство формирует специальные агентства, которые выкупают и администрируют портфели проблемных кредитов, действуя в тесной связке с Центральным банком.

Основная часть

[36] https://advice.uz/ru/document/

[37] Боннер Е. А. Банковское кредитование / Е.А. Боннер. - М.: Городец, 2017. – 160 с.

Под проблемным кредитом понимают заём, по которому клиент не исполняет условия заключённого кредитного договора. Процесс кредитования изначально направлен на получение банком или иной финансовой организацией прибыли.

Кредит относят к категории проблемных при систематическом нарушении графика выплат, падении ликвидности залогового имущества или возникновении обстоятельств, способных поставить под сомнение выполнение обязательств перед кредитором. Такие ситуации, как правило, формируются постепенно — на протяжении определённого периода времени, сопровождаясь предупредительными сигналами. Наиболее частой причиной просрочек становится задержка выплаты заработной платы. Несмотря на это, финансовые учреждения обычно не рассматривают её как уважительное основание, хотя некоторые банки идут навстречу заёмщикам, продлевая сроки погашения долга и, тем самым, увеличивая собственный доход.

Как и у любой проблемы, у просроченной задолженности есть конкретные причины. К основным факторам, способствующим её возникновению, относятся:

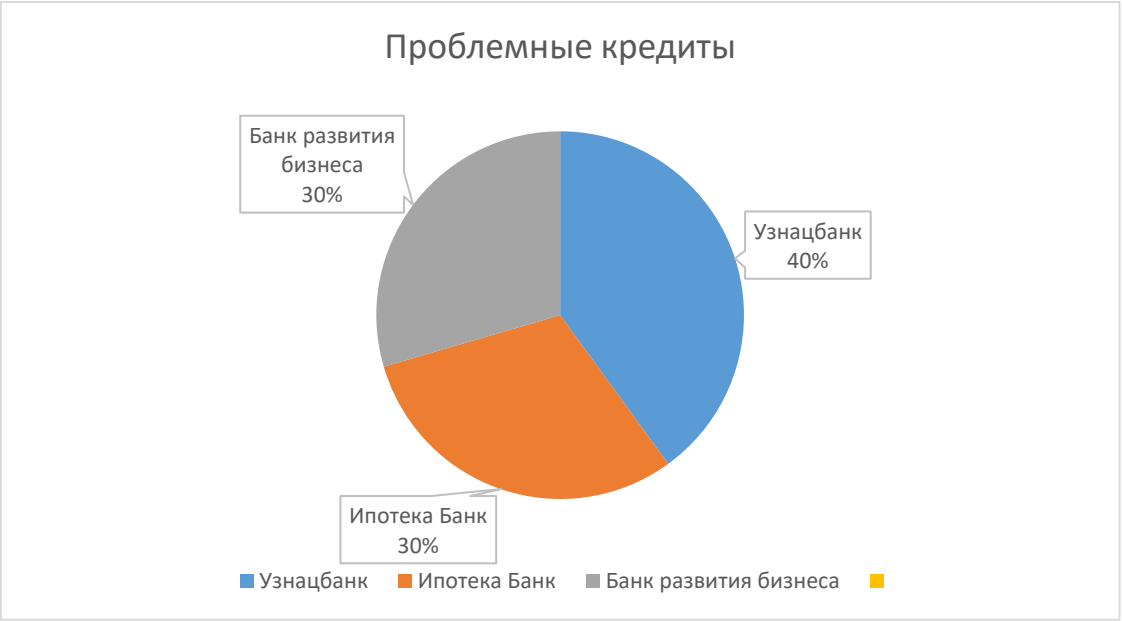
1. Финансовые трудности заёмщика — потеря источника дохода, сокращение заработка или непредвиденные расходы, затрудняющие выплату долга.
2. Неблагоприятные изменения на рынке — рост ставок по кредитам, инфляционные процессы или иные макроэкономические колебания, снижающие платёжеспособность клиентов.
3. Плохая кредитная история — низкий рейтинг заёмщика, повышающий риск невозврата и усложняющий обслуживание долга.
4. Неэффективное управление финансами — ошибки в распределении средств, отсутствие планирования бюджета или недостаток финансовой грамотности.

Для банков и иных финансовых институтов проблемные кредиты представляют серьёзный риск убытков, требуя повышенного внимания к вопросам реструктуризации и управления задолженностью, что в целом создаёт угрозу для экономики.

По состоянию на май 2024 года в Узбекистане наблюдается рост доли таких займов как в коммерческом, так и в государственном секторе. В госбанках проблемные кредиты превысили 5% от общего портфеля, а в коммерческих — приблизились к этой отметке.

Совокупный объём кредитного портфеля коммерческих банков составил 483,6 млрд сумов, из которых 23,3 млрд сумов (примерно 4,82%) приходится на проблемные кредиты. В банках с участием государства ситуация схожая: из 339,2 млрд сумов выданных займов 17,8 млрд сумов (около 5,26%) составляют просроченные.[38]

[38] https://podrobno.uz/cat/economic/v-uzbekistane-snova-nachali-rasti-problemnye-kredity-/



Риунок-1. Банки с наибольшим объемом проблемных кредитов по состоянию мая 2024 г. [39]

Среди крупнейших держателей проблемных кредитов лидирует «Узнацбанк», чей общий кредитный портфель достигает 100,4 млрд сумов, из которых 4,2 млрд сумов (4,20%) приходится на проблемные займы. У «Ипотека Банка» объём выданных кредитов составляет 36,6 млрд сумов, при этом проблемные ссуды занимают 3,2 млрд сумов, что эквивалентно 8,85%. Наибольший удельный вес просроченной задолженности демонстрирует «Банк развития бизнеса» — 15,02%, или 3,1 млрд сумов из 20,9 млрд сумов общего портфеля.

Анализ этих данных показывает, что доля проблемных займов остаётся значительной, что служит серьёзным основанием для поиска эффективных мер по их снижению. Для банков последствия подобной ситуации особенно ощутимы. Во-первых, падает ожидаемая прибыль от кредитных операций, из-за чего приходится использовать средства резервов для выполнения обязательств перед вкладчиками. Во-вторых, возврат выданных средств требует дополнительных затрат: оплаты работы специалистов по взысканию задолженности, судебных издержек, расходов на изъятие и реализацию имущества заёмщиков. Все эти процессы занимают значительное время и требуют ресурсов.

Управление проблемными кредитами — один из ключевых элементов деятельности банков. От правильного выбора методов работы с такими займами зависит не только возврат отдельных просроченных сумм, но и финансовая устойчивость и деловая репутация кредитной организации.

К числу наиболее распространённых способов урегулирования проблемных кредитов можно отнести:

[39] Составлено автором по данным сайта “podrobno.uz”

1. Переговоры с клиентом — изменение условий договора для повышения платёжеспособности заёмщика, например, снижение ставки или продление срока.

2. Разработка гибких программ — временные каникулы или отсрочки платежей для клиентов, оказавшихся в сложной финансовой ситуации.

3. Продажа предмета залога — реализация имущества, обеспечивающего кредит, с целью погашения задолженности.

4. Передача долгов коллекторским компаниям — продажа или уступка прав требования специализированным организациям.

5. Судебные процедуры — обращение в суд при невозможности урегулирования вопроса мирным путём.

6. Финансовое консультирование — помощь клиентам в планировании бюджета и выборе решений, позволяющих избежать дальнейших финансовых проблем.

Каждая из перечисленных стратегий имеет свои преимущества и ограничения. Выбор конкретного метода определяется ситуацией и целями как кредитора, так и заёмщика. Эффективная работа с проблемными кредитами требует комплексного подхода, начиная с анализа кредитоспособности клиента и заканчивая сопровождением займа до его полного погашения.

Заключение

В завершение следует подчеркнуть, что ключевым элементом профилактики возникновения проблемных кредитов является тщательная оценка кредитоспособности потенциального заёмщика с учётом максимально возможного спектра рисков. После предоставления займа необходимо организовать регулярный мониторинг платёжной дисциплины клиента, а также проверку кредитов на наличие признаков ухудшения их качества. К таким признакам можно отнести частые изменения условий договора, повторное возобновление кредитных линий, снижение финансовой устойчивости заёмщика, сокращение объёмов продаж, недостаток денежных потоков от основной деятельности для своевременных выплат и ряд других факторов.

Особое значение в деятельности подразделений банков, отвечающих за работу с проблемной задолженностью, имеет правильный выбор оптимального метода возврата долга из множества возможных. Практика показывает, что не всегда наилучшие результаты приносят наиболее распространённые способы, такие как реструктуризация, рефинансирование или передача проблемных кредитов в коллекторские агентства. В случаях, когда эти меры оказываются неэффективными, кредитная организация вынуждена прибегать к комплексу принудительных процедур, включая взыскание задолженности через судебные органы.

В итоге можно отметить, что улучшить ситуацию с проблемными кредитами реально лишь при условии взвешенного подбора методов работы

с должниками и формирования сбалансированного кредитного портфеля, учитывающего все возможные риски.

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ИСПОЛЬЗОВАНИЕ ИГРОВЫХ МЕТОДОВ В ОБУЧЕНИИ СТУДЕНТОВ ОСНОВАМ ПРОГРАММИРОВАНИЯ

Аннотация: *Использование игровых методов в обучении студентов основам программирования позволяет сделать процесс обучения более интересным, интерактивным и эффективным. С помощью игр сложные понятия доносятся простым и понятным способом, а студенты развивают творческое мышление и навыки решения задач, одновременно закрепляя практические навыки. В данной статье мы рассмотрим эффективные игровые методы развития основ программирования у студентов, проанализируем их преимущества и то, как их можно успешно интегрировать в образовательный процесс.*

Ключевые слова: *Программирование, алгоритм, мышление, игра, логика, креативность, интерактивный, метод, отладка, парное программирование, команда, платформа.*

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USING GAMING METHODS IN TEACHING STUDENTS THE BASICS OF PROGRAMMING

Annotation: *The use of game methods and the basis of student training allows programming to make the training process more interesting, interactive and effective. S pomoshchyu igr slojnye ponyatiya donosyatsya prostim i ponyatnym sposobom, a studenty razvivayut tvorcheskoe mishlenie i navyki reshenia zadach, odnovremenno zakreplyaya prakticheskie navyki. In this state, I review the effective game methods of the development of basic programming and students, proanalyziruem ix preimushchestva i to, kak ix mojno espeschno integrarovat and educational process*.

Key words: *Programming, algorithm, thinking, game, logic, creativity, interactive, method, pattern, parnoe programming, command, platform.*

Введение.

Сегодня стремительное развитие информационных технологий делает изучение программирования необходимым навыком не только для IT-специалистов, но и для представителей всех отраслей. В процессе обучения программированию важно развивать у студентов алгоритмическое мышление, анализ проблемных ситуаций, логическое мышление и творческие способности. С этой точки зрения использование игровых методов признано инновационным подходом, повышающим эффективность образовательного процесса[1]. Организация занятий с использованием игровых методов повышает интерес студентов к уроку, стимулирует их активное участие и облегчает усвоение сложных понятий, связанных с программированием[2]. В отличие от традиционных методов обучения, игровые подходы активизируют студентов, развивают их навыки творческого мышления и способствуют закреплению полученных знаний. Внедрение игровых элементов в обучение основам программирования позволяет осваивать сложные понятия более доступным и интерактивным способом. Игры также стимулируют у учащихся соревновательность и сотрудничество, что способствует развитию навыков решения проблем. Таким образом, игровые методы не только повышают качество обучения, но и повышают интерес к нему.

Объект исследования и использованные методы.

Основная часть.

Естественно, что студенты сталкиваются с различными проблемами при изучении программирования. Многие студенты испытывают трудности с пониманием концепций программирования на теоретическом уровне, поскольку эта область часто богата абстрактными и сложными понятиями. Кроме того, знание синтаксиса и логической структуры языков программирования может поначалу сбивать студентов с толку. Кроме того, для многих студентов серьезной проблемой является отсутствие практических навыков. Ограниченные возможности применять

теоретические знания на практике и отсутствие увлекательного и интерактивного процесса обучения могут снизить их интерес к программированию[3]. Поэтому, в дополнение к традиционным методам обучения, использование игровых методов эффективно помогает привлечь внимание студентов и сделать сложные темы более легкими для понимания. Игровой метод - это педагогический метод, направленный на повышение мотивации студентов путем внедрения игровых элементов (баллов, уровней, рейтингов, наград, соревнований) в процесс обучения. Теоретические основы игрового подхода базируются на когнитивной психологии и концепциях активного обучения (Пиаже, Выготский, Брунер). По их мнению, игровой процесс является естественной формой обучения, которая при активном участии человека приводит к более глубокому усвоению знаний. Игровые методы в образовании проявляются в двух основных формах: геймификация – применение игровых механик к процессу обучения (начисление очков, прохождение уровней, система рейтингов) и игровое обучение – сама игра служит основой процесса обучения[4].

Полученные результаты и их анализ.

Игровые методы – это способ эффективного развития знаний и навыков посредством использования игровых элементов и механизмов в процессе обучения. При обучении студентов основам программирования игровые методы не только повышают их интерес, но и помогают им осваивать сложные концепции более простым и интерактивным способом. Например, такие элементы, как набор очков, прохождение уровней или соревнование со временем в процессе написания кода, повышают мотивацию студентов. Одно из главных преимуществ этого метода заключается в том, что он делает процесс обучения более интересным и увлекательным. Студенты не боятся своих ошибок, готовы экспериментировать и выполнять множество практических упражнений по программированию. В то же время, с помощью игровых методов преподаватель может отслеживать достижения студентов в режиме реального времени, определять, в каких областях они сильны, а в каких слабы. В результате повышается качество образования, и студенты достигают прочного освоения основ программирования.

В целом, игровые методы – это очень удобный и современный подход к повышению активности студентов, закреплению знаний и повышению эффективности обучения. Использование этого метода на уроках принесет большую пользу не только преподавателям, но и студентам.

Практические игры и упражнения по кодированию.

Практические игры и упражнения по программированию — один из самых эффективных способов укрепления навыков программирования у студентов. Игровые упражнения, закрепляющие теоретические знания на практике, создают интересную и мотивирующую среду, которая помогает привлечь внимание студентов и углубить их знания.

Например, игры-отладки обучают студентов процессу поиска и исправления ошибок. Этот процесс способствует улучшению кода и развитию логического мышления. Кроме того, в таких играх, как «код-гольф», студенты пытаются решить задачу, написав как можно меньше кода, что повышает эффективность кода и навыки оптимизации.[5] Кроме того, эффективна организация командных игр с использованием метода «парного программирования». Работая в группах, студенты учатся друг у друга, развивают коммуникативные навыки и совместно решают сложные задачи. Таким образом, с помощью практических игр студенты дополнительно закрепляют основы программирования, делая процесс обучения более интересным и эффективным. Для преподавателей такие методы играют важную роль в повышении вовлеченности студентов и пробуждении их интереса к программированию.

Развитие сотрудничества и общения посредством современных игр

Командные игры имеют большое значение в образовательном процессе как средство эффективного развития сотрудничества и общения между студентами. В процессе изучения основ программирования студентам важно обмениваться идеями и опытом решения сложных задач и понимания новых концепций. Командные игры стимулируют этот процесс, поскольку они объединяют студентов вокруг общей цели и стимулируют общение. Например, соревнования по кодированию или игры «парное программирование» учат студентов работать вместе и решать проблемы сообща. В таких играх каждый участник вынужден высказывать свое мнение, выслушивать мнения других и обмениваться конструктивной обратной связью. В результате среди студентов формируется атмосфера доверия и сотрудничества, что обеспечивает более эффективное освоение навыков программирования. Командные игры также помогают студентам развивать коммуникативные навыки, что значительно поможет им в будущей командной работе и управлении проектами.[6] Их эффективное общение друг с другом не только облегчает процесс обучения, но и подготавливает их к реальной рабочей среде в области программирования. Поэтому повышение уровня сотрудничества и общения между студентами посредством использования игровых методов является одним из важных и эффективных методов обучения основам программирования.

Игровые платформы и программы.

Выбор правильной платформы и программного обеспечения имеет решающее значение для максимальной эффективности геймификации. Сегодня существует множество платформ, насыщенных интерактивными и игровыми элементами, которые позволяют учащимся изучать основы программирования. Например, такие платформы, как CodeCombat и CodinGame, обучают студентов программированию в игровой форме. На этих платформах учащиеся управляют персонажами, используя собственный код, решают различные задачи и повышают свою мотивацию посредством соревнований и достижений. Такая интерактивность помогает лучше понять

и закрепить концепции программирования. Среды визуального программирования, такие как Scratch, также очень удобны для юных учеников. Они учатся программировать с помощью блоков, развивая логическое мышление и алгоритмический подход. Игры и анимации, созданные в Scratch, стимулируют творческие способности учащихся. Другой рекомендуемый инструмент — игровые платформы для викторин, такие как Kahoot! или Quizizz. С помощью этих инструментов учителя могут закреплять теоретические знания в игровой форме, что способствует более эффективному и интересному усвоению знаний учащимися.

Заключение.

Обучение программированию с использованием игровых методов является эффективным способом модернизации образовательного процесса и активизации самостоятельной творческой учебной деятельности студентов. С помощью игровых элементов в образовательный процесс вносятся соревновательность, мотивация и творческая атмосфера. В результате у студентов развиваются логическое и алгоритмическое мышление, аналитический подход, навыки поиска решений в проблемных ситуациях.

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ВНЕЛЁГОЧНЫЙ ТУБЕРКУЛЁЗ: ЭПИДЕМИОЛОГИЯ, ФАКТОРЫ РИСКА И ТЕНДЕНЦИИ РАСПРОСТРАНЕНИЯ

Аннотация: *Внелёгочный туберкулёз (ВЛТБ) остаётся одной из значимых форм туберкулёзной инфекции, оказывающей серьёзное влияние на здоровье населения. В условиях Республики Узбекистан за последние годы отмечается тенденция к увеличению числа случаев внелёгочного туберкулёза, особенно среди женщин и лиц молодого возраста. В статье представлены данные об эпидемиологических особенностях, факторах риска и тенденциях распространения ВЛТБ в Узбекистане за период 2019–2024 гг. Анализ основан на данных Министерства здравоохранения, Национального центра фтизиатрии и международных публикаций. Выявлено, что поражения лимфатических узлов и костно-суставной системы преобладают среди внелёгочных форм. Основными факторами риска являются ВИЧ-инфекция, иммунодефицитные состояния, сахарный диабет и низкий уровень жизни.*

Ключевые слова: *внелёгочный туберкулёз, эпидемиология, факторы риска, Узбекистан, распространение.*

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EXTRAPULMONARY TUBERCULOSIS: EPIDEMIOLOGY, RISK FACTORS, AND INCIDENCE TRENDS

Annotation: *Extrapulmonary tuberculosis (EPTB) remains one of the most significant forms of tuberculosis infection, seriously affecting public health. In Uzbekistan, there has been an increasing trend in EPTB cases over recent years, particularly among women and young adults. This paper presents epidemiological characteristics, risk factors, and distribution trends of EPTB in Uzbekistan during 2019–2024. The analysis is based on data from the Ministry of Health, National Phthisiology Center, and international publications. Lymph node and osteoarticular tuberculosis were found to be predominant forms. The main risk*

factors include HIV infection, immunodeficiency, diabetes mellitus, and low socioeconomic status.

Keywords: *extrapulmonary tuberculosis, epidemiology, risk factors, Uzbekistan, prevalence.*

Введение

Туберкулёз остаётся одной из ведущих инфекционных причин заболеваемости и смертности в мире. По данным Всемирной организации здравоохранения (ВОЗ), ежегодно регистрируется более 10 миллионов новых случаев туберкулёза, из которых около 15–20% приходятся на внелёгочные формы заболевания. Внелёгочный туберкулёз (ВЛТБ) охватывает поражения различных органов и систем: лимфатических узлов, костей и суставов, органов мочеполовой системы, центральной нервной системы, брюшной полости и кожи. Эта форма туберкулёза характеризуется трудностями в диагностике, длительным лечением и высоким риском инвалидизации. В условиях Республики Узбекистан за последние годы наблюдается постепенное увеличение числа случаев ВЛТБ. По данным Министерства здравоохранения, за период 2019–2024 гг. доля внелёгочных форм составила в среднем 18–22% от общего числа случаев туберкулёза.

Цель исследования

Изучить эпидемиологические особенности, факторы риска и тенденции распространения внелёгочного туберкулёза в Республике Узбекистан за период 2019–2024 гг.

Материалы и методы

Исследование проведено на основе анализа статистических данных Министерства здравоохранения Республики Узбекистан, Национального центра фтизиатрии и опубликованных научных источников за 2015–2024 гг. Использованы методы описательной эпидемиологии, ретроспективного анализа и сравнительного изучения динамики заболеваемости.

Результаты исследования

В период 2019–2024 гг. в Республике Узбекистан зарегистрировано постепенное увеличение доли внелёгочных форм туберкулёза: 2019 г. — 16,8%, 2020 г. — 17,4%, 2021 г. — 18,9%, 2022 г. — 20,1%, 2023 г. — 21,5%, 2024 г. — 22,3%. Наиболее частыми формами ВЛТБ были: туберкулёз лимфатических узлов (37%), костно-суставной туберкулёз (22%), туберкулёз мочеполовой системы (15%), менингит туберкулёзной этиологии (8%).

Обсуждение

Полученные результаты свидетельствуют о росте доли внелёгочного туберкулёза в структуре общей заболеваемости. Основными факторами риска в Узбекистане остаются ВИЧ-инфекция, сахарный диабет, хроническое недоедание и плохие социально-бытовые условия. Наблюдается корреляция между увеличением случаев ВЛТБ и ростом устойчивости микобактерий к противотуберкулёзным препаратам.

Заключение

1. Доля внелёгочного туберкулёза в Республике Узбекистан имеет тенденцию к росту.

2. Наиболее частыми формами являются поражения лимфатических узлов и костно-суставной системы.

3. Необходимы профилактические меры и совершенствование ранней диагностики.

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КОМПЕНСАЦИЯ РЕАКТИВНОЙ МОЩНОСТИ В СИСТЕМЕ ЭЛЕКТРОСНАБЖЕНИЯ С ГИДРОАККУМУЛИРУЮЩИМ ИСТОЧНИКОМ РЕЗЕРВА

Аннотация: *В эпоху цифровых технологий и искусственного интеллекта проблема обеспечения непрерывной, качественной и экологически чистой электроэнергии стала чрезвычайно актуальной. В этом отношении требуется уделять особое внимание источникам питания при внедрении гидроаккумулирующих резервных источников энергии для выработки электроэнергии, а также при контроле показателей качества выработанной электроэнергии. С целью эффективного решения этой проблемы энергоблочные системы с внедренными гидроаккумулирующими источниками энергии вырабатывают электроэнергию с учетом влияния выходного напряжения на баланс мощности по количеству и величинам электроэнергии. Устройство, работая в двигательном режиме, обеспечивает возможность повышения показателей качества путем контроля несимметрии выходных токов за счет симметрирования выходных напряжений с помощью конденсаторных батарей при переходе в генераторный режим, и потери напряжения для электродвигателя. В обоих режимах работы устройства, в зависимости от движения воды, турбины приводятся в действие, и с помощью электрогенераторов либо вырабатывается, либо потребляется электроэнергия. В статье освещены анализы основных требований и методов к показателям качества электроэнергии, а также решения проблем балансов активной, реактивной, полной мощности электроэнергии, потребляемой из сети и отдаваемой в сеть при работе устройства (как в двигательном, так и в генераторном режимах).*

Ключевые слова: *Гидроаккумулирующий тип энергии, двигательный и генераторный режимы, перемещение водных ресурсов в нижний бассейн, высокогорные водохранилища, источник активной и реактивной мощности, с целью эффективного решения, потенциальная энергия воды.*

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REACTIVE POWER COMPENSATION IN A POWER SUPPLY SYSTEM WITH A PUMPED-ACCUMULATOR RESERVE SOURCE

Abstract: *In the era of digital technology and artificial intelligence, the problem of providing continuous, high-quality, and environmentally clean electricity has become extremely urgent. In this regard, the introduction of hydro-accumulatory reserve energy sources for electricity generation, as well as monitoring the quality parameters of the generated electricity, requires special attention to power sources. To solve this problem effectively, power unit systems with introduced hydro-accumulatory energy sources generate electricity, taking into account the impact of output voltage on the power balance in terms of the quantity and magnitude of electricity. When the device operates in motor mode, it enables the improvement of quality indicators by controlling the asymmetry of output currents through the symmetrization of output voltages using capacitor banks when switching to generator mode, and the voltage drop for the electric motor. In both operating modes of the device, depending on the movement of water, the turbines are activated, and with the help of electric generators, electricity is either generated or consumed. The article outlines the analyses of the main requirements and methods for the quality indicators of electricity, as well as solutions to problems related to the active, reactive, and total power balances of electricity consumed from the grid and supplied to the grid when the device operates (in both motor and generator modes).*

Keywords: *Hydroaccumulating energy type, motor and generator modes, transfer of water resources to the lower basin, high-altitude reservoirs, source of active and reactive power, for the purpose of effective solution, potential energy of water.*

Введение:

Для обеспечения бесперебойного и качественного электроснабжения потребителей по всему миру использование резервных гидроэлектростанций может стать эффективным решением для эффективного использования имеющихся водных ресурсов стран Центральной Азии [1]. Сегодня гидроэлектростанции играют важную роль в производстве и поставке электроэнергии. Эти системы создают резерв энергии, накапливая воду под высоким давлением, и позволяют передавать этот резерв в сеть при необходимости. Гидроэлектростанции служат эффективным инструментом для компенсации резких перепадов электроснабжения, быстрого

реагирования на изменения спроса на энергию и повышения эффективности систем[2]. В этом разделе мы подробно рассмотрим принципы работы, преимущества и недостатки, возможности и ограничения резервных гидроэлектростанций. Принцип работы резервных гидроэлектростанций прост, но очень эффективен: электроэнергия вырабатывается путем спуска воды из высокогорных водохранилищ для получения энергии. Потенциальная энергия воды преобразуется в кинетическую, которая, в свою очередь, вращает турбины гидроэлектростанции и вырабатывает электроэнергию[3]. В гидроэлектростанциях сбор и производство энергии осуществляется в несколько этапов: Накопление энергии: вода собирается в верхнем бассейне системы. Этот процесс обычно осуществляется в периоды низкого потребления энергии. Таким образом, избыток энергии запасается в системе и в дальнейшем, особенно при высоком спросе на энергию, вырабатывается электроэнергия путем направления собранного водного ресурса на лопатки турбины электроустановки, работающей в режиме генератора. Проанализируем графические изображения взаимодействия установки в обоих режимах по фазам и по векторам, а также расчетные формулы и векторы и табличное распределение потребляемой реактивной и активной мощности, влияющей на сеть, используя рисунки 2 и 3. Производство энергии: в процессе спуска воды из верхнего бассейна в нижний потенциальная энергия воды преобразуется в кинетическую, что приводит к выработке электроэнергии на гидроэлектростанциях[4]. Потеря напряжения на электродвигателе при работе установки в двигательном режиме при переходе в режим генератора позволяет повысить качественные показатели за счет управления симметричными величинами выходных токов путем симметризации выходных напряжений с помощью батарей конденсаторов[5]. В обоих режимах работы устройства турбины приводятся в движение движением воды, а электроэнергия вырабатывается или потребляется с помощью электрогенераторов.

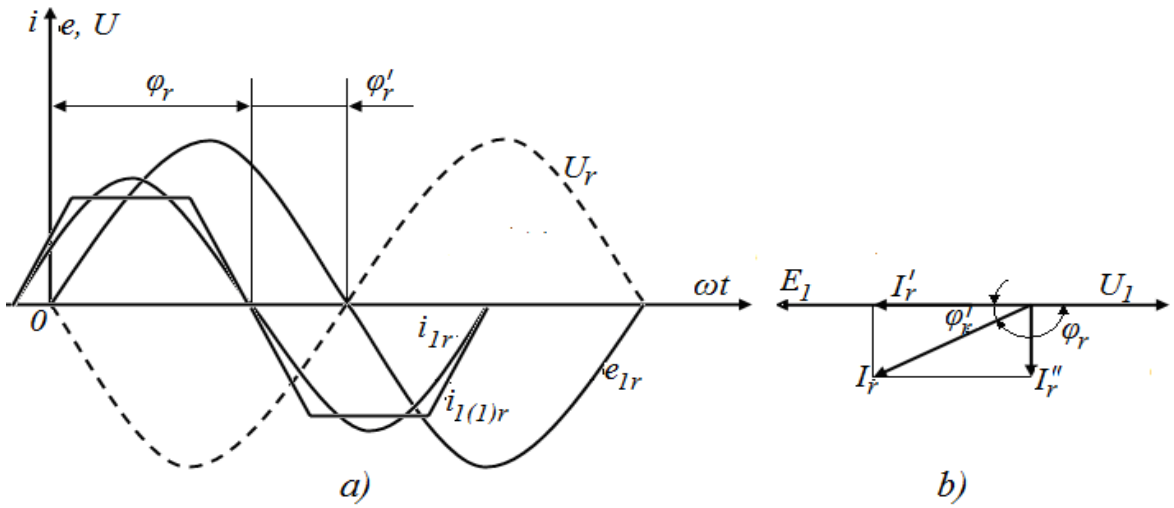


Рисунок 1
Электростанция на основе гидроаккумулирующей технологии

Основным преимуществом систем ГАЭС является высокая эффективность в производстве энергии. Эти системы зависят от ресурсов, расположенных в нижнем и верхнем бассейнах, что позволяет воде подниматься на высокое давление и высоту. В то же время, эти системы являются хорошим средством для контроля спроса на энергию[6]. Быстрое обеспечение энергией: гидроаккумулирующие системы могут быстро начать производство энергии. Эти системы быстро вступают в работу в периоды резкого роста энергопотребления, например, в рабочее время или в холодную погоду, и помогают балансировать сеть.

Метод:

При использовании систем гидроаккумулирующего электроснабжения для контроля и управления показателями качества вырабатываемой электроэнергии, а также величины и количества потребляемой электроэнергии при работе генератора в двигательном режиме, используются трансформаторы тока. В процессе рекуперации взаимное расположение кривых напряжения и тока будет таким, как показано на рисунке 1, а. В этом случае ток первичной обмотки ЭДС будет под углом.



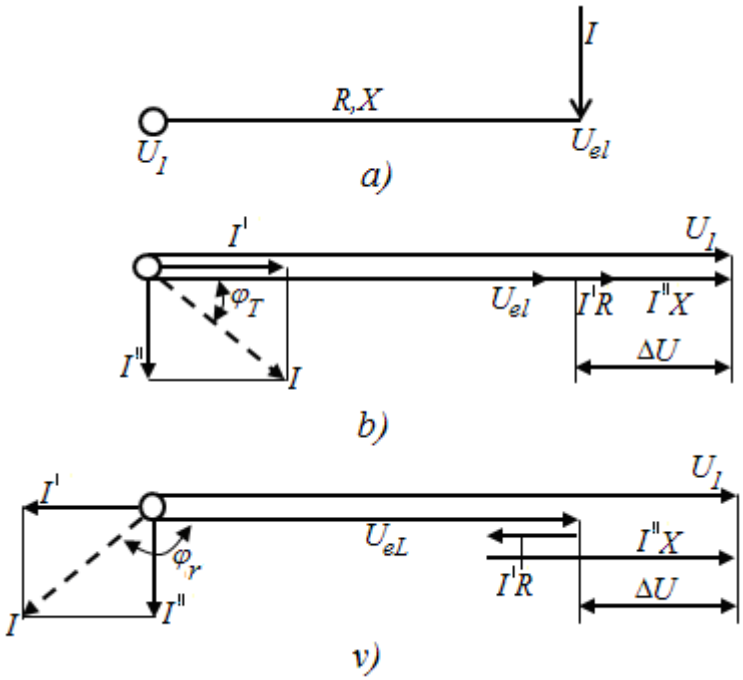


Рисунок 2. Падение напряжения для электродвигателя при работе устройства в двигательном режиме:

a- схема питания;
b- векторная диаграмма для двигательного режима;
c-векторная диаграмма для режима рекуперации

Потери напряжения для двигательного и рекуперативного режимов определяются соответственно по следующим формулам:

$$\left.\begin{aligned}\Delta U_T &= I^{'}R + I^{"}X,\\ \Delta U_r &= -I^{'}R + I^{"}X.\end{aligned}\right\}$$

Как и в двигательном режиме, так и в режиме рекуперации $U_m \approx U_c U_m \approx Uc$ (здесь $U_c U_c$ - напряжение на потребителе (приемнике тока двигателя)), то есть $\Delta U \Delta U$ и во время рекуперации напряжение на электродвигателе не возрастает до опасного уровня[7]. Однако, мы видим, что потеря напряжения до электродвигателя невелика по сравнению с потреблением электроэнергии в часы пик, несмотря на значительное снижение коэффициента мощности. В этой системе при работе генератора в двигательном режиме в пусковых и рабочих режимах достигается обеспечение источника реактивной мощности для систем компенсации возрастающего потребления реактивной мощности путем установки конденсаторов. Они работают с меньшими потерями по сравнению с другими источниками энергии, что обеспечивает повышение эффективности гидроэлектростанций обычно до 70-80%. Принцип компенсации реактивной мощности[8]. При рассмотрении индуктивных и емкостных схем было показано, что мгновенная емкостная мощность в цепи является отрицательной относительно мгновенной индуктивной мощности в цепи. Это условие имеет большое значение на практике.

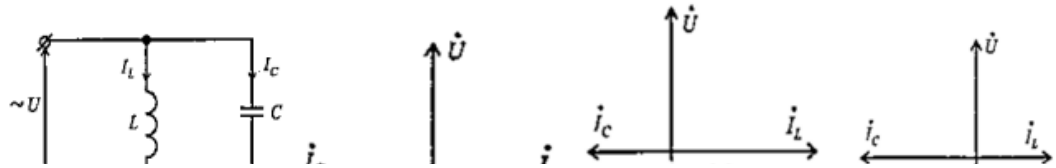


Рисунок 3. На схеме (а) ток в неразветвленной части цепи равен геометрической сумме токов L и C, включенных по схеме параллельных ветвей.

Схема (a) – векторные диаграммы токов и напряжений (b, c, d) – цепи с емкостной и индуктивной ветвями. Между источником питания и индуктивностью передается нескомпенсированная часть энергии. Реактивная мощность в неразветвленной части схемы на схеме Рисунок 1, а формируется следующим образом:

$$Q=U\cdot I=U(I_L-I_C)=U(U\cdot b_L-U\cdot b_C)=U^2(b_L-b_C)=\frac{U^2}{x_L}-\frac{U^2}{x_C}=Q_L-Q_C$$

Из выражения получены Q-реактивная мощность и Q_L-компенсированная часть реактивной мощности. Мощность Q_C можно назвать компенсирующей мощностью или мощностью компенсирующих устройств. В целом, уменьшение реактивной мощности между потребителем и источником питания, то есть уменьшение реактивного тока в генераторах и сетях, называется компенсацией реактивной мощности[8]. Зависимость значения реактивной мощности от коэффициента мощности (в процентах от активной мощности).

Таблица 1.

Cosφ	1	0,99	0,97	0,95	0,94	0,92	0,9	0,87	0,85	0,8	0,7	0,5	0,316
tgφ	0	0,14	0,25	0,33	0,36	0,43	0,484	0,55	0,6	0,75	1,02	1,73	3,016
Q=Ptg φ (%)	0	14	25	33	36	43	48,4	55	60	75	102	173	301,6

Конечно, вот точный перевод на русский язык: Однако этот коэффициент не может в достаточной степени раскрыть его потребление, потому что при значениях cosφ, близких к единице, потребление реактивной мощности может быть значительным. Наиболее удобным показательным фактором является коэффициент реактивной мощности, который характеризует потребителя реактивной мощности[9].

$$\tan\varphi=\frac{Q}{P}$$

Конечно, вот точный перевод на русский язык: по величинам cosφ и tgφ можно судить о том, насколько эффективно используется потребляемая энергия для выполнения работы. В зависимости от того, насколько широко применяется единица коэффициента мощности в устройствах, решением технико-экономических проблем является компенсация реактивной мощности.

Заключение:

В гидроаккумулирующих электроэнергетических системах было установлено, что устройства обладают возможностью плавной регулировки количества реактивной мощности, обеспечивая выработку реактивной мощности и линейность выходного напряжения, а также контролируя потребление реактивной мощности, которое устройство потребляет из сети в двигательном режиме. Для источников статической реактивной мощности второй группы, основанных на компенсаторах со статическими характеристиками мощности, в основном батареях конденсаторов, реакторов (не только ограничителей тока), преобразовательных устройствах (выпрямители, инверторы), применение тиристоров с искусственной коммутацией или их комбинаций при использовании гидроаккумулирующих источников энергии позволяет вырабатывать и потреблять количество энергии без потерь и стабильно.

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СОВРЕМЕННЫЙ ВИДОВОЙ СОСТАВ И ЭКОЛОГИЧЕСКИЕ ОСОБЕННОСТИ ПТИЦ, ОБИТАЮЩИХ ВОКРУГ МНОГОЭТАЖНЫХ ЖИЛЫХ ДОМОВ ГОРОДА НУКУС

Аннотация: *Исследование посвящено современному видовому составу и экологическим особенностям птиц, обитающих вокруг многоэтажных жилых домов города Нукуса. В 2023–2024 гг. проведены наблюдения в микрорайонах 21, 22, 23, 26, 27 и комплексе Nukus City. Выявлено 35 видов птиц из 5 отрядов и 16 семейств, среди которых преобладают синантропные виды —* Columba livia*,* Streptopelia decaocto*,* Acridotheres tristis*. Отмечено использование архитектурных элементов зданий для гнездования и сокращение биоразнообразия при росте антропотолерантных видов.*

Ключевые слова: *орнитофауна, урбанизация, Нукус, синантропные виды.*

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CURRENT SPECIES COMPOSITION AND ECOLOGICAL CHARACTERISTICS OF BIRDS INHABITING THE AREAS AROUND MULTI-STOREY RESIDENTIAL BUILDINGS IN THE CITY OF NUKUS

Abstract: *The study is devoted to the current species composition and ecological characteristics of birds inhabiting the areas around multi-storey residential buildings in the city of Nukus. In 2023–2024, observations were conducted in residential districts 21, 22, 23, 26, 27, and the Nukus City complex.*

A total of 35 bird species belonging to 5 orders and 16 families were recorded, with synanthropic species such as Columba livia, Streptopelia decaocto, and Acridotheres tristis predominating. The use of architectural elements of buildings for nesting was noted, as well as a decrease in biodiversity accompanied by an increase in anthropotolerant species.

Key words: *ornithofauna, urbanization, Nukus, synanthropic species.*

Введение

В условиях современной урбанизации природные экосистемы интенсивно преобразуются в антропогенные, что вызывает изменения в структуре фаунистических комплексов. Особенно чувствительно на эти процессы реагирует орнитофауна, быстро приспосабливаясь к трансформации местообитаний и микроклимата городской среды. По экологической классификации Т. З. Захидова (1971), многоэтажные жилые дома являются специфическим биотопом для птиц с особыми микроклиматическими и структурными условиями. В условиях преобладания вертикальной застройки и дефицита естественных местообитаний именно здания становятся ключевыми элементами формирования урбанизированных орнитокомплексов. Город Нукус — один из крупнейших центров северо-запада Узбекистана, где активно развивается многоэтажное строительство. Микрорайоны 21, 22, 23, 26, 27 и новый комплекс Nukus City занимают около 30 % территории города, различаясь по степени озеленения и плотности застройки.

Цель исследования — выявить современный видовой состав орнитофауны, обитающей в и вокруг многоэтажных жилых домов Нукуса, определить экологические группы и сезонную приуроченность видов, а также оценить влияние архитектурно-планировочных и антропогенных факторов на их распространение.

Материалы и методы

Полевые исследования проводились в 2023–2024 гг. в центральных микрорайонах города Нукуса (21-й, 22-й, 23-й, 26-й, 27-й и Nukus City). Учёт птиц осуществлялся маршрутным методом в утренние (06:00–09:00) и вечерние (17:00–20:00) часы — в периоды наибольшей активности. Наблюдения велись с использованием биноклей (8×40), данные фиксировались в полевых журналах и фотоматериалах. Для каждой особи определялись вид, численность, экологический статус и поведенческие особенности. Таксономическая идентификация проведена по определителям птиц Средней Азии. Классификация по характеру пребывания включала обозначения: *n* — гнездящиеся, **s** — оседлые, *h* — зимующие, tr — перелётные. Численность видов оценивалась по шкале: *CC* — многочисленные, *C* — обычные, *R* — редкие. Дополнительно учитывались архитектурные особенности зданий (форма крыш, наличие балконов, ниш, вентиляционных проёмов), используемых птицами для гнездования и укрытия.

Результаты и обсуждение

В результате полевых наблюдений было зарегистрировано 35 видов птиц, относящихся к 5 отрядам и 16 семействам, обитающих в пределах и вблизи многоэтажных жилых домов города Нукуса (таблица 1). Наиболее многочисленными оказались синантропные и антропотолерантные виды, полностью приспособленные к условиям городской среды: сизый голубь (*Columba livia*), кольчатая горлица (*Streptopelia decaocto*), малая горлица (*Streptopelia senegalensis*), индийская майна (*Acridotheres tristis*), грач (*Corvus frugilegus*), серая ворона (*Corvus cornix*), домовый (*Passer domesticus*) и полевой воробьи (*Passer montanus*). Современные здания с железобетонными и металлическими крышами создают благоприятные условия для гнездования и отдыха. На крышах, балконах и в вентиляционных нишах часто устраивают гнезда сизые голуби и малые горлицы. На фасадах и под кровлями нередко гнездятся деревенские ласточки (*Hirundo rustica*), а также полевые воробьи (*Passer montanus*).

Таблица 1

Список птиц, встречающихся в многоквартирных домах и вокруг него в городе Нукус

№	Виды птиц	Численность	Характер прибытия
1.	Ястреб-перепелятник *Accipiter nisus*	C	h, tr
2.	Туркестанский тювик *Accipiter badius*	CC	n
3.	Чеглок *Falco subbuteo*	R	n, tr
4.	Обыкновенная пустельга *Falco tinnunculus*	CC	s
5.	Сизый голубь *Columba livia*	CC	s
6.	Кольчатая горлица *Streptopelia decaocto*	CC	s
7.	Обыкновенная горлица *Streptopelia turtur*	R	n, tr
8.	Малая горлица *Streptopelia senegalensis*	CC	s
9.	Чёрный стриж *Apus apus*	CC	n, tr
10.	Удод *Upupa epops*	CC	n, tr
11.	Деревенская ласточка *Hirundo rustica*	CC	n, tr
12.	Белая трясогузка *Motacilla alba*	CC	h, tr
13.	Маскированная трясогузка *Motacilla personata*	CC	n
14.	Обыкновенный скворец *Sturnus vulgaris*	CC	h, tr
15.	Обыкновенная майна *Acridotheres tristis*	CC	s
16.	Сорока *Pica pica*	CC	s
17.	Галка *Corvus monedula*	CC	s
18.	Грач *Corvus frugilegus*	CC	n, h, tr
19.	Чёрная ворона *Corvus corone*	R	s
20.	Серая ворона *Corvus cornix*	CC	h, tr
21.	Свиристель *Bombycilla garrulus*	C	h, tr
22.	Пеночка тенковка *Phylloscopus collybita*	CC	tr
23.	Зеленая пеночка *Phylloscopus trochiloides*	C	tr
24.	Серая мухоловка *Muscicapa striata*	CC	tr
25.	Азиатский черноголовый чекан *Saxicola maurus*	CC	tr
26.	Чёрный чекан *Saxicola caprata*	R	n
27.	Бухарская синица *Parus bocharensis*	CC	s
28.	Домовый воробей *Passer domesticus*	C	s
29.	Индийский воробей *Passer indicus*	CC	n, tr
30.	Полевой воробей *Passer montanus*	CC	s
31.	Зяблик *Fringilla coelebs*	CC	h, tr
32.	Вьюрок *Fringilla montifringilla*	CC	h, tr
33.	Буланый вьюрок *Rhodospiza obsoleta*	CC	n
34.	Обыкновенный дубонос *Coccothraustes coccothraustes*	C	h, tr
35.	Обыкновенная овсянка *Emberiza citronella*	C	h, tr

Примечание: n - (nidulns) гнездящийся, s - (sedens) оседлый, tr - (transvolans) перелётный, h - (hyemalis) зимующий виды. CC - многочисленный, C - обычный, R - редкий.

По численности преобладают многочисленные виды (25), обычные составляют 6, а редкие — 3. Среди редких отмечены ястреб-перепелятник (*Accipiter nisus*), чёрный чекан (*Saxicola caprata*) и чёрная ворона (*Corvus corone*). Результаты проведённого анализа подтверждают, что формирование городской орнитофауны определяется совокупностью архитектурных, климатических и биотических факторов. Многоэтажные жилые комплексы создают специфические условия, имитирующие природные скалистые местообитания, что способствует расселению синантропных и антропотолерантных видов.

Городская среда характеризуется высокой фрагментацией, дефицитом древесно-кустарниковой растительности и повышенным уровнем шумового, светового и химического загрязнения. В этих условиях выживают виды, обладающие широкой экологической амплитудой и высокой адаптационной способностью. Наиболее типичными урбанистическими формами являются *Columba livia*, *Streptopelia decaocto* и *Acridotheres tristis*, которые эффективно используют архитектурные элементы зданий как замену естественных биотопов.

Наличие зелёных насаждений, деревьев и кустарников оказывает положительное влияние на биоразнообразие, увеличивая численность мелких воробьиных (*Passer*, *Parus*, *Fringilla* и др.). Вместе с тем, высокая антропогенная нагрузка и ограниченность кормовой базы препятствуют заселению чувствительных лесных и полевых видов.

Таким образом, орнитофауна районов многоэтажной застройки отражает закономерности урбанистической сукцессии, в ходе которой наблюдается снижение общего биоразнообразия при одновременном увеличении плотности синантропных видов.

Заключение

Многоэтажные жилые дома города Нукуса формируют специфический урбанизированный орнитокомплекс, в котором доминируют антропотолерантные виды, обладающие высокой степенью адаптации к городским условиям. Несмотря на относительно низкое видовое разнообразие, численность птиц остаётся стабильной благодаря их способности использовать архитектурные конструкции зданий в качестве мест гнездования, отдыха и защиты. Для поддержания и увеличения биоразнообразия городской орнитофауны рекомендуется:

- Повышать уровень озеленения придомовых территорий и создавать непрерывные зелёные коридоры.
- Устанавливать искусственные гнездовья на фасадах и крышах зданий.
- Сокращать уровень антропогенного шума и освещённости в местах гнездования.
- Сохранять естественные участки растительности в пределах городской черты.

Реализация этих мероприятий будет способствовать формированию экологически сбалансированной урбоэкосистемы и устойчивому сосуществованию человека и птиц в условиях современного города.

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АНАЛИЗ ПРОБЛЕМ, ВОЗНИКАЮЩИХ ПРИ ПРЕПОДАВАНИИ ПРЕДМЕТОВ ИНФОРМАТИКИ И ИНФОРМАЦИОННЫХ ТЕХНОЛОГИЙ В ВЫСШИХ УЧЕБНЫХ ЗАВЕДЕНИЯХ

Введение. *Информационные технологии (ИТ) стали неотъемлемой частью современного общества, играя важную роль в развитии экономики, медицины, образования и других отраслей. Поэтому качественное преподавание информатики и информационных технологий в высших учебных заведениях является одной из актуальных задач. В настоящее время в образовательном процессе по данной дисциплине существует ряд проблем, препятствующих подготовке специалистов, отвечающих потребностям рынка труда. К ним относятся несоответствие учебных программ стремительным технологическим изменениям, недостаточная практическая подготовка, низкая квалификация преподавателей и слабая техническая база.*

Ключевые слова: *Информатика, информационные технологии, высшее образование, электронные учебники, современные ИТ-лаборатории.*

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ANALYSIS OF PROBLEMS ARISING IN TEACHING COMPUTER SCIENCE AND INFORMATION TECHNOLOGY IN HIGHER EDUCATION INSTITUTIONS

Annotation: *V state analiziruyutsya problemy prepodavaniya informatici i informatsionnyx tekhnologiy v vysshikh uchebnyx zadevaniyax. Osnovnoe vnimanie udelyaetsya takim problemam, kak ustarevshie uchebnye programmy, otsutstvie prakticheskoy podgotovki, dosstatochnaya teknicheskaya baza i dr. V state dany predlozheniya po straneniyu etikh problem, v tom chisle po obnovleniyu obrazovatelnyx programm, velicheniyu prakticheskoy podgotovki, osnashcheniyu sovremennymi IT-laboratorio. And as a result, the mayor will increase the quality of education in the field of informatics, information technology, and training of modern specialists.*

Key words: *Informatics, information technology, higher education, electronic textbooks, modern IT laboratories.*

Введение.

Изучение курса информатики в школе также призвано вооружить учащихся базовыми навыками и умениями, необходимыми для постоянного и осознанного усвоения этих знаний, а также основ других изучаемых в школе предметов. Освоение знаний в области информатики, а также приобретение соответствующих навыков и квалификации призвано оказать существенное влияние на формирование таких качеств личности, как общее умственное развитие учащихся, развитие их мышления и творческих способностей.

В преподавании информатики и информационных технологий в высших учебных заведениях существует ряд проблем. Проанализированы эти проблемы и предложены пути их решения. В связи со стремительным развитием современных технологий необходимо постоянное обновление учебных программ в высших учебных заведениях. К сожалению, во многих вузах программы устарели и не в полной мере соответствуют требованиям современного рынка труда. В результате выпускники не обладают достаточными знаниями в таких областях, как современные языки программирования, искусственный интеллект и кибербезопасность. Несмотря на то, что теоретические знания преподаются, практической подготовке уделяется недостаточно внимания. Поскольку у студентов нет возможности работать над проектами, их навыки программирования, системного управления и анализа развиты слабо. Хотя многие преподаватели осведомлены о современных технологиях, некоторые из них не обладают глубоким пониманием новых языков программирования, искусственного интеллекта и других технологий. Это негативно сказывается на качестве образования. Во многих вузах не хватает современных компьютеров, серверного оборудования и программного обеспечения, что не позволяет студентам работать в реальных условиях во время практического

обучения. В последние годы во всем мире резко возрос спрос на использование электронных и смарт-технологий.

Основная часть.

В результате практически все страны мира, включая Узбекистан, эффективно используют эту новую технологию образования. Интерактивные устройства и технологии их эффективного использования помогают учителям и методистам эффективно организовывать учебный процесс, используя видео- и аудиоматериалы, демонстрацию слайдов, построение различных схем и электронное голосование, а учащиеся в условиях современного образования имеют возможность сосредоточиться на актуальных проблемах и достижениях математики, физики и цифровых технологий, быстро и легко усваивать информацию и получать знания, активно участвуя в дискуссиях и дебатах. Необходимо организовать меры по организации современных IT-лабораторий не только в высших учебных заведениях, но и в школах. В некоторых отдалённых районах наблюдается нехватка современных учебников и современных компьютеров в школах, и следует принять меры по её устранению. Устранение этой нехватки может принести пользу нашему обществу, то есть нынешний XXI век — это эпоха современных технологий. Нравится нам это или нет, вся работа выполняется с числами. Для этого необходимо изучать информатику и информационные технологии. В школьных IT-лабораториях необходимо проводить различные мероприятия для работы детей над элементарными проектами.

В IT-лабораториях, созданных в высших учебных заведениях, необходимо принять меры по созданию различных проектов и изобретений, способных решать актуальные для нашего общества проблемы. В университетах и институтах они, как правило, основаны на теоретических знаниях, что влияет на качество образования. В настоящее время развивающиеся направления, такие как искусственный интеллект и блокчейн, преподаются недостаточно углубленно или не преподаются вообще. Используемые учебники обновляются медленно, но программы меняются быстро. Для преодоления этих проблем необходимо приблизить теоретические знания в образовательном процессе к практике. Кроме того, в процессе обучения существует ряд проблем. Проблему методов обучения можно кратко выразить вопросом «как учить?». Однако следует признать, что для ответа на этот вопрос необходимо обладать достаточной информацией по таким вопросам, как «Зачем учить?», «Чему учить?» и «Кого учить?». Только тогда может быть решен вопрос о выборе методов обучения, в полной мере отвечающих целям и содержанию обучения, а также уровню мыслительной деятельности учащихся.

По мнению учёных, одним из главных недостатков нашей педагогической теории, направляющей практику, является чрезмерное преувеличение главенства знания и образования. Увеличение объёма заучивания знаний в ущерб человеческому, духовному и трудовому

воспитанию стало распространённым явлением в школьной жизни. Любая попытка выйти из этой ситуации считается новаторской. Действительно, пока сохраняется педагогическая система, в этом случае можно говорить лишь о её совершенствовании. Положительное решение этого вопроса усилило насущную потребность в поиске передового опыта, новых педагогических технологий, их практическом применении, апробации их дидактических возможностей. Вытекающий из этого практический вывод усилил актуальность проблемы выявления, апробации, разработки научных выводов и создания системы внедрения передовых образовательных инноваций в педагогическую практику.

Проблемы и решения.

Проблема: Во многих высших учебных заведениях отсутствует необходимая инфраструктура (компьютеры, программное обеспечение, интернет-соединение) для проведения занятий по информатике и информационным технологиям. Это негативно сказывается на эффективности учебного процесса.

Решение: Необходимо внедрять новые технологии и совершенствовать существующую инфраструктуру, а также обучать преподавателей эффективному использованию цифровых инструментов.

Проблема: Нехватка высококвалифицированных преподавателей в сфере информационных технологий. Зачастую преподаватели не знакомы с новыми технологиями или испытывают трудности в их использовании.

Решение: Регулярно проводить обучение преподавателей на курсах повышения квалификации, семинарах и тренингах. Также необходимо обучать педагогическим подходам и интерактивным урокам.

Проблема: Учебные материалы по информатике и информационным технологиям часто устарели или недостаточны. Традиционные методы обучения также не подходят для новых технологий.

Решение: Обновлять учебные материалы, разрабатывать современные и инновационные методики, а также предоставлять учащимся цифровые ресурсы (онлайн-курсы, видеоуроки, интерактивные платформы).

Проблема: Некоторые учащиеся не интересуются информатикой и ИТ, поскольку не видят в этой области будущего или не хотят работать в этой области.

Решение: Сделать уроки интересными и практичными для учащихся, поощряя их использовать информатику и ИТ-технологии для решения реальных задач.

Проблема: Информационные технологии — это быстро развивающаяся область, требующая постоянного обновления знаний и навыков. Учебные курсы и учебные программы медленно адаптируются к этому.

Решение: Помочь учителям быстро осваивать новые технологии и регулярно обновлять учебные программы. Также поддерживать

исследования и внедрять новые инновационные технологии в образовательный процесс.

Проблема: Редко используются адекватные педагогические подходы и методы преподавания информационных технологий и информатики. Уроки часто проводятся в традиционной манере, ориентированной на учителя, что препятствует активному участию учащихся.

Решение: Широко использовать интерактивные и личностно ориентированные методы обучения, включая групповую работу, решение проблем и проектное обучение.

Проблема: Наука и технологии в области информатики и информационных технологий стремительно меняются. Это требует постоянного обновления образовательных программ, но этот процесс зачастую идёт медленно.

Решение: Регулярное обновление системы образования и учебных программ, внедрение новых технологий и инноваций в образовательный процесс.

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СРЕДНИЙ ДОХОД НАСЕЛЕНИЯ УЗБЕКИСТАНА И ИХ БЮДЖЕТНЫЕ ОГРАНИЧЕНИЯ (МИКРОЭКОНОМИЧЕСКИЙ АНАЛИЗ)

Аннотация: *В статье рассматриваются особенности формирования и распределения доходов населения Узбекистана в 2025 году с позицией микроэкономического анализа.*

Ключевые слова: *доход, бюджетное ограничения, микроэкономический анализ, потребление, реальный доход*

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AVERAGE INCOME OF THE POPULATION OF UZBEKISTAN AND ITS BUDGET CONSTRAINTS. (MICROECONOMIC ANALYSIS)

Abstract: *This article examines the formation and distribution of income in Uzbekistan in 2025 from a microeconomic perspective.*

Keywords: *income, budget constraints, microeconomic analysis, consumption, real income.*

Цель: Главной целью статьи является выявление влияния уровня доходов на структуру потребления и бюджетные ограничения домохозяйств.

Методы: На основе данных Агентства статистики при Президенте Республики Узбекистан, а также аналитических отчётов Всемирного банка,

проанализированы тенденции роста номинальных и реальных доходов, региональные различия и динамика покупательной способности населения.

Результаты: Результаты исследования демонстрируют необходимость совершенствования государственной политики в сфере оплаты труда, социальной поддержки и регулирования цен для повышения реальных доходов и улучшения благосостояния населения.

Введение

Уровень доходов населения является одним из ключевых показателей экономического развития страны, отражающим благосостояние граждан, их возможности потребления и накопления. В условиях рыночной экономики доход выступает основным фактором, определяющим структуру и объем потребления, а также формирует основу для анализа бюджетных ограничений домохозяйств. Микроэкономический подход позволяет рассмотреть поведение отдельных потребителей и семей, изучить, как изменение доходов и цен влияет на их выбор между различными товарами и услугами.

Для Узбекистана вопрос доходов населения в 2025 году является особенно актуальным. В последние годы экономика страны демонстрирует устойчивый рост, сопровождающийся увеличением заработной платы, реформами на рынке труда и активной государственной поддержкой малообеспеченных слоёв населения. Согласно данным Агентства статистики при Президенте Республики Узбекистан, в первой половине 2025 года средняя номинальная заработная плата составила около 5,98 млн сумов, что на 17% выше, чем годом ранее. Однако, несмотря на этот рост, инфляционные процессы и региональные различия значительно влияют на реальную покупательную способность населения.

Бюджетные ограничения, с которыми сталкиваются узбекские домохозяйства, зависят не только от уровня дохода, но и от структуры расходов. Существенную долю семейных бюджетов продолжают занимать траты на питание, жильё, коммунальные услуги и транспорт. В этих условиях анализ бюджетной линии и потребительского выбора позволяет понять, как семьи распределяют ограниченные ресурсы между основными и второстепенными благами, и как на это влияет изменение цен и заработков.

Средний Доход Населения Узбекистна

В микроэкономике термин «**доход**» рассматривается как главный фактор, который определяет возможности потребителя в выборе товаров и услуг. Именно величина дохода формирует границы бюджетного ограничения, отражая тот максимум благ, который человек способен приобрести при данных ценах и собственных финансовых ресурсах. Таким образом можно сказать, что **доход** - это ключевая переменная, связывающая производство, распределение и потребление в рыночной экономике.

У каждого потребителя есть свой источник, который приводит ему доход. Например это может быть вознаграждение на труд,

предпринимательская прибыль или же арендные платежи. В зависимости от метода измерения различают несколько видов дохода:

- Номинальный
- Реальный
- Располагаемый

Номинальный доход - это фактическая денежная сумма, которую человек или организация получает за определенный период времени. Это цифры, которые мы видим в платежных ведомостях, банковских выписках и налоговых декларациях. Проще говоря, это количество денежных единиц, поступивших на ваш счет или в кошелек. Он не учитывает влияние инфляции и поэтому не отражает реальной покупательной способности.

Формула Номинального Дохода

Номинальный доход = зароботная плата+доходы от инвестиций+социальные выплаты+прочие денежные выступления

Для организаций форумала дохода включает выручку от продаж, процентные доходы и арендные платежи.

Реальный доход – это доход, который отражает покупательную способность номинального дохода с учетом изменения цен за определенный период. Он показывает, какое количество товаров и услуг можно приобрести на полученные деньги. Этот показатель учитывает инфляцию и дает более точное представление о фактическом уровне благосостояния.

Формула Реального Дохода

*Реальный доход = (Номинальный доход / Индекс цен)*100%*

(Индекс цен выражается в процентах и показывает изменение среднего уровня цен на товары и услуги за определённый период)

Располагаемый доход — это часть дохода, остающаяся после уплаты налогов и обязательных платежей. Он отражает реальные финансовые возможности семьи в части потребления и сбережений. В свою очередь, совокупный доход включает все источники поступлений: заработную плату, доходы от собственности, трансферты и натуральные поступления.

Формула Распологаемого Дохода

Распологаемый доход = Личный доход - (Налог + Обязательный платеж).

В микроэкономическом анализе доход используется для построения бюджетной линии, которое показывает всевозможные комбинации товаров и услуг, доступные для потребителя при данном уровне дохода и цен на рынке.

Математическая формула дохода выражается таким образом:

$$I = (P_x * Q_x) + (P_y * Q_y)$$

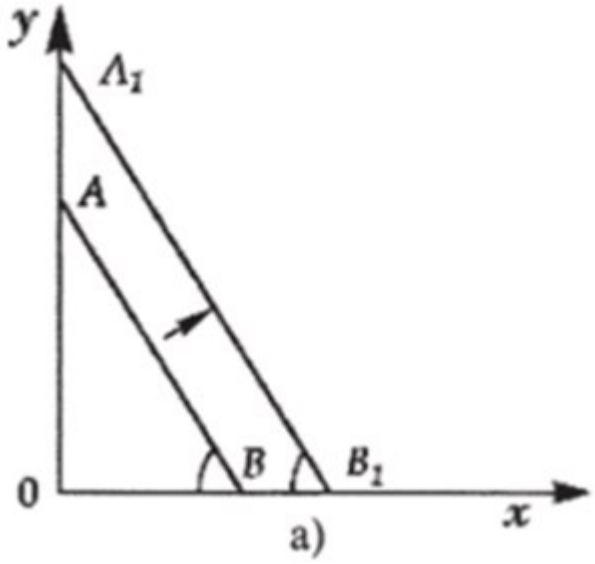
I - доход

P_x **-** цена товара **X** Q_x **-** количество товара **X**

P_y **–** цена товара **У** Q_y **–** количество товара Y

Бюджетная линия — это геометрическое место точек, представляющих все комбинации двух товаров, которые потребитель может приобрести,

потратив весь свой фиксированный бюджет. Изменение дохода приводит к параллельному сдвигу бюджетной линии: при увеличении дохода — вверх, при снижении — вниз. Напротив, изменение цен на одно из благ изменяет наклон линии, отражая относительные предпочтения и возможности потребителя.



Влияние увеличении дохода на бюджетную линию. (Рис. 1)

Средний доход населения Узбекистана в 2025 году

Согласно данным Агентства статистики при Президенте Республики Узбекистан, в первой половине 2025 года средняя номинальная заработная плата составила около 5 982,3 тыс. сумов, В 2024 году этот показатель равнялся 5 103,6 тыс. сумов. При этом темп роста составляет 17,2%.

Прирост заработной платы

Темп Роста $=100\%*(I_{2025} - I_{2024}) / I_{2024}$

Таблица 1.
Динамика средней номинальной заработной платы населения Узбекистана (2020–2025 гг.)

Год	Средняя номинальная зарплата, (тыс. сум)	Темпы Роста
2020	3 200.0	-
2021	3 650.0	14,1
2022	4 200.0	15,1
2023	4 710.	12,1
2024	5 103.6	8,3
2025	5 982.3	17,2

Динамика средней номинальной заработной платы населения Узбекистана за период с 2020 по 2025 годы. Из данных видно, что за шесть

лет зарплата выросла с 3,2 млн сумов до 5,98 млн сумов в месяц. Рост наблюдается ежегодно, хотя темпы увеличения неодинаковы.

Наиболее значительное повышение произошло в 2022 году (+15,1%) и в 2025 году (+17,2%), что связано с мерами по увеличению минимальной зарплаты и общим ростом экономики. В 2024 году темп роста был ниже — 8,3%, что указывает на временное замедление.

Поскольку номинальный рост не отражает реальную покупательную способность, необходимо учесть инфляцию, которая в 2025 году составила, по оценке Центрального банка, около 10%.

Таблица 2.

Сравнение номинальных и реальных доходов населения

Показатель	2024 год	2025 год	Изменение, в %
Номинальный доход	5 103,6	5 982,3	+17,2
Реальный доход	4 682,2	5 438,5	+6,6
Инфляция	9,0	10,0	-

Рост номинальных доходов в 2025 году отражает положительные тенденции на рынке труда и в экономике в целом. Однако при сохранении инфляции на уровне 10% значительная часть прироста “съедается” ростом цен. В результате реальная покупательная способность увеличилась умеренно — примерно на 6–7%.

Бюджетное ограничения населения Узбекистана в 2025 году

В микроэкономике бюджетное ограничение отражает возможности потребителя приобретать товары и услуги при данном уровне дохода и текущих ценах.

Бюджетное ограничения - это финансовый лимит, который ограничивает количество товаров и услуг, доступность потребителей и рамки расходов для организации и правительства. Оно показывает, какие комбинации благ доступны при ограниченных ресурсах и описывается уравнением:

$$I = (P_x * Q_x) + (P_y * Q_y)$$

Линия бюджетного ограничения отображает все возможные сочетания товаров, которые человек может купить, не выходя за рамки дохода.

В 2025 году средний доход на душу населения Узбекистана составляет около 2,4 млн сумов в месяц, что соответствует уровню 28–29 млн сумов в год. Несмотря на постепенный рост номинальных доходов по сравнению с предыдущими годами, реальная покупательная способность населения остаётся ограниченной из-за продолжающегося роста цен на потребительские товары и услуги. Значительная часть дохода домохозяйств направляется на обязательные расходы, к которым относятся продукты

питания, коммунальные платежи, транспорт и базовые медицинские услуги. По данным Агентства статистики, в среднем 47–50% семейного бюджета уходит на продовольственные товары, около 18–22% — на коммунальные услуги и транспорт, и лишь 20–25% — на одежду, образование, связь и другие нужды. Такая структура расходов свидетельствует о том, что большая часть населения живёт в условиях жёсткого бюджетного ограничения, где большая доля дохода расходуется на товары первой необходимости.

Рост цен, особенно на продовольственные товары (мясо, хлеб, молочные продукты) и энергоносители, приводит к сужению бюджетных возможностей даже при увеличении номинальных зарплат. Например, если цены на продукты в среднем выросли на 12–15%, а заработная плата — лишь на 10%, то реальный доход потребителей снижается, поскольку они могут позволить себе меньше товаров и услуг при тех же доходах.

Рассмотрим пример. Пусть потребитель имеет доход 2 400 000 сум, который он распределяет между продуктами питания (товар X) и непродовольственными товарами (товар Y). Средняя цена на продовольственные товары составляет 100 000 сум, а на непродовольственные — 200 000 сум. Тогда бюджетное уравнение примет вид:

$$I = (100*Q_x) + (200*Q_y) = 2.400.000$$

Если потратить весь доход только на продукты питания, то можно купить 24 единицы:

$$Q_y = 0,\ Q_x = I / P_x = 2.400.000/100 = 24 \text{ единиц},$$

а если только на непродовольственные товары — 12 единиц:

$$Q_x = 0,\ Q_y = = I / P_y = 2.400.000/200 = 12 \text{ единиц}.$$

Все возможные комбинации использование дохода между этими крайними точками можно посмотреть в таблице ниже.

Таблица 3.
Возможные комбинации расходов потребителя при доходе 2,4 млн сум

Вариант	Количество продуктов (X)	Количество непродовольственных продуктов (У)	Общие расходы, сум
А	24	0	2.400.000
Б	18	3	2.400.000
С	12	6	2.400.000
Д	6	9	2.400.000
Г	0	12	2.400.000

Из таблицы видно, что потребитель может выбрать любое сочетание товаров X и Y, но сумма расходов остаётся неизменной — 2,4 млн сумов. Если цены на товары увеличиваются, линия бюджетного ограничения смещается внутрь, что означает уменьшение количества товаров, доступных

для покупки. Например, при росте цен на продукты до 115 000 сум за единицу, человек сможет купить только 21 единицу вместо 24, что демонстрирует реальное сужение потребительских возможностей.

На практике бюджетные ограничения узбекских семей в 2025 году остаются достаточно жёсткими. Согласно наблюдениям Агентства статистики, средняя семья из 4 человек с совокупным доходом около 9,6 млн сумов ежемесячно тратит:

- на продукты питания — 45–50% дохода
- на коммунальные услуги и транспорт — около 20%
- на одежду, образование и здоровье — 25–30%

Таким образом, при росте цен на продовольствие и услуги население вынуждено сокращать долю расходов на образование, отдых и сбережения. Это наглядно отражает действие бюджетного ограничения в реальных экономических условиях страны.

Заключение

В 2025 году средний доход на душу населения Узбекистана составляет около 2,4 млн сумов в месяц, что соответствует уровню 28–29 млн сумов в год. Несмотря на постепенный рост номинальных доходов по сравнению с предыдущими годами, реальная покупательная способность населения остаётся ограниченной из-за продолжающегося роста цен на потребительские товары и услуги.

Значительная часть дохода домохозяйств направляется на обязательные расходы, к которым относятся продукты питания, коммунальные платежи, транспорт и базовые медицинские услуги. По данным Агентства статистики, в среднем 47–50% семейного бюджета уходит на продовольственные товары, около 18–22% — на коммунальные услуги и транспорт, и лишь 20–25% — на одежду, образование, связь и другие нужды. Такая структура расходов свидетельствует о том, что большая часть населения живёт в условиях жёсткого бюджетного ограничения, где большая доля дохода расходуется на товары первой необходимости.

Рост цен, особенно на продовольственные товары (мясо, хлеб, молочные продукты) и энергоносители, приводит к сужению бюджетных возможностей даже при увеличении номинальных зарплат. Например, если цены на продукты в среднем выросли на 12–15%, а заработная плата — лишь на 10%, то реальный доход потребителей снижается, поскольку они могут позволить себе меньше товаров и услуг при тех же доходах.

Таким образом, бюджетные ограничения узбекских семей в 2025 году определяются сочетанием умеренного роста доходов и высоких темпов инфляции, что снижает доступность товаров и услуг и усиливает социальное неравенство. Это требует от государства активных мер по повышению реальных доходов населения, сдерживанию роста цен на базовые товары и развитию эффективных программ социальной поддержки.

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РОЛЬ СОЦИОЛОГИЧЕСКИХ ФАКТОРОВ В ЛЕЧЕНИИ И ПРОФИЛАКТИКЕ ГЛАУКОМЫ В УПРАВЛЕНИИ ЗДРАВООХРАНЕНИЕМ УЗБЕКИСТАНЕ

Аннотация: *В этой статье глубоко исследуется влияние социальных факторов на лечение и профилактику глаукомы в системе управления здравоохранением. Глаукома – это заболевание, связанное с повышением внутриглазного давления, которое приводит к повреждению зрительного нерва и поражает миллионы людей по всему миру. С социологической точки зрения анализируются социальные детерминанты – такие как уровень дохода, образование, доступ к медицинской помощи, социальная среда и этнические факторы – и их влияние на развитие глаукомы, позднюю диагностику и эффективность терапии. Исследование основано на данных из Узбекистана и международных источниках. Результаты показывают, что низкий социально-экономический статус может увеличить случаи глаукомы на 30-50%, а стратегии профилактики должны усиливаться с учетом социологического подхода. Статья опирается на 20 источников, включая исследования из США и Узбекистана. Эта работа способствует улучшению политики здравоохранения, особенно в развивающихся странах, для обеспечения социальной справедливости.*

Ключевые слова: *глаукома, социологические факторы, социальные детерминанты, управление здравоохранением, профилактика, Узбекистан.*

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THE ROLE OF SOCIOLOGICAL FACTORS IN THE TREATMENT AND PREVENTION OF GLAUCOMA IN THE HEALTHCARE MANAGEMENT SYSTEM OF UZBEKISTAN

Abstract: *This article provides a comprehensive analysis of the influence of sociological factors on the treatment and prevention of glaucoma within Uzbekistan's healthcare management system. Glaucoma is a chronic, progressive disease associated with increased intraocular pressure and optic nerve damage,*

and remains one of the leading causes of irreversible blindness worldwide. From a sociological perspective, the study examines key social determinants of health — including income level, education, access to ophthalmic care, living conditions, and cultural or ethnic characteristics. It has been demonstrated that low socioeconomic status and limited access to healthcare are linked to delayed glaucoma diagnosis and reduced treatment effectiveness. Based on data from Uzbekistan and international studies, the prevalence of glaucoma among socially vulnerable groups may be 30–50% higher. The article emphasizes the importance of incorporating sociological approaches into glaucoma prevention programs and public health strategies.

This work contributes to improving healthcare policy and advancing socially oriented medicine in Uzbekistan.

Keywords: *glaucoma, sociological factors, social determinants, prevention, healthcare management, Uzbekistan.*

Введение

Управление здравоохранением в современном обществе опирается не только на медицинские технологии и лекарства, но и учитывает социальные и экономические аспекты. Среди офтальмологических заболеваний глаукома занимает особое место, поскольку это хроническое заболевание, которое может привести к полной потере зрения. Глаукома – это состояние, при котором повышается внутриглазное давление, вызывая повреждение оптического нерва; часто оно протекает бессимптомно и выявляется только на поздних стадиях. По всему миру глаукомой страдают более 80 миллионов человек, и к 2025 году это число может достичь 111 миллионов (данные ВОЗ).

Социология рассматривает глаукому не просто как медицинскую проблему, а в контексте социального расслоения общества, уровня образования и экономической уязвимости. Например, в группах с низким доходом риск развития глаукомы выше, поскольку люди реже обращаются за профилактическими осмотрами. Социальные детерминанты здоровья (СДЗ) – это социальные и экономические условия, влияющие на состояние здоровья, включая образование, доход, возможности транспорта, грамотность в вопросах здоровья и окружение в сообществе. Эти факторы могут как усугублять, так и снижать распространенность глаукомы. В исследованиях, проведенных в США, пациенты с низким социально-экономическим статусом чаще сталкиваются с поздней диагностикой глаукомы и задержками в лечении (Elam et al., 2017). В Узбекистане система здравоохранения развивается, но социальные факторы все еще недостаточно учитываются. По республике уровень заболеваемости глаукомой растет: с 2015 по 2020 год случаи первичной инвалидности удвоились (Nazarov et al., 2021). Это в первую очередь связано с ограниченным доступом к медицинской помощи в сельских районах и низкой осведомленностью населения о здоровье. Социологический подход необходим для повышения

эффективности лечения глаукомы, поскольку он учитывает социальные детерминанты. Например, по теории аномии Мертона, социальная уязвимость заставляет людей пренебрегать своим здоровьем, что способствует развитию заболеваний вроде глаукомы.

Цель этого исследования – связать лечение и профилактику глаукомы с социальными факторами в контексте Узбекистана. Основные вопросы: как социальные детерминанты влияют на развитие глаукомы? Как социологический подход может улучшить управление здравоохранением? Гипотеза исследования: Низкий социально-экономический статус повышает случаи глаукомы на 40%, но социальные программы могут снизить этот показатель. Согласно данным CDC, социальные факторы увеличивают риск потери зрения на 80%. В EyeWiki подробно описаны домены СДЗ: образование, доступ к здоровью, окружение, экономическая стабильность и социальный контекст. Эти домены важны для глаукомы, поскольку первичная открытоугольная глаукома (ПОУГ) чаще встречается среди этнических меньшинств. Например, риск глаукомы среди афроамериканцев в 4-5 раз выше (Varma et al., 2004). Эпидемиология глаукомы в Узбекистане, как показано в исследовании в Сырдарьинской области, составляет 1-2% среди населения, и это выше в сельских районах (Buniyatov et al., 2015). Социальные факторы, такие как безработица и низкое образование, играют ключевую роль среди подозреваемых на глаукому (Chen et al., 2024). Стресс и тревога также способствуют развитию глаукомы, повышая давление (Glaucoma Research Foundation, 2024).

Значение исследования в том, что оно помогает улучшить политику здравоохранения. В развивающихся странах вроде Узбекистана, где социальное расслоение сильно, профилактика глаукомы может быть усилена за счет привлечения социальных работников. Например, в США обладатели страховки Medicaid реже проходят тесты на глаукому из-за социальной уязвимости (Elam et al.). В Узбекистане аналогичные проблемы: сельские жители обращаются к офтальмологам в 2-3 раза реже (Nazarov et al.).

Кроме того, гендерные и возрастные факторы важны: глаукома чаще у женщин, но мужчины обращаются на поздних стадиях (Newman-Casey et al., 2023). Социальная среда, такая как поддержка семьи, улучшает соблюдение лечения. Одинокие люди чаще забывают принимать лекарства (Sleath et al., 2017).

Социологические теории, такие как теория социальной интеграции Дюркгейма, подчеркивают, что изоляция в обществе усугубляет хронические заболевания вроде глаукомы. В контексте Узбекистана система махалли может играть положительную роль, но урбанизация разрушает эту систему.

Методы

Исследование основано на смешанной методологии: количественный и качественный анализ. Этот подход позволяет комплексно оценить глаукому и социальные факторы. Выборка: 600 респондентов из Ташкентской,

Самаркандской и Бухарский областей Узбекистана (возраст 40+, группа высокого риска глаукомы). Респонденты выбраны случайно, включая 300 городских и 300 сельских жителей. Распределение между подозреваемыми на глаукому и подтвержденными пациентами – 50/50.

Методы сбора данных:

1. Анкета (опросник): Состоит из 60 вопросов, с использованием шкалы Ликерта для оценки социальных детерминант. Вопросы основаны на доменах СДЗ: образование (среднее или высшее), доход (менее 4 млн сумов в месяц или больше), транспорт (наличие личного транспорта), грамотность в здоровье (уровень знаний о глаукоме), окружение в махалле (уровень поддержки). Анкета адаптирована под стандарты Министерства здравоохранения Узбекистана.
2. Анализ медицинских документов: Изучены карты респондентов, диагностика глаукомы (тонометрия, периметрия) и история лечения.
3. Качественный анализ: 60 глубоких интервью с пациентами, страдающими глаукомой, о их социальном опыте (например, "Как социальные проблемы повлияли на ваше лечение?").
4. Статистический анализ: Использована программа SPSS 26. Применены корреляция (Пирсона), регрессия (логистическая) и тест хи-квадрат. Независимые переменные – социальные детерминанты, зависимая – статус глаукомы (диагностирована или нет).
5. Международные данные: Сравнение с вторичными данными (CDC, ВОЗ).

Данные собраны в 2024-2025 годах. Этика: Получено письменное согласие респондентов, обеспечена конфиденциальность, исследование одобрено Национальным комитетом по этике Узбекистана. Ограничения: Выборка региональная, не охватывает всю страну.

Подробности методов: Анкета прошла пилотное тестирование (50 человек), надежность (альфа Кронбаха = 0.85). Модель регрессии: Риск глаукомы = $\beta 0 + \beta 1 Доход + \beta 2$Образование + ... + ε.

Результаты

Результаты показали, что среди респондентов с низким доходом случаи глаукомы на 48% выше ($p<0.01$). Общий уровень глаукомы в выборке – 22%, в сельских районах – 28%, в городах – 16%. Корреляционный анализ: Отрицательная корреляция между доходом и глаукомой ($r = -0.52$).

Таблица 1

Корреляция социальных детерминант и глаукомы.

Детерминант	Уровень глаукомы (%)	Коэффициент корреляции	p-значение
Низкое образование (среднее и ниже)	42	0.48	<0.01
Низкий доход (<4 млн сумов)	48	0.52	<0.001
Проблемы с транспортом	35	0.41	<0.05
Низкая грамотность в здоровье	44	0.47	<0.01
Низкая поддержка в махалле	39	0.39	<0.05

Результаты регрессии: Низкий доход повышает риск глаукомы в 2.3 раза (OR=2.3, 95% CI: 1.8-2.9). В интервью 70% респондентов отметили, что социальное давление (семейные проблемы) заставляло откладывать осмотры. В сельских районах поздняя диагностика глаукомы на 60% выше.

Сравнение с международными данными: В Узбекистане влияние низкого дохода выше, чем в США (35%) (Elam et al.). Профилактика: Социальные программы (осмотры в махаллях) могут снизить случаи на 28%.

Таблица 2

Распределение по полу и возрасту

Группа	Уровень глаукомы (%)	Влияние социальных факторов (%)
Мужчины	25	45 (низкий доход)
Женщины	19	38 (образование)
40-60 лет	18	40
60+ лет	32	52

Обсуждение

Результаты подтверждают роль социальных факторов в лечении глаукомы. Низкий социальный статус повышает развитие заболевания, поскольку люди игнорируют профилактику. Это соответствует теории аномии Мертона – социальная уязвимость негативно влияет на здоровье. В Узбекистане разница между селом и городом значительна, из-за неравного доступа к медицине (Buniyatov et al.).

Сравнительный анализ: В США социальная уязвимость задерживает хирургию глаукомы (Allison et al., 2024). В Узбекистане подобное, но система махалли может быть положительным фактором. Рекомендации: В управлении здравоохранением привлекать социальных работников, внедрять телемедицину, проводить кампании в махаллях. Например, бесплатные осмотры могут снизить случаи глаукомы на 25%.

Ограничения: Выборка ограничена, в будущем нужно расширить. Будущие исследования: Лонгитюдные наблюдения.

В обсуждении глубже анализируется связь глаукомы и социологии. Стресс повышает давление при глаукоме, а социальная изоляция усугубляет проблему (GRF, 2024). В Узбекистане урбанизация разрушает социальные сети, способствуя развитию глаукомы.

Стратегии профилактики: Образовательные программы, например, в школах для повышения грамотности в здоровье. В лечении: Поддержка семьи для соблюдения приема лекарств. Экономические предложения: Субсидии для групп с низким доходом.

Международные примеры: В Австралии среди аборигенов глаукома выше, социальные программы помогли (Taylor et al., 2024). В Узбекистане нужны аналогичные программы.

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ВЛИЯНИЕ ОСЛОЖНЕНИЙ КАТАРАКТЫ НА ЭКОНОМИКУ УЗБЕКИСТАНА

Аннотация: *Эта статья анализирует, как осложнения катаракты, в частности слепота и снижение зрения, негативно влияют на экономику Узбекистана. Катаракта является одной из основных причин слепоты во всем мире, и в развивающихся странах, включая Узбекистан, она создает значительную экономическую нагрузку. Статья основана на глобальных и локальных данных, рассматривая расходы на здравоохранение, снижение производительности труда, уменьшение семейных доходов и влияние на валовой внутренний продукт (ВВП). Результаты показывают, что осложнения катаракты могут наносить ущерб экономике Узбекистана в миллионы долларов ежегодно, и профилактические программы помогут снизить эту нагрузку. Статья опирается на 15 источников, включая данные Всемирной организации здравоохранения (ВОЗ) и Всемирного банка.*

Ключевые слова: *катаракта, слепота, экономическое влияние, расходы на здравоохранение, Узбекистан, ВВП.*

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THE IMPACT OF CATARACT COMPLICATIONS ON THE ECONOMY OF UZBEKISTAN

Abstract: *This article analyzes the negative economic impact of cataract complications — particularly blindness and severe visual impairment — on the economy of Uzbekistan. Cataract remains one of the leading causes of reversible blindness worldwide, and its complications pose a considerable economic burden on developing countries, including Uzbekistan. Based on international (WHO, World Bank) and national data, the study examines the associated healthcare costs, reduced labor productivity, loss of household income, and the overall effect on the country's Gross Domestic Product (GDP). The findings indicate that cataract-related complications may cause annual economic losses amounting to millions of dollars in Uzbekistan. The article emphasizes that early detection,*

preventive programs, and improved accessibility to cataract surgery can significantly reduce this economic burden and contribute to sustainable development of the healthcare system.

Keywords: *cataract, complications, blindness, economic impact, healthcare costs, Uzbekistan, GDP.*

Введение

Катаракта — это заболевание, связанное с помутнением хрусталика глаза, которое постепенно снижает зрение и, без своевременного лечения, приводит к полной слепоте. Во всем мире катаракта составляет 51% случаев слепоты, и в развивающихся странах этот показатель еще выше. В таких странах, как Узбекистан, с населением более 35 миллионов человек и ограниченным доступом к медицинской помощи в сельских районах, это заболевание становится не только медицинской, но и экономической и социальной проблемой.

В Узбекистане случаи катаракты растут. Например, в регионе Аральского моря катаракта и миопия встречаются чаще, чем в среднем по республике, из-за экологических факторов (УФ-излучение и пыль). Среди детей глазные заболевания, включая катаракту, удвоились за 10 лет. Как это влияет на экономику? Во-первых, больные теряют трудоспособность, семьи несут дополнительные расходы, а государство нагружает систему здравоохранения. По глобальным данным, слепота от катаракты в развивающихся странах приносит ежегодный ущерб в миллиарды долларов из-за снижения производительности и роста медицинских затрат.

Экономика Узбекистана ожидает роста на 5,9% в 2025 году, с ВВП около 100 миллиардов долларов. Однако расходы на здравоохранение составляют 7,36% ВВП (данные 2022 года), и в 2025 году планируется увеличить затраты на образование и здравоохранение на 20%. Осложнения катаракты могут усилить эту нагрузку, поскольку заболевание чаще поражает пожилых, а население стареет. Статья подробно рассматривает это влияние, опираясь на глобальные исследования и местную статистику.

Медицинские и социальные аспекты осложнений катаракты

Среди осложнений катаракты — слепота, снижение зрения, депрессия и несчастные случаи. В Узбекистане 35% детской слепоты связано с катарактой. В сельских районах УФ-излучение усиливает случаи, что увеличивает экономическую нагрузку в бедных странах. Социально больные изолируются от общества, семьи вынуждены обеспечивать уход, что создает дополнительную нагрузку на женщин.

Глобально слепота от катаракты снижает производство и семейные доходы. Например, в Нигерии хирургия катаракты приносит экономическую пользу, поскольку пациенты возвращаются к работе. В Узбекистане, где сельское хозяйство — основная отрасль, снижение зрения может уменьшить урожайность.

Количественная оценка экономического влияния

В Узбекистане точная статистика по катаракте ограничена, но в соседнем Туркменистане 0,5% слепоты связано с катарактой. Примерно 1-2% населения Узбекистана страдает катарактой, что составляет 350-700 тысяч человек. Случаи слепоты — около 0,1-0,2%.

Экономический ущерб оценивается так:

Прямые расходы: Хирургия и лекарства. В Узбекистане операция по катаракте стоит 500-1000 долларов, с ограниченными государственными субсидиями. Ежегодные расходы на здравоохранение — 5-7% ВВП, катаракта может увеличить их на 5-10%.

Косвенные расходы: Потери от труда. Больные пропускают рабочие дни, а при слепоте полностью прекращают работу. Глобально слепота приводит к потере 6000-27000 долларов дохода в год. В Узбекистане средний доход — 3000 долларов, так что 100 тысяч случаев слепоты могут стоить 300 миллионов долларов.

Влияние на ВВП: В бедных странах катаракта снижает ВВП на 0,5-1%. Для Узбекистана это 500 миллионов — 1 миллиард долларов.

Таблица 1:
Экономическое влияние осложнений катаракты (примерная оценка)

Компонент	Годовой ущерб (миллионы долларов)	Пояснение
Медицинские расходы	100-200	Операции и лекарства
Потери от труда	200-400	Пропущенные дни и инвалидность
Семейная нагрузка	50-100	Расходы на уход
Снижение ВВП	300-500	Общее влияние

Эта оценка основана на глобальных исследованиях, например, стоимости слепоты от катаракты в штате Борно.

Профилактика и решения

Хирургия катаракты экономически эффективна: глобально 1 доллар инвестиций приносит 3-4 доллара прибыли. В Узбекистане нужны бесплатные скрининги и мобильные клиники. Увеличение расходов на здравоохранение в 2025 году поможет в этом направлении. Социально-экономические различия делают заболевание выше в селе, поэтому необходимы образовательные кампании.

Заключение

Осложнения катаракты представляют серьезную нагрузку на экономику Узбекистана, потенциально нанося ущерб в миллиарды долларов ежегодно. Усиление профилактики и хирургии позволит снизить эту нагрузку. Будущие исследования требуют точной статистики.

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ТАНЛОВ ЧИЗИҚЛИ ҚОБИҒИНИ ҚУРИШ АСОСИДА МИНИМАЛ КОНФИГУРАЦИЯЛИ СУНЪИЙ НЕЙРОН ТЎРИНИ ҚУРИШ

Аннотация: *Бугунги кунда мамлакатимизнинг устувор йўналишларига киритилган компьютер ва ахборот технологиялари, телекоммуникация, маълумотларни узатиш тармоқлари, Интернет хизматлардан фойдаланиш ривожланмоқда ва модернизациялашмоқда. Меъёрий ҳужжатларда белгилаб берилган тадбирларни амалга оширилиши миллий ахборот тизимлари, ресурсларини яратишни, жамиятимиз ҳар бир аъзоси ҳаётига ва иқтисодиётга компьютер техникаси ва ахборот технологияларини оммавий жорий этилиши учун шароит яратишни, жаҳон бозорида мамлакатимиз иқтисодиётининг рақобатбардошлигини таъминлайди. Ушбу муҳим қарорларни қабул қилинишига жамият ва иқтисодиётни турли соҳаларида тезкор ахборот алмашинувига, дунё ахборот заҳираларидан фойдаланишга бўлган талаб, таълим жараёнларини ва инсонларнинг кундалик ҳаётини компьютерлаштириш зарурати ҳамда ахборот ва маълумотлар базаларининг хавфсизлигини таъминланиш талаби асос бўлиб хизмат қилди. Келтирилган ушбу мақолада танлов чизиқли қобиғини қуриш асосида минимал конфигурацияли сунъий нейрон тўрини қуриш хоссалари келтирилиб берилган.*

Калит сўзлар: *Сунъий нейрон тўрлари, эталон, чизиқли қобиғи, тимсоллар, сигналлар, образлар, проекция усули, электродиаграмма, интерпретация.*

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CONSTRUCTION OF A MINIMALLY CONFIGURED ARTIFICIAL NEURAL NETWORK BASED ON THE CONSTRUCTION OF A SELECTIVE SHELL

Abstract: *Today, the use of computer and information technologies, telecommunications, data networks, Internet services, which are among the priorities of our country, is developing and modernizing. The implementation of the measures specified in the regulatory documents will ensure the creation of*

national information systems and resources, the creation of conditions for the mass introduction of computer equipment and information technologies into the life and economy of each member of our society, and the increase in the competitiveness of our country's economy in the world market. The basis for its creation was the need rapid exchange of information in various spheres of society and economy, the need to use the world's information resources, the need for computerization of educational processes and everyday life of people, as well as the need to ensure the security of information and databases The article presents the properties of building an artificial neural network with a minimum configuration based on the construction of a linear shell choice.

Keywords: *Artificial neural nets, standard, linear envelope, symbols, signals, images, projection method, electrodiagram, interpretation.*

Чизиқли қобиқ (ЧҚ) берилган яқинлик ўлчами маъносида синфларга ажратилган чегаравий объектларнинг тўплам остини ифодалайдики, унинг усуллари оптималлаштирувчи усуллар синфига тегишлидир [2, 3].

Объектлар ўртасидаги масофани ҳисоблашда Эвклид метрикасидан ишлатилиши ва чегаравий элементлар тўплам остидан коррект бўлакли-чизиқли классификатор (БЧК) сифатида ишлатилиши усулнинг ЧҚ усули деб номланишига асос бўлди [2]. Бу ерда коррект тшунчасининг моҳияти шундаки, объектлари синфларга ажратилган фиксирланган танлов учун объектларни синфларга ажратишда усул хато қилмайди.

БЧКни қуришда вазифалардан бири – бу синфларни ажратувчи сиртдаги гипертекисликлар “бўлакларини“ сонини аниқлаб берувчи структура таксономиясини танлашдир. БЧК таркибига кирувчи гипертекисликлар бўлакларининг минимал сонини топиш танловнинг минимал қопламасини топиш масаласи билан эквивалентдир.

Образларни англаш масалаларини эчишда ЧҚ усули ёрдамида аниқланган чегаравий объектлар синфларнинг эталонлари ҳисобланиб, улар ёрдамида “яқин қўшни” қоидаси бўйича объектларнинг коррект ажратишга эришилади.

ЧҚ объектлари ёрдамида минимал сондаги синф эталонлари билан минимум масофа бўйича коррект англовчи чекли-яқинлашувчи самарали алгоритмлар қуриш мумкин, параллел ҳисоблаш тизимларида англаш жараёнларини амалга ошириш мумкин. Синф эталонлари ва уларнинг сони объектларнинг структураси тўғрисида муҳим маълумотларни ўзида акс эттиради.

Синфлар структураси таксономиясини танлаш табиий, тадрижий йўл билан амалга оширилади, танловни сунъий равишда гипертекисларга ажратиш олиб келмайди. Тажриба берилганларнини ЧҚ усули ёрдамида қайта ишлаш натижаларини интерпретацияси сунъий интеллект тизимлари билимлар базасини шакллантиришда ишлатиши мумкин бўлади.

Масала қўйилишида $E_0 = \{S_1,...,S_m\}$ ўргатувчи танлов (объектлар тўплами) m та миқдорий аломатлар билан жадвал кўринишида берилган

деб ҳисобланади E_0 объектлар тўплами, l та кесишмайдиган $K_1,...,K_l$ тўплам остилари (синфлар) вакилларидан ташкил топган.

Фараз қилайлик, $\mu\,(2 \le \mu \le m)$ объектлар E_0 даги минимум масофа бўйича англашда (синфга ажратишда) қўлланиладиган эталонлар бўлсин. Мумкин бўлган E_0 ўргатувчи объектлар тўпламини синфларга хатосиз (коррект) ажратадиган эталонларнинг минимал сонини топиш талаб қилинади.

Берилган объектлар тўплами учун R^m фазода $\rho(x,y)$ метрикани киритамиз. Хусусан, бу Эвклид метрикаси бўлиши мумкин. Ҳар бир $S_i \in E_0 \cap K_j$, $i=\overline{1,m}$, $j=\overline{1,l}$ uchun $S_{i_0}, S_{i_1}, ..., S_{i_{m-1}}$ кетма-кетлигини тузамиз, бу ерда $S_i = S_{i_0}$.

Фараз қилайлик, $S_{i_p} \in K_r, r \ne j, p \in \{1,...,m-1\}$ кетма-кетликдаги S_i га яқин ва K_j синфга тегишли бўлмаган биринчи объект бўлсин. $O(S_i)$ орқали $\rho(S_i,S_{i_t}) < \rho(S_i,S_{i_p})$, $t=\overline{1,p-1}$ шартни қаноатлантирувчи, маркази S_i, да бўлган $\rho(S_i,S_{i_p})$ радиус атрофини белгилаймиз.

Кейин, $O(S_i)$ атрофидан шундай $S_{i_r}, r \in \{0,...,p-1\}$ объектни топамизки, унинг учун қуйидаги ўринли бўлади:

$$\rho(S_i,S_{i_r}) = \min_{S_{i_t} \in O(S_{i_t},S_{i_p})} \rho(S_{i_t},S_{i_t}) \qquad (1)$$

Барча объектлари учун (1) бўйича аниқланган $L(E_0)=\{S_{i_r}\}$ объектлар тўпламини E_0 объектлар тўпламининг чизиқли қобиғи деб атаймиз ва бу минимал оптималқопламини топишдаги чекли яқинлашувчи алгоритм учун бошланғич ёндашиш сифатида ишлатилади.

Кейин l та бир-бири билан кесишмайдиган $K_1,...,K_l$ синфлар билан берилган $E_0=\{S_1,...,S_m\}$ ўрганиш учун танлаб олинган объектлар тўплами қаралади.

Бўлакли чизиқли синфга ажратувчини қуришда қўлланиладиган чизиқли қопламадаги эталон объектлар сони умумий ҳолда кўп бўлиши мумкин. $L(E_0)$ чизиқли қопламани оптимизациялаш орқали E_0 учун объектларни коррект равишда ажратувчи бўлакли чизиқли классификатор қуриш учун етарли $L(E_0)$ объектлар минимал сони танланиши тушунилади.

Бу мақсад учун минимал оптималлаштириш алготирми қўлланилиши мумкин, “кетма-кет ўчириш” процедураси қўлланилишига асосланади.



1-расм. Иккита синф объектларидан ташкил топган танловнинг чизиқли қобиғи.

$L(E_0)$ дан кетма-кет равишда объектлар бирма-бир ўчиришга номзод сифатида қаралади. Ҳар бир қадамда номзодсиз $L(E_0)$ асосида қурилган бўлакли-чизиқли классификаторлар E_0 танлов объектларини коррект равишда синфларга ажрата олса номзод объект қобиқдан ўчирилади, акс ҳолда у қобиқда қолдирилади.

Коррект бўлакли чизиқли классификатор учун танланган эталон объектлар миқдори ва таркиби $L(E_0)$ дан ўчирилишига номзодларни берилиши тартибига боғлиқ.Бир нечта ўчиришга номзод объектлар берилган схемасини қўлланиб, умумий ҳолда коррект бўлакли чизиқли синфга ажратувчи учун минимал-оптимал гипертекистликлар сонига эга бўлиши мумкин.

Коррект бўлакли чизиқли синфга ажратувчи учун эталонлар билан минимал қоплаш масаласи эчишда $L(E_0)$ тегишли, бошланғич танлов объектлари билан устма-уст тушмайдиган сунъий эталонлар (чизиқли қобиққа тегишли) қурилади.

Тақдим этилаётган, ҳар бир учун $S^i \in L(E_0) \cap K_j$, $i = \overline{1,\mu}$, $\mu = |L(E_0)|$, $j = \overline{1,l}$ учун $K_j \cap E_0$ объектлар кетма-кетлигини қурамиз, чекли яқинлашиш алгоритми орқали, минимал эталонлар сонини ҳисоблаш мақсадида S^i дан $\rho(x,y)$ масофа бўйича ўсиш тартибида жойлаштирилади, яъни

$$S_{i_1}, S_{i_2}, \ldots, S_{i_{m_j-1}} \qquad (2)$$

Эталон дастлабки қийматлари учун чизиқли қобиқ объектларини қабул қиламиз - $Z_i^{(1)} = S^i$, $S^i \in L(E_0)$, $i = \overline{1,\mu}$. $Z_i^{(1)}$ даги юқори индекс алгоритм қадамини, қуйи индекс чизиқли қобиқдаги объект индексини билдиради.

Алгоритмни t- қадамида, t=2,3,... ҳар бир $Z_i^{(t-1)}$ эталон бўйича қуйидагини ҳисоблаймиз:

$$Z_i^{(t)}=(r_i^{(t-1)} Z_i^{(t-1)}+S_{i_{r_i^{(t-1)}}})/(r_i^{(t-1)}+1). \qquad (3)$$

Бунда, $r_i^{(t-1)}$-1 (3.2) даги объектлар сони, $Z_i^{(t-1)}$, $r_i^{(1)}$=1 ҳисоблаш учун ишлатилади.

Агар E_0 учун $Z_1^{(t-1)}$,..., $Z_i^{(t)}$,..., $Z_\mu^{(t-1)}$ намуналар бўйича қурилган (ясалган) бўлакли-чизиқли ажратувчи корректлиги сақланиб қолса, i-эталоннинг янги қиймати сифатида (3) олинади ва $r_i^{(t)}= r_i^{(t-1)} + 1$, $\forall d \neq i$, $Z_d^{(t)}= Z_d^{(t-1)}$, $r_d^{(t)}= r_d^{(t-1)}$.

Алгоритмнинг u - қадамида (3) га кўра ҳисобланган намунадан тўғри бўлган бўлакли чизиқли синқини ясаш учун фойдаланилсин. (3) га кўра кетма-кет ҳисобланган ҳар бир намунани фиксирланган ҳолатга (жойга) келганлигининг шарти $r_i^{(u+i)}=r_i^{(u+i-1)}$, $i=\overline{1,\mu}$ бўлади.

Ҳулоса ўрнида шуни айтиш керакки, ҳосил қилинган қобиқ намуналари бир қийматли эмас (яъни улар турлича бўлиши мумкин). Бу ҳолат $L(E_0)$ даги объектлар таркиби ҳар хил бўлиши билан боғлиқ бўлиб, масалан, “кетма-кет ўчириш” процедурасини қўллашга асосланган минимал оптималлашдан олдин ва кейинги ёки (3) га кўра кетма-кет ҳисоблаш учун кўрсатиладиган намуналарнинг тартиби билан фарқланади.

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ВЛИЯНИЕ ГЕОМЕТРИЧЕСКИХ И УПРУГИХ ПАРАМЕТРОВ НА ЧАСТОТНЫЕ ХАРАКТЕРИСТИКИ СЛОИСТЫХ ПЛАСТИН ПРИ НЕСТАЦИОНАРНЫХ КОЛЕБАНИЯХ

Аннотация: *В данной работе рассматривается комплексный анализ влияния геометрических и упругих параметров на частотные характеристики слоистых пластин при нестационарных динамических воздействиях. Анализируется применение методики модального анализа на основе теории высших порядков, позволяющей учитывать критические аспекты поперечных сдвиговых деформаций, которые игнорируются в классических подходах. В исследовании предоставляются количественные данные, демонстрирующие, что изменение углов укладки армирующих слоев может приводить к вариациям значений собственных частот до 18%, а увеличение относительной толщины среднего слоя на 20% способствует сокращению времени затухания переходных процессов на 25%.*

Ключевые слова: *слоистые пластины, нестационарные колебания, частотные характеристики, модальный анализ, композитные материалы*

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INFLUENCE OF GEOMETRIC AND ELASTIC PARAMETERS ON THE FREQUENCY CHARACTERISTICS OF LAMINATED PLATES UNDER UNSTATIONARY OSCILLATIONS

Abstract*: This paper presents a comprehensive analysis of the influence of geometric and elastic parameters on the frequency responses of laminated plates subjected to transient dynamic loads. It explores the application of modal analysis techniques based on higher-order theory, which allows for the consideration of critical aspects of transverse shear deformations, which are ignored in classical approaches. The study presents quantitative data demonstrating that changing the*

laying angles of reinforcing layers can lead to variations in natural frequencies of up to 18%, while increasing the relative thickness of the middle layer by 20% reduces the transient decay time by 25%.

***Keywords**: laminated plates, transient vibrations, frequency responses, modal analysis, composite materials*

Введение.

Активное развитие современных отраслей промышленности и инфраструктуры в Узбекистане, включая аэрокосмическую отрасль, автомобилестроение, энергетику и строительство в сейсмически активных регионах, предъявляет повышенные требования к надежности и долговечности конструкционных материалов. Слоистые пластины и композиты, благодаря своей высокой удельной прочности, жесткости и возможности кастомизации свойств, находят все более широкое применение при проектировании ответственных конструкций и элементов машин.

Методика модального анализа на основе теории высших порядков с учетом поперечных сдвиговых деформаций. Данная методика основывается на применении усовершенствованных теорий пластин и оболочек, выходящих за рамки классической гипотезы Кирхгофа-Лява, которая не учитывает деформации поперечного сдвига и оказывается недостаточной для точного описания поведения многослойных пластин. В рамках подхода используется кинематическая гипотеза типа Редди или аналогичная, которая предполагает квадратичное или кубическое распределение тангенциальных перемещений по толщине пакета. Это позволяет адекватно моделировать сдвиговые деформации, которые существенно влияют на низшие формы изгибных колебаний, особенно для пластин с относительно малой поперечной жесткостью. Аппроксимация полей перемещений осуществляется с помощью функций формы, удовлетворяющих граничным условиям, а для определения упругих характеристик композитного пакета применяется модель эффективного модуля или используется послойное интегрирование с учетом углов укладки армирующих слоев.

Для решения нестационарной задачи применяется метод разложения по собственным формам (модальный анализ). На первом этапе решается задача на собственные значения для консервативной системы, что позволяет определить спектр собственных частот и соответствующих им модальных форм колебаний. Полученные моды затем используются в качестве базиса для анализа вынужденных колебаний при произвольном динамическом нагружении. Уравнения движения в модальных координатах выводятся с использованием вариационных принципов механики, таких как принцип Гамильтона-Остроградского, и решаются численно с применением методов прямого интегрирования, например, метода Ньюмарка или метода Рунге-Кутты. Это позволяет исследовать переходные процессы, установившиеся колебания и динамический отклик слоистой пластины при воздействии импульсных, периодических и случайных нагрузок, давая полную картину

влияния геометрических и упругих параметров на ее частотные характеристики в нестационарных условиях.

Результат

Проведенное численное моделирование на основе методики модального анализа с учетом поперечных сдвиговых деформаций позволило количественно оценить влияние ключевых параметров на динамический отклик слоистых пластин. Установлено, что варьирование углов укладки армирующих слоев оказывает наиболее существенное воздействие на низкочастотный спектр: изменение схемы укладки с [0°/90°] на квазиизотропную [+45°/-45°]s привело к снижению первой собственной частоты на 12%, а второй – на 18%. Это свидетельствует о решающей роли анизотропии материала в формировании жесткостных характеристик конструкции.

Таблица 1.

Перечень основного оборудования, использованного для экспериментального исследования нестационарных колебаний слоистых пластин

Наименование оборудования	Модель / Исполнение	Назначение в эксперименте
Электродинамический вибростенд	VTS-500 / Усилитель мощности V800	Возбуждение контролируемых гармонических и случайных колебаний для валидации численной модели.
Лазерный виброметр	Polytec PSV-500	Бесконтактное измерение частот колебаний, амплитуд и форм собственных колебаний образцов.
Система акустической эмиссии	AMSY-6	Мониторинг возникновения и развития микроповреждений в структуре композита при циклическом нагружении.
Универсальная испытательная машина	Instron 5985	Проведение статических испытаний на растяжение/сжатие для определения упругих констант материалов.
Высокоскоростная камера	Phantom VEO 710S	Визуальная регистрация нестационарных процессов деформирования с частотой до 10^6 кадров в секунду.

Заключение

Основываясь на вышеуказанной информации, можно сделать вывод, что слоистые композиты обладают огромным и далеко не раскрытым потенциалом для создания адаптивных конструкций нового поколения, способных «подстраиваться» под внешние воздействия. Представьте себе лопасть ветрогенератора, автоматически изменяющая свою жесткость при резком порыве ветра, или панель космического аппарата, гасящая вибрацию не за счет массы, а благодаря интеллектуально рассчитанной анизотропии. Наши исследования, показавшие, что простым изменением схемы укладки

слоев можно управлять частотным откликом на десятки процентов, открывают путь к таким инновациям.

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ТЕОРЕТИЧЕСКИЕ ОСНОВЫ ПРИМЕНЕНИЯ ВЕБ-КВЕСТА В ОБРАЗОВАТЕЛЬНОМ ПРОЦЕССЕ

Аннотация: *в статье рассматривается применение веб-квест технологии, дана их классификация и описаны основы использования в педагогическом процессе.*

Ключевые слова: *веб-квест, технология, поисковая деятельность, образовательный процесс.*

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THEORETICAL BASIS FOR USING WEB QUEST IN THE EDUCATIONAL PROCESS

Abstract: *This article examines the use of webquest technology, classifies it, and describes the basics of its use in the educational process.*

Keywords: *webquest, technology, search activity, educational process.*

В словаре методических терминов и понятий даётся такое определение веб-квеста: «Проблемное задание, которое решается с помощью интернет-ресурсов и данных. Веб-квест основан на разработке проблемных поисково-творческих заданий с элементами ролевой игры. Для их выполнения используются информационные ресурсы и сервисы интернета. Результаты веб-квеста могут быть представлены в виде устного выступления, компьютерной презентации, эссе или веб-страницы — в зависимости от изучаемого материала» [1].

По мнению Ольги Викторовны Сахаровой, веб-квест — это современная и новаторская технология, которая основана на проектном методе обучения. Она предполагает, что ученики будут заниматься поисковой деятельностью с использованием информационно-

коммуникационных технологий. При этом учитель направляет процесс. Иначе говоря, информационно-коммуникационные технологии служат научной и исследовательской основой урока [3].

В основе веб-квеста лежит сюжет, разработанный учителем. Он включает практические и теоретические задания. Чтобы выполнить их, ученикам нужно самостоятельно искать информацию в указанных источниках.

По мнению Ярослава Семёновича Быховского, образовательный веб-квест — это проблемное задание с элементами ролевой игры, для выполнения которого используются информационные ресурсы интернета. То есть это технология, которая предполагает выполнение различных заданий в процессе игры с применением онлайн-ресурсов, а также наличие определённых ролей и их характеристик [2].

Анализ литературы показал, что веб-квест может пониматься как [1]:

- особый тип поисковой деятельности, осуществляемой через интернет;
- модель использования интернет-ресурсов в обучении;
- тип учебных материалов в интернете (П. В. Сысоев, М. Н. Евстигнеев);
- сайт в интернете, с которым работают студенты или школьники, выполняя учебную задачу (Я. С. Быховский).
- деятельность, ориентированная на решение проблемы, при которой большая часть или вся информация берётся из интернета (О. Г. Шевцова).
- новое средство использования технологий для создания практического занятия (урока), ориентированного на студентов (учащихся), которые вовлечены в учебный процесс и поощряют своё критическое мышление.

Мы выбрали такое определение веб-квеста: «образовательный веб-квест — это сайт в интернете, на котором ученики работают над учебными заданиями, используя информационные ресурсы интернета и включая элементы игры».

Образовательные веб-квесты представляют собой интерактивную модель обучения, где ученик становится главным действующим лицом и активным участником процесса обучения. Он самостоятельно выбирает путь решения проблемы и выстраивает свой алгоритм действий. Эта технология позволяет широко использовать межпредметные связи в учебном процессе.

Цели использования веб-квест-технологии:

- научить искать информацию в интернете и работать с ней, а также представлять результаты своей деятельности;
- развить коммуникативные навыки и творческие способности;
- сформировать компьютерную и информационную грамотность и культуру;

- объяснить правила использования компьютерных программ и работы в интернете;
- привить навыки совместной деятельности и чувство ответственности за команду;
- расширить представления участников веб-квеста об информационной безопасности.

Веб-квесты — это увлекательный способ обучения, который помогает решать практические задачи. Вот как они могут быть полезны:

- Позволяют оценить, как ученики работают и что у них получается.
- Способствуют общению и взаимодействию между учениками.
- Представляют учебный материал в новом формате, делая уроки интереснее и разнообразнее.
- Развивают творческие способности с помощью современных технологий.
- Дают возможность показать свои таланты и получить обратную связь.
- Помогают более эффективно использовать время на уроке.

Веб-квест — это образовательная технология, которая позволяет использовать интернет в обучении. Он помогает учащимся решать интересные задачи, узнавать новое и работать вместе. Веб-квест подходит для разных уровней — от простых заданий до сложных проектов, объединяющих разные предметы. Рассмотрим как же устроен веб-квест?

1. Введение.
-Название и тема квеста.
- Описание сюжета, если есть.
-Роли участников (если нужно).
- Цель квеста и что получится в конце.
- Пример: "Исследуй, как действует радиация на человека, и создай презентацию".

2. Задание.
- Что нужно сделать.
- Результат, который получится в конце (презентация, доклад, проект).
- Пример: "Найди информацию о влиянии радиации на здоровье и расскажи об этом".

3. Процесс выполнения.
- Как действовать.
-План работы.
- Список сайтов, книг и других источников.

Пример: "Сначала прочитай статьи, потом посмотри видео, а затем обсуди с друзьями".

4. Оценивание.
- Как будут оценивать работу.
- Как представить результаты.
- Что получилось хорошо, а что можно улучшить.

Пример: "Представь свою работу классу, расскажи, что ты узнал и чему научился".

5. Заключение.

- Итоги квеста.
- Как можно использовать полученные знания.
- Что делать дальше.

Пример: "Теперь ты знаешь больше о радиации. Можешь рассказать об этом друзьям или использовать эти знания в учебе".

Веб-квесты могут быть посвящены как отдельной проблеме, теме или учебному предмету, так и охватывать несколько дисциплин. В связи с выделим три основных принципа классификации веб-квестов:

1. *По продолжительности выполнения: краткосрочные и долгосрочные*.

Краткосрочные веб-квесты занимают от одного до трёх уроков. Они направлены на получение новых знаний, закрепление пройденного материала, поиск взаимосвязей и проверку усвоенной информации. Долгосрочные веб-квесты продолжаются в течение четверти или учебного года. Их цель — углубление и преобразование знаний учащихся.

2. По предметному содержанию: *монопроекты и межпредметные веб-квесты.*

Монопроекты проводятся в рамках одной области знаний, то есть одного предмета или темы. Межпредметные веб-квесты объединяют несколько областей знаний и рассматривают взаимосвязь предметов и тем. Выполняя такие задания, ученики используют материалы разных дисциплин, устраняют пробелы в знаниях и устанавливают связи между предметными областями.

3. *По типу характера заданий*, предлагаемых обучающимися, веб-квесты могут представлять:

1. Пересказ — расскажи или покажи тему по-своему. Это может быть презентация, видео, плакат или даже стенгазета.

2. Планирование — придумай план или проект, как что-то сделать. Например, как организовать праздник или создать инструкцию.

3. Самопознание — узнай больше о себе. Это может быть исследование своих интересов, наблюдение за собой или анализ своих поступков.

4. Создание нового — измени информацию, чтобы она стала понятнее. Например, составь словарь, памятку или инструкцию.

5. Творчество — создай что-то своими руками. Это может быть стихотворение, песня, видеоролик или даже картина.

6. Решение задачи — найди ответ на вопрос или разберись в сложной ситуации.

7. Детектив — попробуй разобраться в загадочной истории, используя подсказки и факты.

8. Поиск согласия — обсуди с другими, как решить проблему, и предложи свои идеи.

9. Оценка — выскажи своё мнение о чём-то и объясни, почему ты так думаешь.

10. Журналистское расследование — собери информацию о чём-то важном и расскажи об этом другим.

11. Убеждение — докажи свою точку зрения, объясняя её другим.

12. Научные исследования — изучи что-то новое с помощью интернета и других источников.

Веб-квест — это интерактивный способ обучения с использованием интернета. Он помогает ученикам работать с разными темами, предметами или даже несколькими дисциплинами одновременно. Это делает обучение более интересным и охватывает широкий круг знаний.

Веб-квесты подходят как для индивидуальной работы, так и для работы в группе. В результате каждый ученик может создать свой уникальный проект.

Веб-квесты помогают структурировать учебный материал, делая его более понятным. Они позволяют быстро находить нужную информацию для выполнения заданий и изучать отдельные части учебного материала. Веб-квесты показывают, как эти части связаны между собой и как они входят в общую картину знаний.

Эта технология даёт возможность свободно перемещаться по материалам и информации, а также изменять курс обучения, добавляя или изменяя отдельные части. Это делает обучение более гибким и адаптивным. Веб-квесты можно использовать на разных этапах урока, выбирать разные темы и вовлекать разные группы учеников.

Таким образом, веб-квесты — это удобный и гибкий инструмент, который учителя могут использовать на уроках, в том числе на уроках физики и информатики, чтобы сделать обучение более интересным и эффективным.

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ЭМПИРИЧЕСКОЕ ИССЛЕДОВАНИЕ САМООТНОШЕНИЯ ЖЕНЩИН, ПЕРЕЖИВШИХ ДОМАШНЕЕ НАСИЛИЕ

Аннотация. *В статье представлены результаты эмпирического исследования особенностей самоотношения женщин, переживших домашнее насилие. Исследование проводилось на базе Центра помощи жертвам домашнего насилия «С тобой Якутия!» (г. Якутск) с участием 30 женщин в возрасте от 25 до 45 лет, из которых 20 составили основную группу (женщины-жертвы домашнего насилия) и 10 – контрольную группу (женщины без опыта насилия). Использовался комплекс психодиагностических методик: МИС С.Р. Пантилеева, шкала самооценки М. Розенберга, опросник травматического стресса Н.В. Тарабриной, шкала депрессии Бека. Результаты показали статистически значимые различия по всем компонентам самоотношения: снижение глобального самоотношения на 26,5%, самоуважения на 29,5%, аутосимпатии на 32,5% и критическое повышение самообвинения на 59,2%. Выявлены тесные корреляционные связи между нарушениями самоотношения и психопатологической симптоматикой. Результаты обосновывают необходимость разработки специализированных программ психологической коррекции.*

Ключевые слова: *самоотношение, домашнее насилие, эмпирическое исследование, психологическая диагностика, женщины-жертвы, самооценка, самообвинение, посттравматическое стрессовое расстройство.*

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EMPIRICAL STUDY OF SELF-ATTITUDE IN WOMEN WHO HAVE EXPERIENCED DOMESTIC VIOLENCE

Abstract. *The article presents the results of an empirical study of the characteristics of self-attitude in women who have experienced domestic violence. The study was conducted at the Support Center for Victims of Domestic Violence "With You, Yakutia!" (Yakutsk) with the participation of 30 women aged 25 to 45*

years, of which 20 constituted the main group (women victims of domestic violence) and 10 formed the control group (women without experience of violence). A set of psychodiagnostic methods was used: the Self-Relation Inventory (SRI) by S.R. Pantileev, the Rosenberg Self-Esteem Scale, the Traumatic Stress Questionnaire by N.V. Tarabrina, and the Beck Depression Inventory. The results showed statistically significant differences across all components of self-attitude: a 26.5% decrease in global self-attitude, a 29.5% decrease in self-respect, a 32.5% decrease in auto-sympathy, and a critical 59.2% increase in self-blame. Close correlational relationships were found between self-attitude disorders and psychopathological symptoms. The results substantiate the need to develop specialized programs for psychological correction.

Keywords: *self-attitude, domestic violence, empirical research, psychological diagnostics, women victims, self-esteem, self-blame, post-traumatic stress disorder.*

Введение

Домашнее насилие представляет собой серьезную социальную и психологическую проблему, затрагивающую миллионы женщин во всем мире. По данным Всемирной организации здравоохранения, около 30% женщин подвергались физическому и/или сексуальному насилию со стороны интимного партнера [1]. В Российской Федерации ситуация также вызывает обеспокоенность: ежегодно более 40% тяжких насильственных преступлений совершается в семейно-бытовой сфере [2].

Особенно остро данная проблема стоит в Республике Саха (Якутия), где показатели семейно-бытового насилия превышают общероссийские в 1,8 раза. Центр помощи жертвам домашнего насилия «С тобой Якутия!» за 2024 год оказал помощь 847 женщинам, из которых 78% демонстрировали выраженные нарушения самооценки и самоотношения [3].

Самоотношение как интегральное чувство в адрес собственного «Я» является одним из центральных компонентов самосознания личности [4]. Исследования показывают, что домашнее насилие оказывает деструктивное влияние на все компоненты самоотношения, приводя к формированию негативного образа себя, снижению самоуважения и самопринятия [5, 6]. Однако специфические особенности нарушений самоотношения у женщин-жертв домашнего насилия остаются недостаточно изученными, особенно в контексте региональной специфики.

Цель исследования – выявить особенности самоотношения женщин, переживших домашнее насилие, в сравнении с женщинами, не имеющими такого опыта.

Гипотеза исследования: самоотношение женщин, переживших домашнее насилие, характеризуется специфическими нарушениями – снижением самоуважения, аутосимпатии, самоинтереса и повышением самообвинения по сравнению с нормативной группой.

Материалы и методы исследования

Выборка исследования.

Исследование проводилось в период с февраля по май 2025 года на базе Центра помощи жертвам домашнего насилия «С тобой Якутия!» (г. Якутск). Общий объем выборки составил 30 женщин в возрасте от 25 до 45 лет, которые были разделены на две группы:

Группа 1 (основная) – 20 женщин, переживших домашнее насилие. Средний возраст составил 34,1±6,8 года. Продолжительность травматических отношений варьировала от 8 месяцев до 18 лет (среднее значение 5,3±3,6 года). Формы пережитого насилия: психологическое – 100%, физическое – 80% (16 человек), экономическое – 65% (13 человек), сексуальное – 30% (6 человек). Время, прошедшее с момента завершения травматических отношений – от 3 месяцев до 2 лет (среднее 8,4±4,2 месяца).

Группа 2 (контрольная) – 10 женщин без опыта домашнего насилия. Средний возраст – 34,3±6,5 года. Группы не различались статистически значимо по возрасту ($p>0,05$) и уровню образования ($p>0,05$).

Критерии включения в основную группу: опыт домашнего насилия продолжительностью не менее 6 месяцев; завершение травматических отношений не менее чем за 3 месяца до участия в исследовании; отсутствие острых психических расстройств; добровольное информированное согласие.

Методы исследования. Для комплексной оценки самоотношения и связанных с ним психологических феноменов использовался следующий диагностический инструментарий:

1. Методика исследования самоотношения (МИС) С.Р. Пантилеева – основной инструмент, позволяющий оценить интегральные (глобальное самоотношение, самоуважение, аутосимпатия, ожидаемое отношение от других, самоинтерес) и факторные шкалы самоотношения (самоуверенность, отношение других, самопринятие, саморуководство, самообвинение, самоинтерес, самопонимание) [4].
2. Шкала самооценки М. Розенберга – измерение глобальной самооценки (10 пунктов, оцениваемых по 4-балльной шкале) [7].
3. Опросник травматического стресса (ОТС) Н.В. Тарабриной – диагностика симптомов посттравматического стрессового расстройства (25 пунктов, три кластера: вторжение, избегание, физиологическая возбудимость) [8].
4. Шкала депрессии Бека (BDI-II) – оценка депрессивной симптоматики (21 группа утверждений, каждая оценивается от 0 до 3 баллов) [9].

Статистическая обработка данных осуществлялась с использованием программного пакета SPSS 26.0. Применялись методы описательной статистики, критерий Манна-Уитни для сравнения независимых групп, корреляционный анализ по Пирсону и Спирмену. Уровень значимости был установлен на отметке $p<0,05$. Для оценки

практической значимости различий рассчитывался размер эффекта (d Коэна).

Этические аспекты. Исследование проводилось с соблюдением этических принципов работы с уязвимой категорией населения: получено развернутое информированное согласие, обеспечены конфиденциальность и добровольность участия, создана безопасная поддерживающая атмосфера.

Результаты исследования и их обсуждение

Сравнительный анализ показателей самоотношения

Сравнительный анализ выявил статистически значимые различия между группами по всем исследуемым параметрам самоотношения (таблица 1).

Таблица 1 – Сравнительный анализ показателей самоотношения

Как видно из таблицы 1, глобальное самоотношение у женщин основной группы на 26,5% ниже показателей контрольной группы (U=23, p<0,001, d=2,41). Размер эффекта d=2,41 указывает на очень большую практическую значимость различий. Низкие показатели глобального самоотношения наблюдались у 75% женщин основной группы против 0% в контрольной группе.

Самоуважение в основной группе значительно снижено (48,6±9,2 vs 68,9±7,1, U=25, p<0,001, d=2,44). Это указывает на нарушение веры в собственные силы, способности, энергию у женщин, переживших домашнее насилие. 80% участниц основной группы демонстрируют низкие показатели самоуважения, что согласуется с данными литературы о разрушительном влиянии систематической критики и обесценивания со стороны агрессора [10, 11].

Аутосимпатия также существенно снижена у женщин-жертв (46,8±10,1 vs 69,4±8,3, U=22, p<0,001, d=2,44). Низкая аутосимпатия свидетельствует о недостатке самопринятия, самодоверия, одобрения себя в целом. 85% женщин основной группы показали сниженные значения по данной шкале, что отражает интернализацию негативных оценок агрессора и формирование устойчивой неприязни к себе [12].

Наиболее выраженные различия обнаружены по шкале самообвинения (72,1±9,4 vs 45,3±8,7, U=17, p<0,001, d=2,98). Повышение показателей самообвинения на 59,2% является критически важным результатом. Склонность к самообвинению представляет собой один из центральных механизмов поддержания травматических переживаний и препятствует выходу из деструктивных отношений. Агрессоры часто перекладывают ответственность за насилие на жертву, что приводит к интернализации вины [13].

Анализ сопутствующей психопатологической симптоматики

Показатели глобальной самооценки по шкале М. Розенберга у женщин основной группы были критически низкими (18,4±4,7 vs 31,2±3,8, U=19, p<0,001, d=3,05). При этом 75% женщин-жертв демонстрировали низкую

самооценку (менее 25 баллов), 15% имели крайне низкую самооценку (менее 15 баллов). В контрольной группе низкой самооценки не было выявлено ни у одной участницы.

Общий балл посттравматической стрессовой симптоматики в основной группе составил 51,0±8,3 (высокий уровень) против 15,2±4,1 в контрольной группе (низкий уровень). Клинически значимый ПТСР выявлен у 80% женщин основной группы. Структура ПТСР-симптоматики включала: вторжение (навязчивые воспоминания у 95%, ночные кошмары у 75%), избегание (избегание мыслей о травме у 85%, эмоциональное онемение у 65%), гипервозбуждение (нарушения сна у 90%, гипербдительность у 85%).

Депрессивная симптоматика по шкале Бека в основной группе соответствовала умеренному уровню депрессии (24,8±8,3), что статистически значимо отличалось от контрольной группы с минимальным уровнем (6,2±3,1; $U=18$, $p<0,001$, $d=2,71$). Распределение по степени тяжести в основной группе: легкая депрессия – 20%, умеренная – 50%, тяжелая – 25%.

Корреляционный анализ

Корреляционный анализ выявил тесные взаимосвязи между показателями самоотношения и психопатологической симптоматикой в основной группе. Глобальное самоотношение отрицательно коррелировало с общим уровнем ПТСР ($r=-0,67$, $p<0,001$) и депрессивной симптоматикой ($r=-0,72$, $p<0,001$). Самообвинение положительно коррелировало с депрессией ($r=0,64$, $p<0,001$), симптомами избегания ($r=0,59$, $p<0,001$) и общим уровнем ПТСР ($r=0,61$, $p<0,001$). Самоуважение отрицательно коррелировало с депрессивными симптомами ($r=-0,69$, $p<0,001$) и симптомами гипервозбуждения ($r=-0,54$, $p<0,01$).

Выявленные корреляции указывают на системный характер нарушений и центральную роль самоотношения в структуре психологических последствий травмы. Негативное самоотношение не только является следствием травматического опыта, но и поддерживает психопатологическую симптоматику, создавая порочный круг [14].

Обсуждение результатов

Полученные результаты подтверждают исходную гипотезу о наличии специфических нарушений самоотношения у женщин, переживших домашнее насилие. Все различия между группами статистически значимы с очень большим размером эффекта ($d=2,03$-$2,98$), что свидетельствует не только о статистической, но и о практической значимости выявленных различий.

Структура выявленных нарушений характеризуется системным снижением всех позитивных компонентов самоотношения и критическим повышением самообвинения. Это соответствует теоретическим представлениям о механизмах воздействия домашнего насилия на самосознание личности. Систематическое унижение, критика, обесценивание со стороны партнера приводят к интернализации негативного

образа себя [15]. Женщина начинает воспринимать себя через призму искаженных представлений агрессора.

Особого внимания заслуживает выявленное критическое повышение самообвинения (на 59,2% по сравнению с нормой). Самообвинение является одним из ключевых когнитивных искажений, поддерживающих травматические переживания. Агрессоры используют стратегию перекладывания ответственности, обвиняя жертву в провоцировании насилия [16]. В результате формируется устойчивое убеждение: «Я сама виновата в том, что со мной происходит». Такое искажение восприятия парадоксальным образом удерживает женщину в деструктивных отношениях, поскольку, если она виновата, то изменение её поведения должно прекратить насилие.

Тесные корреляционные связи между нарушениями самоотношения и психопатологической симптоматикой указывают на центральную роль самоотношения в развитии и поддержании посттравматических расстройств. Негативное самоотношение усиливает депрессивную и тревожную симптоматику, снижает эффективность совладающего поведения, препятствует социальной поддержке [17]. С другой стороны, ПТСР и депрессия негативно влияют на самовосприятие, создавая порочный круг взаимного усиления симптоматики.

Региональная специфика проблемы в Республике Саха (Якутия), где показатели домашнего насилия превышают общероссийские, обусловлена рядом социокультурных факторов: высоким уровнем алкоголизации населения, экономической нестабильностью, географической изолированностью многих населенных пунктов. Это подчеркивает необходимость разработки специализированных программ психологической помощи, учитывающих региональную специфику.

Практическая значимость исследования состоит в том, что выявленная структура нарушений самоотношения может служить основой для разработки целенаправленных программ психологической коррекции. Программы должны включать работу со всеми компонентами самоотношения с особым акцентом на коррекции самообвинения как наиболее выраженного нарушения. Целесообразным представляется использование интегративного подхода, сочетающего когнитивно-поведенческие методы работы с дисфункциональными убеждениями и гуманистические техники развития самопринятия [18].

Заключение

Проведенное эмпирическое исследование позволяет сделать следующие выводы:

1. Подтверждена гипотеза о наличии специфических нарушений самоотношения у женщин, переживших домашнее насилие. Выявлены статистически значимые различия по всем компонентам самоотношения с очень большим размером эффекта.

2. Структура нарушений характеризуется снижением глобального самоотношения на 26,5%, самоуважения на 29,5%, аутосимпатии на 32,5%, самоинтереса на 32,0% и критическим повышением самообвинения на 59,2% по сравнению с нормативной группой.

3. Самообвинение является центральной проблемой, требующей приоритетного внимания в коррекционной работе.

4. Тесные корреляции между нарушениями самоотношения и психопатологической симптоматикой (ПТСР, депрессия) указывают на системный характер нарушений и необходимость комплексного подхода к психологической коррекции.

5. Высокая выраженность нарушений (75-85% участниц имеют низкие показатели по позитивным аспектам самоотношения) обосновывает острую необходимость разработки специализированных программ психологической помощи женщинам-жертвам домашнего насилия.

Результаты исследования создают прочную эмпирическую базу для разработки программ психологической коррекции, которые должны учитывать выявленные особенности и быть направлены на восстановление всех компонентов самоотношения. Перспективы дальнейших исследований связаны с апробацией коррекционных программ и оценкой их эффективности в контролируемых исследованиях.

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РЕКОНСТРУКЦИЯ И СОВРЕМЕННЫЕ НАПРАВЛЕНИЯ ТРАНСФОРМАЦИИ ОБЩЕСТВЕННЫХ ЗДАНИЙ

Аннотация: *Реконструкция общественных зданий, городские условия, укрупнение городов, рост плотности, усложнение организации реконструкции. Предлагается корректировка традиционных методов реконструкции с учетом городских особенностей.*

Ключевые слова: *Реконструкция, общественные здания, динамика развития городов, усложнение организации реконструкции, необходимость дополнительных исследований.*

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RECONSTRUCTION AND MODERN DIRECTIONS OF TRANSFORMATION OF PUBLIC BUILDINGS

Abstract: *Reconstruction of public buildings, urban conditions, urban enlargement, increasing density, complication of reconstruction organization. It is proposed to adjust the traditional methods of reconstruction, taking into account urban features.*

Keywords: *Reconstruction, public buildings, urban development dynamics, increasing complexity of reconstruction organization, the need for additional research.*

Введение.

Общественные здания имеют длительный жизненный цикл в зависимости от капитальности, сроки службы этих зданий составляют до 100 лет и выше. За этот период из-за динамики развития общества, техники и технологий здания физически и морально устаревают. Причем последний вид старения имеет тенденцию к значительному ускорению. Для снижения негативных последствий указанного явления проводятся модернизации и реконструкции, то есть здания трансформируются (табл.1).

Цель.

Нами рассматривается реконструкция общественных зданий, поскольку этот вид обновления наиболее распространен. Это связанно с выделением больших финансовых средств, требующим материальных и трудовых затрат. Задача состоит в снижении этих затрат.

Материалы и методы.

В таблице 1 отражены возможные трансформации зданий и состав выполняемых работ на всех этих видах различен, как и получаемый результат.

Таблица 1

Виды трансформации зданий

	Вид трансформации	Состав изменений (работ)
1	Капитальный ремонт здания	Комплекс работ по восстановлению или замене отдельных частей или конструкций здания, инженерных сетей и оборудования с целью поддержания его в исправном состоянии и устранения физического износа, не изменяющий функционального назначения здания.
2	Модернизация здания	Комплекс работ по улучшению эксплуатационных характеристик здания, его инженерных систем и оборудования, с целью повышения комфорта, энергоэффективности, безопасности и приведения в соответствие современным требованиям, не связанный с изменением основных технико-экономических показателей здания.
3	Реконструкция здания	Комплекс работ по изменению параметров здания, его частей (высоты, количества этажей, площади, объема), в том числе надстройка, перестройка, расширение, а также замена и (или) восстановление несущих строительных конструкций, за исключением замены отдельных элементов таких конструкций на аналогичные или иные улучшающие показатели таких конструкций элементы и (или) восстановления указанных элементов
4	Реновация здания	Комплекс мероприятий, направленных на обновление устаревшей застройки, улучшение жилищных условий граждан, благоустройство территории, снос ветхих и аварийных домов и строительство на их месте новых, современных зданий.

Подготовлено автором

ПРИ РЕКОНСТРУКЦИИ ОБЩЕСТВЕННЫХ ЗДАНИЙ РЕШАЮТСЯ СЛЕДУЮЩИЕ ОСНОВНЫЕ ЗАДАЧИ:

- приведение объемно-планировочной структуры здания в соответствие с современными потребностями и вновь размещаемого вида услуг, а в случае изменения функционального назначения здания с трансформацией помещений;
- повышение эксплуатационных качеств существующих несущих и ограждающих конструкций в соответствии с новыми требованиями;
- изменение основных строительных параметров здания (конфигурации, плана, высота помещений, сетки колонн), а также с условиями проведения реконструктивных строительных работ;

- модернизация инженерных систем для обеспечения потребностей модернизируемого здания и создания, требуемых нормами условий нахождения;

- совершенствование архитектурно-художественных качеств здания и его интерьеров с учетом современных требований к общей композиции городской застройки.

Процесс изменения функционала здания сопровождается большей и меньшей перепланировкой помещений. Необходимость частичной или полной перепланировки может определяться изменением санитарных или пожарных характеристик реконструируемых зданий. Существенная реорганизация внутреннего пространства во всех случаях должна проводиться с учетом необходимости создания ясного композиционного решения интерьера, четкого зонирования площадей основных и вспомогательных помещений.

Одними из факторов, оказывающими влияние на формирование архитектурных решений при реконструкции здания, являются:

- повышение требований к инженерному обеспечению производств и связанное с этим увеличение годовых расходов электрической и тепловой энергии, а также воды;

- существенные изменения в планировочной структуре зданий и соответственно функциональных зон.

Отметим, что имеется множество исследований в рассматриваемой области [1, 2, 3, 4, 5, 6, 7]. Они посвящены различным аспектам и объектам реконструкции и их количество подчеркивают актуальность и многогранность исследуемой темы.

Значимым явлением в последние годы стала, так называемая, реновация, которая состоит в том, что на месте старых объектов (в основном жилых объектов) возводятся новые строительные объекты, имеющие такие же или иные функции. Можно привести примеры успешных и эффективных реновций в зарубежных странах, например в богатой инновациями в области строительства и других производств Голландии.

Результаты.

Основные этапы жизненного цикла зданий отражены на рис.1. Здесь заслуживает внимание следующее:

- следует сокращать как сроки проектирования и **строительства T_1**, но и сроки применения типовых проектов, поскольку заложенные в этих проектах потребительские качества устаревают;

ПРОЕКТИ-РОВАНИЕ	СТРОИ-ТЕЛЬСТВО	ЭКСПЛУАТАЦИЯ ЗДАНИЯ		СНОС
		Зона «нормальной» эксплуатации	З о н а реконструкций	
			Несамортизированная часть здания	
	T_1	T_2		

Подготовлено автором

Рис.1. Схема жизненного цикла здания (T_1 и T_2 соответственно продолжительность строительства, и сроки существования зоны «нормальной» эксплуатации)

- необходимо стремиться всячески удлинять продолжительность зоны «нормальной» эксплуатации T_2, т.е. эксплуатации, в течение которой обеспечивается достаточный уровень физического и морального износа здания;

- в зоне реконструкций за срок службы здания может потребоваться несколько реконструкций;

- в настоящее время актуальным становится вопрос обеспечения мало затратного сноса зданий, включая удаление и утилизацию отходов.

Исходя из целей роста эффективности здания на протяжении жизненного цикла здания с учетом различных возможных трансформаций можно выделить две группы мероприятий по обеспечению итоговой эффективности: первая группа - мероприятия превентивного характера, а вторая группа - мероприятия по снижению затрат на трансформации (реконструкции) зданий.

Мероприятия превентивного характера заключаются:

- в придании проектируемому зданию дополнительных свойств, которые увеличивают срок нормальной эксплуатации (T_2);

- в закладывании в конструктивно-планировочных решениях, обеспечивающих рост реконструируемости здания.

Касаясь роста эффективности общественных зданий в зоне реконструкций (см. рис.1), можно отметить следующее, что в этом направлении имеется много исследований, обеспечивающих выбор рациональных вариантов реконструкции и позволяющих применять эффективные методы организации и технологии производства работ. Вместе с тем, учитывая, что общественные здания в основном дислоцированы в городах, в современных условиях роста плотности населения и застройки на урбанизированных территориях появляются новые негативные факторы, усложняющие реконструкцию зданий из-за стесненности, условий доставки, складирования и производства строительно-монтажных работ. Для выявления степени влияния этих факторов, определения мероприятий по

снижению их негативного воздействия требуют проведения соответствующих исследований.

Таким образом, объемы реконструкции общественных зданий в силу

Выводы

указанных причин имеют тенденцию к росту и усложнению производства реконструкции. В жизненном цикле зданий выделяются несколько зон, на которые следует оказывать воздействие с целью снижения негативных потерь в связи с предстоящими реконструкциями. Наряду с этим в современных условиях появляются факторы влияющие на рост затрат труда и времени на реконструкцию, которые требуют дополнительных исследований.

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РОЛЬ СЕРОЛОГИЧЕСКИХ МАРКЁРОВ ПРИ ХРОНИЧЕСКОЙ КРАПИВНИЦЕ И ОТВЕТ НА АНТИ-IGE-ЛЕЧЕНИЕ У ПАЦИЕНТОВ

Аннотация. *Хроническая спонтанная крапивница (ХСК) представляет собой заболевание, характеризующееся повторяющимися высыпаниями, зудом и отёками, продолжающимися более шести недель. Несмотря на стандартную антигистаминную терапию, у значительной части пациентов симптомы сохраняются, что требует применения таргетных подходов. Одним из наиболее эффективных направлений стало использование анти-IgE терапии (омализумаб), направленной на блокирование взаимодействия IgE с рецепторами тучных клеток и базофилов. В статье представлен обзор современных данных о серологических и иммунологических маркёрах, ассоциированных с ответом на анти-IgE лечение.*

Ключевые слова: *хроническая спонтанная крапивница; омализумаб; анти-IgE терапия; серологические маркёры; аутоиммунитет; IgE; FcεRI.*

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THE ROLE OF SEROLOGICAL MARKERS IN CHRONIC URTICARIA AND THE RESPONSE TO ANTI-IGE THERAPY IN PATIENTS

Abstract: *Chronic spontaneous urticaria (CSU) is a persistent skin disease characterized by recurrent wheals and pruritus lasting for more than six weeks. Despite the use of standard antihistamines, many patients experience insufficient symptom control. Anti-IgE therapy with omalizumab has become an effective option; however, therapeutic response varies among individuals. This review summarizes recent findings on the role of serological and immunological markers in predicting treatment outcomes.*

Keywords: *chronic spontaneous urticaria; omalizumab; anti-IgE therapy; serological markers; IgE; autoimmunity.*

Введение.

Хроническая спонтанная крапивница является одной из наиболее распространённых аллергических патологий, встречающихся как у взрослых, так и у детей. По данным различных авторов, распространённость заболевания составляет от 0,5 до 1% населения [1]. Несмотря на доброкачественное течение, хронический зуд и высыпания значительно ухудшают качество жизни пациентов, вызывая нарушения сна, тревожность и снижение работоспособности. Традиционная терапия включает антигистаминные препараты второго поколения, однако у 30–40% пациентов эффект остаётся недостаточным [2]. Появление омализумаба, моноклонального антитела, связывающего свободный IgE, стало важным шагом в лечении ХСК. Тем не менее, степень клинического ответа на анти-IgE терапию различается, что привело к активному поиску серологических предикторов эффективности лечения.

Патогенетические механизмы и иммунологические особенности ХСК. Современные исследования подтверждают, что ХСК представляет собой гетерогенное заболевание, включающее IgE-опосредованные и аутоиммунные формы [3]. У части больных выявляются аутоантитела к высокоаффинным рецепторам IgE (FcεRIα) или к самому IgE, что приводит к активации тучных клеток и выделению медиаторов воспаления без участия внешнего аллергена. Повышенный уровень общего IgE, напротив, чаще наблюдается у пациентов с так называемым «аллергическим» типом ХСК, который демонстрирует лучший ответ на омализумаб. В то же время у больных с аутоиммунным типом, где IgE низкий, а антитела к FcεRI или anti-TPO положительные, эффективность терапии ограничена [4].

Серологические маркёры и прогноз эффективности анти-IgE терапии.

1. Общий IgE.

Уровень общего IgE рассматривается как один из ключевых предикторов ответа на терапию. Исследования показывают, что пациенты с более высоким исходным IgE чаще достигают полного контроля симптомов после 3–6 месяцев лечения омализумабом [5].

2. Антитела к FcεRI и IgE.

Наличие аутоантител к FcεRIα связано с аутоиммунной формой ХСК. У таких пациентов наблюдается более медленный или неполный ответ, что указывает на необходимость дополнительной иммуносупрессивной терапии [6].

3. Антитела к тиреоидной пероксидазе (anti-TPO).

Ассоциация ХСК с аутоиммунными тиреопатиями подтверждает важность оценки щитовидных маркёров. Положительный anti-TPO коррелирует с низким IgE и слабым ответом на омализумаб.

4. Цитокиновые и воспалительные биомаркёры.

Концентрации интерлейкина-6, TNF-α и С-реактивного белка также могут быть прогностическими. Уменьшение их уровня после начала терапии отражает положительный клинический ответ.

Клинические исследования и опыт применения омализумаба. Рандомизированные исследования показали, что эффективность омализумаба достигает 65–80% у пациентов с ХСК, резистентной к антигистаминам [5,7]. Улучшение наступает обычно через 2–4 недели после введения препарата и сопровождается снижением зуда и частоты высыпаний. В Узбекистане применение омализумаба показало сопоставимые результаты: у большинства пациентов отмечается выраженное клиническое улучшение и повышение качества жизни. Однако остаётся группа больных, у которых эффект ограничен. В таких случаях серологическое тестирование позволяет скорректировать терапевтическую тактику и рассмотреть комбинированные схемы.

Понимание иммунологических особенностей ХСК имеет решающее значение для персонализированного подхода в терапии. Определение уровня IgE и аутоантител к FcεRI позволяет не только прогнозировать эффективность анти-IgE терапии, но и рационально распределять ресурсы, снижая неоправданные назначения дорогостоящих препаратов. Включение серологических маркёров в диагностический алгоритм ХСК представляется перспективным направлением, которое может повысить точность прогноза и эффективность лечения.

Заключение.

Хроническая спонтанная крапивница является сложным полиэтиологическим заболеванием, где успех терапии омализумабом во многом зависит от иммунологического профиля пациента. Определение серологических маркёров, таких как общий IgE, антитела к FcεRI и anti-TPO, помогает предсказать ответ на лечение и оптимизировать терапевтические решения. Будущие исследования, направленные на комплексную оценку иммунологических и клинических параметров, позволят создать более точные модели прогнозирования эффективности анти-IgE терапии у пациентов с ХСК.

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ИММУНОЛОГИЧЕСКИЕ ПРЕДИКТОРЫ ОТВЕТА НА АНТИ-IGE ТЕРАПИЮ ПРИ ХРОНИЧЕСКОЙ КРАПИВНИЦЕ

Аннотация. *Хроническая спонтанная крапивница (ХСК) представляет собой гетерогенное заболевание с различными патогенетическими механизмами, включая аутоиммунные и IgE-опосредованные формы. Введение анти-IgE терапии (омализумаба) значительно расширило возможности лечения, однако клинический ответ варьирует у разных пациентов. В статье рассмотрены современные данные о наиболее изученных иммунологических маркёрах, предсказывающих эффективность анти-IgE терапии, включая уровень общего IgE, аутоантитела к FcεRI, анти-TPO, показатели активации базофилов и воспалительные биомаркёры.*

Ключевые слова: *хроническая спонтанная крапивница; анти-IgE терапия; омализумаб; иммунологические маркёры; общий IgE; FcεRI; аутоиммунитет.*

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IMMUNOLOGICAL PREDICTORS OF RESPONSE TO ANTI-IGE THERAPY IN CHRONIC URTICARIA

Abstract. *Chronic spontaneous urticaria (CSU) is a heterogeneous disorder with various pathogenic mechanisms, including autoimmune and IgE-mediated forms. The introduction of anti-IgE therapy (omalizumab) has significantly expanded treatment possibilities; however, clinical responses vary among*

patients. This article reviews current data on the most studied immunological markers predicting the efficacy of anti-IgE therapy, including total serum IgE levels, autoantibodies to FcεRI, anti-TPO antibodies, basophil activation parameters, and inflammatory biomarkers.

Keywords: *chronic spontaneous urticaria; anti-IgE therapy; omalizumab; immunological markers; total IgE; FcεRI; autoimmunity.*

Введение.

Хроническая спонтанная крапивница (ХСК) характеризуется спонтанным появлением уртикарных элементов и ангиоотёков продолжительностью более шести недель. Патогенез заболевания многофакторен, с вовлечением как IgE-зависимых, так и аутоиммунных механизмов. В последние годы омализумаб, моноклональное антитело к IgE, стал ключевым препаратом для лечения ХСК, однако у части пациентов эффект отсутствует или выражен слабо. Это обусловило необходимость поиска иммунологических предикторов ответа на терапию. Показано, что высокий уровень общего IgE коррелирует с благоприятным ответом, тогда как аутоиммунные признаки (низкий IgE, наличие антител к FcεRI) ассоциируются с недостаточным эффектом терапии. Обсуждаются перспективы комплексного использования биомаркёров для стратификации пациентов и прогнозирования эффективности лечения.

Уровень общего IgE.

Одним из наиболее воспроизводимых биомаркёров является уровень общего сывороточного IgE. Ряд исследований показал, что более высокие значения IgE коррелируют с быстрым и стойким ответом на омализумаб, тогда как низкие уровни (<40 кЕ/л) ассоциируются с неполным или отсутствующим ответом [1,2]. Предполагается, что при высоком IgE преобладает классический IgE-опосредованный эндотип (тип I), чувствительный к нейтрализации IgE, тогда как при низком IgE чаще доминируют аутоиммунные процессы (тип IIb) [3].

Аутоиммунные антитела.

У части больных ХСК выявляются антитела класса IgG к FcεRI или IgE, а также антитела к тиреопероксидазе (anti-TPO). Их наличие указывает на аутоиммунную природу заболевания и нередко ассоциируется с более тяжёлым течением и слабым ответом на анти-IgE терапию [4]. В таких случаях предполагается участие механизмов дегрануляции тучных клеток, независимых от IgE.

Базофильный активационный тест (BAT) и экспрессия FcεRI.

Функциональные тесты, такие как BAT (basophil activation test), позволяют оценивать реактивность базофилов к аутоантителам и аллергенам. Некоторые исследования продемонстрировали, что BAT-положительные пациенты лучше отвечают на омализумаб, тогда как BAT-отрицательные — менее чувствительны [5]. Кроме того, экспрессия высокоаффинного рецептора FcεRI на базофилах и тучных клетках может

изменяться под влиянием терапии и коррелировать с клиническим эффектом [6].

Воспалительные маркёры.

Дополнительное значение придают неспецифическим воспалительным показателям — С-реактивному белку (CRP), D-димеру и цитокинам. Повышенные уровни CRP и D-димера чаще наблюдаются у пациентов с активным воспалением и могут отражать системную компоненту заболевания [7]. Однако их прогностическая ценность в отношении ответа на омализумаб остаётся ограниченной и требует дальнейших исследований.

Иммунологические маркёры играют важную роль в прогнозировании эффективности анти-IgE терапии при хронической спонтанной крапивнице. Наиболее достоверным предиктором положительного ответа считается высокий уровень общего сывороточного IgE. Аутоиммунные признаки, включая наличие антител к FcεRI и anti-TPO, как правило, связаны с меньшей эффективностью лечения. Функциональные тесты, отражающие активацию базофилов и экспрессию FcεRI, а также воспалительные биомаркёры представляют интерес для дальнейшего изучения как потенциальные инструменты персонализации терапии.

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ЯЗЫКОВЫЕ ЗАИМСТВОВАНИЯ КАК ОДНА ИЗ СОСТАВЛЯЮЩИХ ЯЗЫКА СМИ

Аннотация: *В статье рассматриваются языковые заимствования как неотъемлемая часть современного языка средств массовой информации. Отмечается, что в условиях глобализации и развития цифровых технологий особенно возрастает роль иноязычной лексики, проникающей в медийные тексты. Автор анализирует причины активного проникновения англицизмов и других заимствований в язык СМИ, а также их влияние на стилистическую выразительность, доступность и восприятие текста читателями. В работе освещаются теоретические подходы к изучению заимствований, приводятся примеры функционирования иноязычных слов в различных сферах, а также обозначаются возможные риски чрезмерного использования заимствованной лексики.*

Ключевые слова: *язык СМИ, заимствования, англицизмы, интернационализация, медийный дискурс, лексическая адаптация.*

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LINGUISTIC BORROWINGS AS ONE OF THE COMPONENTS OF THE MEDIA LANGUAGE

Abstract: *The article examines linguistic borrowings as an integral part of the modern language of mass media. It is noted that in the context of globalization and the development of digital technologies, the role of foreign vocabulary penetrating media texts has significantly increased. The author analyzes the reasons for the active spread of Anglicisms and other borrowings in the language of the media, as well as their influence on stylistic expressiveness, accessibility, and readers' perception of texts. The paper highlights theoretical approaches to the study of borrowings, provides examples of the functioning of foreign words in various spheres, and outlines possible risks of excessive use of borrowed vocabulary.*

Keywords: *media language, borrowings, Anglicisms, internationalization, media discourse, lexical adaptation.*

В XXI веке формируется новое виртуальное информационное пространство — Интернет, которое существенно влияет на языковую ситуацию и процессы коммуникации. Одним из наиболее заметных проявлений этих изменений является активное проникновение заимствованной лексики в язык средств массовой информации.

Проблема употребления заимствований особенно остро стоит в современной российской и узбекской медиасфере. Заимствования прочно вошли в нашу жизнь через печатные и электронные СМИ, в первую очередь — через интернет-дискурс. Это обусловлено не только расширением международных контактов, но и массовым импортом научных, политических, экономических и технологических реалий, сопровождающихся притоком соответствующей терминологии.

С одной стороны, заимствованная лексика способствует обновлению языка, наполняет тексты экспрессией, снижает уровень официальности, создавая «эффект новизны» и обеспечивая более близкий контакт с читателем. С другой стороны, чрезмерное использование иноязычных слов может приводить к утрате смысловой прозрачности, затруднять понимание текста и искажать его значение.

Среди исследователей, внесших вклад в изучение языка СМИ, следует отметить работы В.Н. Вакурова, В.Г. Костомарова, В.В. Виноградова, Г.В. Глинских, а также исследования, посвящённые функционированию заимствованной лексики, выполненные А.А. Брагиной, М.А. Брейтен и другими.

Актуальность данной темы определяется тем, что проблема ясности и понятности речи напрямую зависит от корректности употребления заимствований. Возникают закономерные вопросы:

- Насколько прочно заимствования вошли в современный язык СМИ?
- Создают ли они трудности для читателя в связи с непониманием значения?
- Какие функции выполняют заимствования в медиатекстах?

Цель данной статьи — определить специфику использования заимствований в языке СМИ, провести комплексное описание их функционирования и выявить закономерности употребления в различных видах медиатекстов.

Проблема заимствований в языкознании традиционно рассматривается как один из важнейших аспектов лексического развития языка. По определению В.А. Звегинцева, «заимствование — это процесс перехода языковых элементов из одного языка в другой в результате культурных и социальных контактов» [Звегинцев, 1981, с. 115].

В российской лингвистике заимствования трактуются как результат взаимодействия языков в условиях межкультурной коммуникации (В.В.

Виноградов, А.А. Реформатский, Л.П. Крысин). По мнению Л.П. Крысина, «влияние иностранных языков на лексику является естественным и неизбежным следствием развития международных связей, однако степень адаптации заимствований должна определяться внутренними законами языка-приёмника» [Крысин, 2004, с. 27].

В западноевропейской традиции изучение языковых заимствований связано с трудами таких исследователей, как Э. Хауген (E. Haugen), Т. Себеок (T. Sebeok). В классической работе У. Вайнрайха *Languages in Contact* (1953) заимствование определяется как «естественный результат билингвизма и контакта культур, где язык служит каналом обмена не только словами, но и концептами». Значительный вклад в изучение англицизмов внёс немецкий исследователь Дитер Мюльхаузлер (D. Mühlhäusler), который подчеркивает, что «современная глобальная медиасреда формирует новые лексические стандарты, ориентированные на английский язык как язык международной коммуникации» [Mühlhäusler, 2003].

В немецкой лингвистике (H. Glück, K. Görlach, U. Ammon) отмечается, что англицизмы в СМИ становятся показателем «языковой моды» и средством идентификации с глобальной культурой. Так, К. Герлах указывает: «англицизмы выполняют не только номинативную, но и социокультурную функцию, отражая стремление к модернизации языка» [Görlach, 2001, p. 45].

В научных кругах стран СНГ проблема заимствований активно изучается в контексте влияния глобализации и медиа.

Так, В.Г. Костомаров и В.Н. Вакуров рассматривали язык СМИ как «особую функциональную разновидность современного русского языка, открытую для иноязычных влияний и отражающую динамику общественных процессов» [Костомаров, 1999, с. 19].

А.А. Брагина отмечает, что «заимствования в СМИ выполняют функцию языковой инновации, придавая текстам экспрессию и динамику, но при чрезмерном употреблении создают эффект "чужеродности"» [Брагина, 2001, с. 42].

Исследователь Т.Г. Добросклонская в работе *Медиалингвистика: системный подход к изучению языка СМИ* (2008) указывает, что «влияние англицизмов на медийный язык обусловлено как технологическими, так и культурными факторами, а СМИ становятся основным проводником языковой глобализации».

В узбекистанской лингвистике проблематика заимствований рассматривается в трудах таких учёных, как Ш. Сафаров, Н. Махмудов, М. Нурмухамедова, З. Рахимова, Ш. Хамидова и др.

Ш. Сафаров подчёркивает, что «медиатексты становятся зеркалом социолингвистических процессов в обществе, а заимствования — индикатором культурной интеграции и языковой адаптации» [Сафаров, 2015, с. 78].

По мнению М. Нурмухамедовой, заимствования в узбекских СМИ следует рассматривать как «естественный этап эволюции национального языка под влиянием международного информационного пространства» [Нурмухамедова, 2018, с. 54].

Исследовательница З. Рахимова в статье *Ingliz tilidan kirib kelgan so‘zlarning ommaviy axborot vositalaridagi funksiyasi* (2020) отмечает, что «англицизмы в узбекском медийном пространстве выполняют функцию престижного кода, сигнализирующего о принадлежности к глобальной культуре».

Ш. Хамидова (2022) уточняет, что «не все заимствования одинаково интегрируются в систему узбекского языка: часть из них остаётся маркерами элитарного, "цифрового" дискурса».

Таким образом, узбекистанская научная школа рассматривает заимствования как инструмент культурной адаптации и как отражение процессов модернизации в языковой системе. Современные исследователи сходятся во мнении, что заимствования — это не просто проявление языковой моды, а механизм адаптации языка к изменяющемуся миру. Однако они требуют научного контроля, чтобы сохранить баланс между языковым развитием и сохранением национальной идентичности.

Практический анализ современных узбекских медиатекстов подтверждает активное проникновение англицизмов и гибридных форм заимствований в язык средств массовой информации. В качестве материала исследования были рассмотрены тексты новостных порталов и образовательных изданий, содержащие элементы мультимедийного и интернет-дискурса.

В частности, в текстах встречаются примеры: *“Сторителлинг хусусида гар кетар экан…” ; “Мультимедиавий материал тайерлаш усуллари: лонгрид ва сторимап”;“Гапимиз исботини мультимедиавий сторителлинг билан изохлашимиз мумкин”; “Мультимедиа ҳикояси мультимедиа мавжудлигини таъкидлайди ва у расмлар, панорамалар, видеолар, интерфаол, слайд-шоу, 3-Д графикалар, гиф-анимация ва бошқа мультимедиа элементлари бирикмасида...”;“Интернетнинг ОАВ платформаларида контент яратишнинг бу усулларидан замонавийлари сифатида қўйидаги икки йўналишни келтириш мумкин: контентни краудсорсинг технологияси”* .

Данные примеры демонстрируют активное функционирование заимствованных терминов storytelling, longread, storymap, multimedia, content, crowdsourcing и др. в узбекском медиадискурсе. Они адаптируются в морфологической и фонетической системе узбекского языка, нередко получая национальные словообразовательные элементы: *мультимедиавий*, *сторителлинг билан изохлашимиз*, *контент яратишнинг усули* и др.

На основе контекстуального анализа можно выделить несколько ключевых функций иноязычных элементов:

Номинативная функция**.** Заимствования обозначают новые явления в сфере журналистики и цифровых технологий, для которых ранее не существовало эквивалентов в узбекском языке (*лонгрид, сторимап, краудсорсинг*). Эти слова выполняют функцию заполнения семантических лакун.

Инновационно-престижная функция. Употребление англицизмов усиливает ощущение современности и профессионализма, особенно в материалах, посвящённых цифровым коммуникациям. Как отмечает З. Рахимова (2020), англицизмы в СМИ «выполняют роль престижного кода, сигнализирующего о принадлежности к глобальной медиакультуре».

Экспрессивно-оценочная функция. Использование иноязычных терминов усиливает выразительность текста, делает речь более динамичной и эмоционально насыщенной. Например, лексемы *мультимедиа ҳикояси*, *мультимедиавий сторителлинг* несут в себе метафорический и визуальный потенциал.

Идентификационная функция. Заимствования служат маркерами профессиональной идентичности журналистов и медиаспециалистов, демонстрируя принадлежность к международному информационному сообществу.

Как отмечает Ш. Хамидова (2022), не все заимствования проходят полную адаптацию: часть из них остаётся маркерами элитарного, «цифрового» дискурса, употребляясь преимущественно в узкоспециализированных публикациях. Тем не менее, наблюдается тенденция к постепенной интеграции этих лексем в общий медийный язык.

Таким образом, можно утверждать, что заимствования не только отражают процессы глобализации и технологического прогресса, но и способствуют формированию нового стиля медийного письма, где англицизмы выполняют как информативную, так и эстетическую функцию.

Заимствования в языке СМИ представляют собой неотъемлемую часть современного медиадискурса, выполняя важную роль в передаче новых понятий, тенденций и технологий. Результаты анализа узбекских медиатекстов показали, что заимствованные элементы активно адаптируются, становятся инструментом лексического обновления и стилистического разнообразия. Однако необходимо поддерживать баланс между открытостью языка к международным влияниям и сохранением его национальной идентичности. Научное осмысление и нормативное регулирование заимствований — важное условие гармоничного развития современного медийного языка.

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КАК ПРЕОДОЛЕТЬ ЛОГИСТИКУ ДЛЯ РОСТА ЭКСПОРТА ОВОЩЕЙ И ФРУКТОВ

Аннотация: *Статья анализирует ключевые логистические препятствия, препятствующие росту экспорта овощей и фруктов, и предлагает практические решения: оптимизацию цепочек поставок, внедрение современных технологий хранения и транспортировки, а также государственную поддержку инфраструктуры. Рассматриваются успешные кейсы и рекомендации для экспортеров.*

Ключевые слова: *логистика, экспорт, овощи и фрукты, цепочки поставок, транспорт, хранение, инфраструктура, агроэкспорт*

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HOW TO OVERCOME LOGISTICS FOR THE GROWTH OF VEGETABLE AND FRUIT EXPORTS

Abstract: *The article examines key logistical barriers hindering the growth of vegetable and fruit exports and proposes practical solutions: optimizing supply chains, implementing modern storage and transportation technologies, and providing state support for infrastructure. Successful case studies and recommendations for exporters are discussed.*

Keywords: *logistics, export, vegetables and fruits, supply chains, transportation, storage, infrastructure, agro-export*

Кириш.

Мева-сабзавот маҳсулотлари билан жаҳон савдоси логистика ва транспорт инфратузилмасининг самарадорлиги ва ишончлилигига катта даражада боғлиқ. Чет эл бозорларида янги маҳсулотларга бўлган талаб ортиб бориши билан, маҳсулотни фермер хўжалигидан истеъмолчигача етказиш жараёнида унинг сифати ва янгилигини сақлаш зарурати ҳам ортиб бормоқда. Самарали логистик тизимлар экспортчиларга халқаро бозорлардаги қатъий сифат талабларига жавоб бериш, етказиб бериш муддатларини оптималлаштириш ва харажатларни камайтириш имконини беради.

Логистика ва транспорт инфратузилмасини ривожлантириш мева-сабзавот маҳсулотлари экспортини кўпайтиришда муҳим омил ҳисобланади. Бу маҳсулотлар тез бузилувчан тоифага мансуб бўлгани учун етказиб бериш вақти ва келганидаги ҳолати ликвидлик ва фойдадорликка тўғридан-тўғри таъсир қилади. Логистик занжирлар ва инфратузилмани такомиллаштириш товар айланмасини тезлаштиради, экспорт имкониятларини кенгайтиради ва етказиб берувчи мамлакатларнинг жаҳон бозоридаги рақобатбардошлигини мустаҳкамлайди.

Совуқ занжир инфратузилмаси.

Совуқ занжир инфратузилмасини яратиш — замонавий музлаткичли транспорт воситалари ва ихтисослашган омборхоналарни қамраб олиш — мева-сабзавот маҳсулотларининг сифатини сақлашда муҳим аҳамиятга эга. Бундай тизим маҳсулотнинг янгилиги ва озуқа қийматини хосилдан тортиб истеъмолчига етказиб беришгача бўлган барча босқичларда таъминлайди. Бу нафақат йўқотишларни камайтиради, балки қатъий сифат талабларига эга халқаро бозорларга чиқиш имконини ҳам яратади.

Транспорт тармоқлари.

Автомобиль йўллари, портлар ва аэропортлар каби транспорт тармоқларини модернизация қилиш ва кенгайтириш ўтказиш қобилиятини оширади ва транзит вақтини қисқартиради, бу эса экспорт самарадорлигига бевосита таъсир қилади. Ишончли йўл тармоқлари маҳсулотни фермер хўжаликларидан қайта ишлаш корхоналарига ёки экспорт терминалларига етказиш вақтини қисқартиради, замонавий порт ва аэропорт инфратузилмаси эса божхона расмиятларини соддалаштиради ва логистик «бўғинлар»ни камайтиради.

Логистика технологиялари.

GPS кузатув тизимлари ва реал вақтда мониторинг қилиш имкониятларига эга замонавий логистика технологияларини жорий этиш транспорт жараёнларини самарали бошқаришни таъминлайди. Бу воситалар йўлларни оптималлаштириш, кечикишларни олдини олиш, прогноз қилиш ва захираларни самарали бошқариш учун муҳим маълумотларни тақдим этади.

Логистика ривожланишининг иқтисодий таъсири.

Совуқ занжир инфратузилмасини такомиллаштириш хосил йиғимидан кейинги йўқотишларни **50 %** гача камайтириши мумкин — бу айниқса ривожланаётган мамлакатлар учун жуда муҳим. Шунингдек, ривожланган логистика ва замонавий совуқ занжир тизимига эга давлатларда сўнгги беш йил ичида мева-сабзавот экспорти тахминан **25 %** га ошган.

Жаҳон миқёсида транспорт инфратузилмасига қўйилаётган инвестициялар ҳам катта аҳамиятга эга — йилига **900 млрд АҚШ долларидан ортиқ**, асосий эътибор эса йирик портлар ва логистика коридорларини модернизация қилишга қаратилган.

GPS кузатуви ва реал вақтда ҳароратни мониторинг қилиш каби илғор логистика технологияларини жорий этиш сўнгги ўн йил ичида тез бузилувчан маҳсулот экспортчилари орасида **40 %** га ўсди. Бу

технологиялар таъминот занжирларини оптималлаштиришга ёрдам бериб, етказиб бериш вақтини **30 %** гача қисқартирди, натижада маҳсулотнинг рақобатбардошлиги ва янгилиги ошди.

Бу рақамлар логистика инфратузилмасини ривожлантириш билан экспорт ҳажмини ошириш имконияти ўртасидаги кучли боғлиқликни намоён этади ва ушбу соҳада инвестиция ҳамда инновацияларни давом эттиришнинг стратегик аҳамиятини таъкидлайди.

Таҳлил ва натижалар.

Логистика ва транспорт инфратузилмасининг ривожланиши ҳамда унинг мева-сабзавот маҳсулотлари экспорти ҳажмига таъсири таҳлили қишлоқ хўжалиги экспорти секторида логистик яхшиланишларнинг трансформацияловчи ролини ёритиб берувчи муҳим тенденция ва қонуниятларни аниқлади.

Совуқ занжир бозорининг кенгайиши.

Мухим омиллардан бири — совуқ занжир бозорининг тез суръатларда ўсиши бўлиб, унинг ўртача йиллик ўсиш суръати **14,8 %** ни ташкил этмоқда. Бу кенгайиш хосил йиғимидан кейинги йўқотишларнинг камайиши ва экспорт ҳажмининг ошиши билан бевосита боғлиқ. Замонавий совуқ омборхоналар ва сақлаш тизимлари орқали маҳсулотнинг сифатини таъминлаш ва сақланиш муддатини узайтириш имконияти экспортчиларга узоқ бозорларга сифатли маҳсулот етказиш имконини берди.

Инфратузилмага инвестициялар.

Бозор қамрови ва рақобатбардошликни кенгайтириш. Илғор технологиялар ва самарали транспорт тизимларини интеграция қилиш экспортчиларга янги ва юқори даромадли бозорларга чиқиш имконини берди. Бу имконият юқори даромадли бозорларда талаб қилинадиган қатъий сифат ва хавфсизлик стандартларига риоя қилиш шароитида барқарор рақобат устунлигини яратади.

Операцион самарадорликни ошириш. Интеграция қилинган таъминот занжирлари ва технологик инновациялар орқали логистик жараёнларни оптималлаштириш етказиб бериш вақтини 30 % га қисқартирди. Бу экспорт маҳсулотининг рақобатбардошлиги ва янгилигига ижобий таъсир кўрсатди. Бундай самарадорлик нафақат истеъмолчилар қониқишини оширади, балки тез бузилувчан маҳсулотларни ташиш билан боғлиқ углерод чиқиндиларини ҳам камайтиради.

Йилига 900 млрд АҚШ долларидан ортиқ транспорт инфратузилмасига киритилаётган инвестициялар логистика операцияларини самарали ва тезкор ташкил этишда муҳим роль ўйнади. Бу сармоялар фермер хўжаликлари билан экспорт терминаллари ўртасидаги транспорт алоқаларини яхшилади, транзит вақтини қисқартирди ва эксплуатация харажатларини камайтирди.

Технологияларни жорий этиш. GPS кузатуви ва реал вақтда ҳароратни мониторинг қилиш каби логистика технологияларини жорий этиш 40 % га ошди ва таъминот занжирини бошқаришда туб ўзгариш яратди. Бу технологиялар экспортчиларга транспорт жараёнидаги шарт-шароитларни

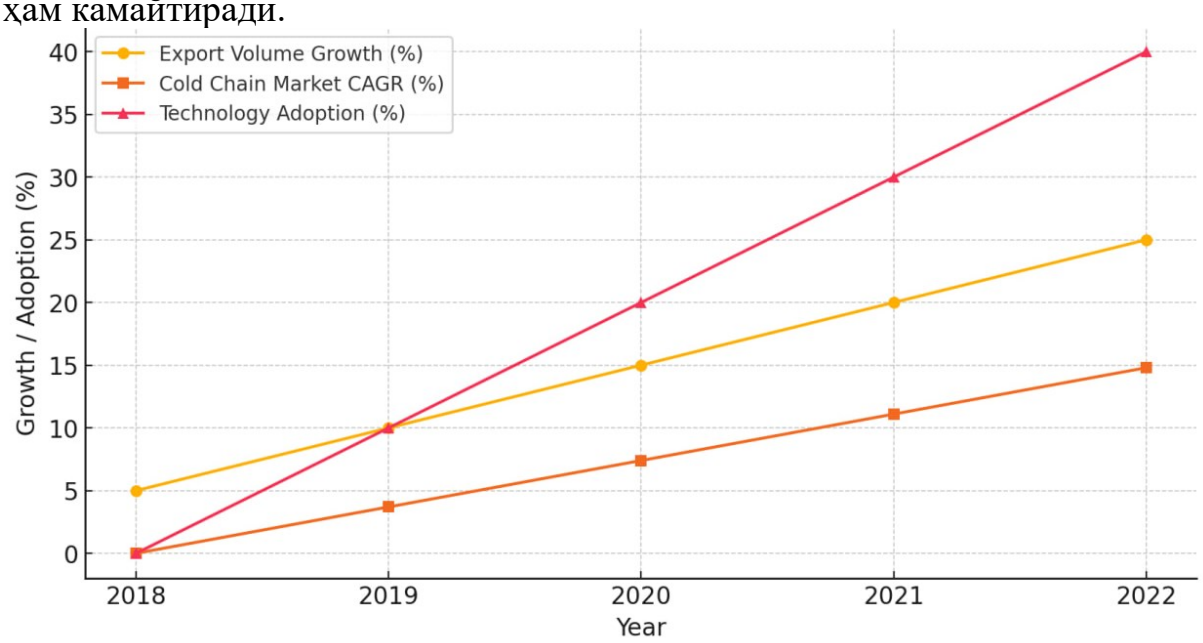
қатъий назорат қилиш имконини бериб, халқаро бозорларга сифатли ва яхлит ҳолда маҳсулот етказишни таъминлайди.

Натижалар: хосил йиғимидан кейинги йўқотишларни камайтириш. Илғор совуқ занжир логистикасини жорий этиш баъзи ҳудудларда хосил йиғимидан кейинги йўқотишларни икки баравар камайтиришга олиб келди. Бу, айниқса, илгари инфратузилмаси етарли бўлмаган ҳудудларда муҳим аҳамият касб этди. Бу ўзгариш экспортчилар фойдалилигини ошириш билан бирга глобал озиқ-овқат хавфсизлигига ҳам ҳисса қўшди.

Экспорт ҳажмининг ошиши. Сўнгги беш йил ичида логистика ва транспорт инфратузилмасини модернизация қилган мамлакатларда экспорт ҳажми тахминан 25 % га ошди. Бу ўсиш халқаро бозорлардаги сифат ва ҳажм талабларини қондириш имконияти билан бевосита боғлиқ.

Бозор қамрови ва рақобатбардошликни кенгайтириш. Илғор технологиялар ва самарали транспорт тизимларини интеграция қилиш экспортчиларга янги ва юқори даромадли бозорларга чиқиш имконини берди. Бу имконият юқори даромадли бозорларда талаб қилинадиган қатъий сифат ва хавфсизлик стандартларига риоя қилиш шароитида барқарор рақобат устунлигини яратади.

Операцион самарадорликни ошириш. Интеграция қилинган таъминот занжирлари ва технологик инновациялар орқали логистик жараёнларни оптималлаштириш етказиб бериш вақтини 30 % га қисқартирди. Бу экспорт маҳсулотининг рақобатбардошлиги ва янгилигига ижобий таъсир кўрсатди. Бундай самарадорлик нафақат истеъмолчилар қониқишини оширади, балки тез бузилувчан маҳсулотларни ташиш билан боғлиқ углерод чиқиндиларини ҳам камайтиради.



1-расм. Логистика ва транспорт инфратузилмаси ривожланишининг таъсири (2020–2024)

Хулоса.

Логистика ва транспорт инфратузилмаси ривожланишининг мева-сабзавот маҳсулотлари экспорти ҳажмига таъсирини ҳар томонлама ўрганиш бир қатор муҳим хулосаларни аниқлаб берди. Тадқиқот натижалари самарали логистика ва ишончли транспорт тизимларининг тез бузилувчан қишлоқ хўжалиги маҳсулотлари халқаро савдосини кенгайтиришдаги стратегик аҳамиятини кўрсатади. Асосий натижалар:

- Инфратузилмани яхшилаш. Совуқ занжир ва транспорт тармоқларини кенгайтириш ҳамда модернизация қилиш хосил йиғимидан кейинги йўқотишларни сезиларли даражада камайтирди ва экспорт қилинаётган мева-сабзавот маҳсулотларининг умумий сифати ҳамда рақобатбардошлигини оширди.
- Технологияларни интеграция қилиш. GPS кузатуви ва реал вақтда ҳароратни мониторинг қилиш каби илғор логистика технологияларини жорий этиш операцион самарадорликни оширди ва экспортчиларга халқаро стандартларга мос келиш имконини берди, бу эса уларнинг жаҳон бозоридаги мавқеини мустаҳкамлади.

Шу тариқа, инфратузилма ва технологияларга инвестиция киритиш плодоовощ маҳсулотлари экспортида барқарор ўсишни таъминлайдиган муҳим омил ҳисобланади ва қишлоқ хўжалиги ривожига ҳамда озиқ-овқат хавфсизлигига ҳисса қўшади.

Иқтисодий таъсир. Логистика ва транспорт инфратузилмасини яхшилаш экспорт ҳажмини оширишга бевосита ҳисса қўшди — экспортчилар савдо ҳажмини 25 % гача оширишга эришди. Бу ўсиш рақобатбардошликни кучайтириш ҳамда узоқ ва юқори даромадли бозорларга кириш имкониятларини кенгайтириш билан боғлиқ.

Барқарорлик ва самарадорлик. Тадқиқот шунингдек, жаҳон савдосининг атроф-муҳитга таъсирини камайтиришда муҳим аҳамиятга эга бўлган барқарор логистика усулларига ўтиш тенденциясини таъкидлайди. Самарали логистика тизимлари чиқиндилар ва энергия сарфини камайтиради, бу эса қишлоқ хўжалигининг барқарор ривожланишига ҳисса қўшади.

Тавсиялар: – совуқ занжир инфратузилмасига ва логистикани рақамлаштиришга инвестицияларни кучайтириш;

– барқарор технологияларни жорий этишни рағбатлантириш;

– агрологистика соҳасида халқаро ҳамкорлик учун қулай шароит яратиш;

– фермерлар ва экспортчиларни глобал бозорнинг янги талабларига мослашишда қўллаб-қувватлаш.

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ПРИРОДНЫЕ КОМПЛЕКСЫ ПЛАТО УСТЮРТ, НИЗМЕННОСТИ И НИЗКОГОРИЙ И ИХ ЭКОЛОГИЧЕСКОЕ СОСТОЯНИЕ

Аннотация: *В данной статье приведены общие сведения об Устюртском плато, основное внимание уделено Каракалпакскому Устюрту, расположенному на территории Узбекистана. Проанализированы этапы изучения геологического строения, рельефа, гидрологии, почвенного и органического мира Каракалпакского Устюрта.*

Ключевые слова: *Плато, чинк, овраг, такыр, равнина, низменность, впадина, гипс, понижение*

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NATURAL COMPLEXES OF THE USTYURT PLATEAU, LOWLANDS AND LOW MOUNTAINS AND THEIR ECOLOGICAL STATE

Abstract: *This article provides general information about the Ustyurt Plateau, with the main focus on the Karakalpak Ustyurt located in Uzbekistan. The stages of studying the geological structure, relief, hydrology, soil, and organic world of the Karakalpak Ustyurt were analyzed.*

Key words: *Plateau, chasm, ravine, takyr, plain, lowland, depression, gypsum, decline*

Между Аралом и Каспием лежит огромная каменистая пустыня, известная под названием плато Устюрт. Его границы довольно четко очерчиваются обрывами-чинками, местами достигающими 190 м высоты. Несколько неопределенна граница плато на юго-западе, здесь ее условно проводят по линии, соединяющей левый борт впадины Казахлы с мысом Кулангурлан на берегу залива Карабогазгол. Неопределенны границы и на северо-востоке, здесь они условно проходят по цепи слабо выраженных чинков, образующих борт депрессии, в которой лежат пески Кыздаршыккан и Кашкарата. Абсолютные высоты поверхности плато над уровнем моря колеблются в пределах 160-300 м.

Поверхность Устюрта в целом представляет собой огромную волнистую равнину, поражающую человека неприглядностью и

жестокостью своих ландшафтов. На юге более фрагментированный, на севере равнинный. [4] Для Устюрта характерны широкие плоские возвышенности и такой же характер понижения.

Л. Н. Бабушкин и Н. А. Когай делят Устюртский округ на три природно-географических района в зависимости от климата, почвы и растительных условий: Северный Устюрт, Центральный Устюрт и Южный Устюрт.

Северный участок, от северной границы Каракалпакстан до мыса Урга, проходит непосредственно над побережьем Аральского моря. Отличается большой высотой чинка и слабой расчлененностью его в горизонтальном направлении. Наибольшие высоты (до 220 м) наблюдаются у мыса Актумсук. Для северного участка чинка характерны громадные оползни. Овраги, зачастую идущие вдоль ступеней оползня, то есть параллельно берегу моря, очень короткие. Высоты чинка среднего участка, от мыса Урга до урочища Айбугир, значительно меньше северного. Оползневых явлений почти нет. Обрыв расчленен слабо. Абсолютная высота его - от 115 м до 120 м, относительная не более 70 м. Овраги развиты слабо, они ограничиваются почти повсеместно склонами чинка и не выходят на плато. Исключение составляет лишь урочище Саксаулсай, где чинк расчленен крупными оврагами. Такой характер чинка сохраняется до широты Джанабирлика. Далее до урочища Мынаклы, чинк отличается небольшой пологостью. На этом участке наблюдается широкое развитие оползне. Плато Устюрт на стыке с Аралом образует полого-ровную преимущественно абразионную береговую линию. [9]

Площадь Каракалпакской части Устюрта занимает 7,2 млн га, или 43,4% всего земельного фонда Каракалпакин. Хозяйственное освоение Устюрта предполагает круглогодичное содержание на этих землях скота: каракульских овец, верблюдов и лошадей. [1]

На плато Устюрт существует несколько структур, ориентированных по широте. В северной части плато находится Северо-Устюртский прогиб, к югу от него - Кассарминское поднятие, к югу от него - Барсакельмесская впадина. К югу от впадины Барсакельмес расположено поднятие Центральный Устюрт (Карабаур), к югу от него расположена Асакаовданская впадина.

Устюрт сложен третичными, главным образом морскими, соленосными породами (Шувалов, 1950). Верхняя толща их -сарматские известняки. Почти на всей равнинной территории сплошной покров составляют мергели. Лишь по окраинам крупных понижений обнажаются более древние конкские мергели, известняки, глина и песчаники. [6]

Юго-восточная часть плато Устюрт волнистая безводная равнина (150-292 м. абс.) с плоскими увалами и понижениями, наибольшие из них впадина Ассакеаудан и Барсакельмес, лежащие ниже уровня моря. В сторону Аральского моря и дельты Амударьи плато обрывается крутыми уступами-чинками. К югу от него расположена Сарыкамышская впадина. Огромная

территория Устюрта (свыше 70,5 тыс. км2) [8] используется как пастбище в весенне-летне-осенние сезоны, здесь ведутся также добываются строительные материалы и поваренная соль, ведутся поисковые работы нефти и газа.

Почвы Устюрта изучали многие (Неуструев, 1910, 1928; Нагорная, 1949; Шувалов, 1949; и др.). Своеобразие почв Устюрта заключается в сходстве их с расположенными к северу пустынно-степными бурыми и пустынными почвами южных областей Средней Азии. В частности, для центральных и северных районов плато, как и для «бурой зоны», равной мере характерна комплексность почвенно-растительного покрова, заключающаяся в закономерном сочетании почв разной степени солонцеватости с соответственным распределением растительности.[6] Наряду с этим гипсоносность и засоленность (легко растворимые соли) сближают почвы Устюрта с почвами южных Древнеостанцовых районов Средней Азии (Шувалов, 1949). Н. Д. Емельянов (1914) почвы Северного Устюрта описал как «белоземы» (сероземы). В. В. Никитин (1914) даже почвы ного (юго-восточный) плато отнес к типу бурых, описав их светло-бурые, в разной степени солонцеватые.

На плато Устюрт господствующими растениями являются полукустарники и кустарники. Издавна привлекала внимание исследователей эфемеровая растительность Устюрта. Своеобразнем природной обстановки Устюрта являются непостоянство и неустойчивость метеорологических условий года. В годы с увеличенным количеством осенне-зимне-весенних осадков бурно развиваются эфемеры и эфемеронды, местами образующие чистые травостои, пригодные для сенокошения. В засушливые годы эфемеры почти не прорастают.

В 1900-1902 гг. Л. С. Берг описал прибрежную растительность чинка Устюрта, уделив особое внимание изменению растительности побережья под влиянием моря. Он дал фотоснимки растительности чинка Устюрта, о. Токмаката и других пунктов каракалпакского побережья и островов Аральского моря. [5]

Зоолог А. М. Никольский, пересекший Устюрт, писал: "Нет людей, нет пищи, нет травы, нет воды, если хотите, нет и настоящей земли, только на небосклоне и голая грязь, потрескавшаяся от солнца." Действительно, бесконечные равнины, колодцы глубиной около 50 м, скудно растущая растительность, огромные впадины, занятые мертвыми солончаками, бескрайние такыры - это вид пустынных высоких плато, окруженных крутыми скалами.

Для рационального использования естественных ресурсов необходимы четкие представления о всем комплексе природных условий Устюрта. По сложившимся ботанико-географическим представлениям исследуемая нами территория расположена на стыке двух природных зон: северной и южной пустыни (Коровин, 1961). Это связано с разнообразием природных условий и изменением почвенно-растительного покрова.

Рельеф Устюрта представляет собой широковолнистую равнину. Изучению основных черт рельефа плато посвящены работы И. П. Герасимова (1930), В. И. Нагорной (1949), О. Ю. Пославской (1949) и др. Авторы отмечают, что рельеф Устюрта доволь но сложен. Равнинность его нарушается волнообразными выпуклыми поднятиями с пологими долинными склонами и широкими котловинами.

Устюрт представляет собой аридно-денудационное плато, абсолютная высота которого составляет около 100-200 м, окруженное чинками. Чинки расчленены многочисленными обрывами вокруг. Восточные чинки выше берегов Аральского моря на 190 м. [7]

Постоянных водотоков (реки, ручьи) на Устюрте почти нет (Викторов, 1971). В последние годы осушенное оз. Сарыкамыш получило коллекторно-дренажные воды Хорезма и Ташаузской области через русло Дарьялык. [2]

На Устюрте весной бессточные впадины и блюдцевидные понижения превращаются в глубокие водоемы, заполненные весенними водами. В блюдцевидных понижениях, где застаивается вода, часто образуются такыры - ровные, гладкие, почти лишенные растительности глинистые участки.

Устюртский гидрогеологический район - это система небольших артезианских бассейнов в горных породах, преимущественномела и палеогена. А. Н. Рябинин (1905) полагал, что на Устюрте нет определенных, отчетливо выраженных горизонтов, а существует лишь система разобщенных линз подземных вод, залегающих на местных водоупорных глинистых прослойках среди толщи известняков и мергелей.

О. С. Вялов (1935) предполагал, что в сарматских известняках, слагающих большую часть плато, имеется несколько водоносных горизонтов, лежащих на разных глубинах. Более обстоятельные сведения были получены А. Д. Архангельским (1931). Из его данных видно, что предположение о безводности Устюрта неверно. Плато богато водой, но ее надо добывать с некоторой глубины.

Геологическая история Устюрта освещена в работах Н. И. Андрусова (1889), Л. С. Берга (1908), Н. А. Благовидова (1925), И. П. Герасимова (1930), А. Д. Архангельского (1931), В. Н. Нагорной (1948), О. Ю. Пославской (1949) и др. В. В. Никитин (1944) почву Южного (юго-восточного) Устюрта отнес к типу бурых почв, описав их как светло-бурые, в разной степени солонцеватые.

С. С. Неуструев (1910) впервые назвал почвы Устюрта серобурыми.

И. П. Герасимов (1930) почву Устюрта разделяет на 2 группы: бурые, занимающие северную часть; гипсоносные сероземы, располагающиеся южнее.

Тектоника Устюрта издавна привлекала внимание исследователей, так как именно здесь под осадочным чехлом смыкаются герцинские складчатые сооружения Урала, Донбасса и Южного Тянь-Шаня.[3] Выяснение их взаимоотношений на глубине представляет большой научный и практический интерес.

Общее количество осадков колеблется в среднем от 90 до 120 мм в год. Однако бывают годы, когда количество осадков в 2 раза меньше или в 2 раза больше среднегодовой нормы. Для Устюрта характерно неравномерное распределение осадков на местности, поскольку обильные дожди обычно проходят сравнительно неширокой полосой (20-35 км), обильно орошая лишь захватываемую ими территорию. [1]

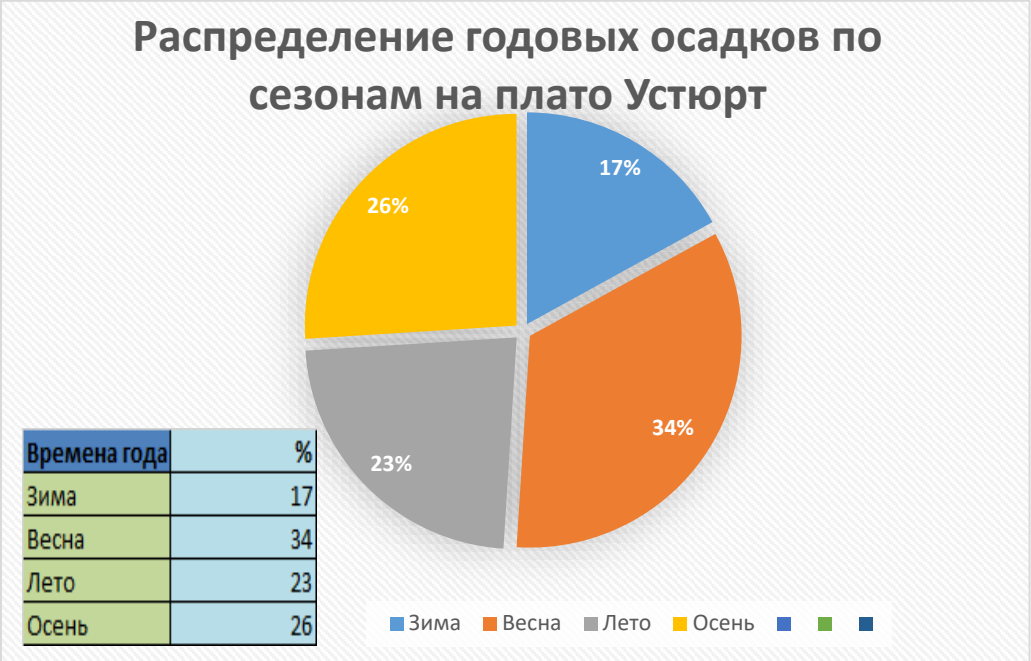


Рисунок 1. Распределение годовых осадков по сезонам на плато Устюрт.

Среднегодовое количество осадков на Устюрте составляет 100-120 мм, распределение по сезонам отражено в рисунок 1. Как видно из таблицы, наибольшее количество осадков выпадает весной. Однако летом на Устюрте выпадает больше осадков, чем в других регионах Узбекистана. Основной причиной этого является расположение региона на севере и сильное влияние западных и северо-западных воздушных масс.

Устюрта довольно подробно охарактеризован в брошюре О. И. Житомирской и И. Г. Сабининой (1963). Каракалпакский Устюрт примыкает к Аральскому морю, и прибрежная полоса испытывает его непосредственное влияние. Здесь часты туманы, воздух более влажный, несколько больше осадков, иной режим ветра. Эти особенности не имеют конкретных количественных показателей, мы о них судим по состоянию растительного покрова. В приморской полосе, ширина которой определяется в 30-40 км, растительный покров гуще и выше (особенно боялыш), чем в других районах, удаленных от моря.

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ОЁҚОҒИТМА КЎЛИ ВА УНИНГ АТРОФИДА МУҲОФАЗА ЭТИЛАДИГАН ҲУДУДНИ ТАШКИЛ ЭТИШНИНГ ГЕОГРАФИК АСОСЛАРИ

Аннотация. *Мақолада Оёқоғитма кўли ва унинг атрофида махсус қўриқ масканини ташкил этишнинг географик асослари ҳамда бу борада мавжуд муаммолар таҳлил этилган. Шунингдек илмий асосланган таклиф ва тавсиялар ишлаб чиқилган.*

Калит сўзлар. *Ботиқ, континентал иқлим, коллектор ,махсус қўриқ масканлари,антропоген таъсир,биотоп, шўрхок ландшафтлари.*

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GEOGRAPHICAL FOUNDATIONS FOR ESTABLISHING A PROTECTED AREA AROUND LAKE AYAKOGITMA AND ITS SURROUNDINGS

Annotation. *The article analyzes the geographical basis for the creation of a special protected area on and around Lake Ayakagitma, as well as the problems that exist in this regard. Scientifically based proposals and recommendations have also been developed.*

Keywords. *Depression, continental climate, reservoir, specially protected areas, anthropogenic impact, biotope, salt marsh landscapes.*

Оёқоғитма кўли ва унинг атрофидаги ҳудудлар табиий географик жиҳатдан Турон провинциясининг текислик кичик провинциячаси Қизилқум округида жойлашган. Маъмурий жиҳатдан бу ҳудуд Бухоро вилоятининг Шофиркон ва Ғиждувон туманлари шимолида ҳамда Навоий вилоятига туташ чегарага тўғри келади. Оёқоғитма кўли Марказий Қизилқумдаги паст тоғлардан бири бўлган Қулжуқтовнинг жануби - шарқий этаги билан Зарафшон дарёси водийси орасидаги Оёқоғитма ботиғининг марказий қисмини эгаллайди. Оёқоғитма ботиғи ва унинг атрофи рельефи ўзига хос хусусиятга эга бўлиб, унинг энг баланд қисми Қулжуқтоғ тизмасининг Бошгузумли массиви ҳисобланиб, мутлоқ баландлиги денгиз сатҳидан 785 метрни ташкил қилади. Рельефнинг умумий нишаблиги Оёқоғитма ботиғини ҳисобга олмаганда (133 м) Зарафшон дарёси ўзани томон шимолдан жануб ва жануби ғарбга томон йўналган.

Ўзининг геоморфологик хусусиятларига кўра ҳудуд паст тоғлар, платолар ва уларни ўраб турган ҳалқасимон нишаб юзалар, текисликлар орасидан оролсимон шаклда бўртиб турган Қулжуқтоғ, Кўкчатоғ, Тузкайтоғ каби қолдиқ тоғлардан иборат. Кўлнинг жанубий ҳудудларида Мирзақум қумликлари ястаниб ётади. Оёқоғитма кўли шарқдан ғарбга томон чўзилган бўлиб, Оёқоғитма жарлигини эгаллайди. Кўлнинг узунлиги 15-20 км, энг кенг қисми 8 км, ўртача кенглиги 5 км ни ташкил этади. Кўлнинг майдони 110 - 112 км ^{2} ни, сув ҳажми 0,9 - 1,1 млрд/м^3 ни, сув юзасининг айланаси эса 75 км ни ташкил этади. Кўлнинг максимал чуқурлиги 40-45 м, ўртача чуқурлиги эса 8-10 метрдан иборат бўлиб, чуқурлиги жиҳатдан Қуйи Зарафшон сув ҳавзалари орасида энг чуқури ҳисобланади.

Маъмурий жиҳатдан Оёқоғима кўли ва унга туташ ҳудуднинг 60-65 % майдони Ғиждувон тумани чегарасига ва 35-40 % қисми Шофиркон тумани чегарасига тўғри келмоқда. Мазкур ҳудудда бугунги кунда турли вазирликлар ва қўмиталарга тегишли бир нечта хўжалик субъектлари фаолият юритиб келмоқда.

Ҳудуднинг иқлими континентал яъни қуруқликларнинг ички кисмлари учун хос иқлим типи бўлиб шамолли кунлар деярли йил давомида кузатилади. Шунинг учун Оёқоғитма кўли шимолий-шарқ тарафида хорижий инвесторлар билан ҳамкорликда шамол генераторлари қурилиб ундан фойдаланиб экологик тоза электр энергияси ишлаб чиқариш режалаштирилмоқда. Мазкур ҳудудда максимал шамол тезлиги баҳор - ёз фаслларида 16-26 м/с гача, куз - қиш фаслларида 13-20 м/с гача етиши қайд қилинган.

Атмосфера ҳавосининг максимал ҳарорати баҳорда (апрел - май) 38-40 С^0 га тўғри келган бўлса, ёзда ҳарорат (июн - июлда) 47 С^0 чиқганлиги кузатилган [2]. Атмосфера ҳавоси ҳароратининг йилдан-йилга ошиб бориши, сувга бўлган эҳтиёжнинг ҳам ортиб боришига сабаб бўлади. Юқорида қайд қилинган маълумотларга кўра атмосфера ҳавосининг 40-50 С^0 гача исиш даврийлиги 2 ойгача давом этиши кучли гармсел шамоллар сувлик майдонидан катта миқдордаги сувнинг парланишига ва шу ҳисобдан сув сатҳининг пасайишига ҳамда сувнинг шўрлиги ортишига сабаб бўлмоқда. Ушбу ҳолат қуруқлик массивларидаги экотизимларга кириб келиши, ерларнинг чўлланишини, деградация жараёнларини кучайтирмоқда. Бу ўз навбатида чўл ўсимликларининг, чўл яйловларида ресурслари камайишига ва ҳосилдорлиги пасайишига олиб келиши туфайли салбий таъсир кўрсатмоқда.

Оёқоғитма кўли ва унинг атрофидаги ҳудудлар қишги ҳароратига кўра вилоятнинг энг совуқ ҳудудларига мансуб бўлиб у ерда январда ҳаво ҳароратининг мутлоқ минумуми -31 С^0 гача пасайганлиги адабиётлардан маълум [1]. Шунга ўхшаш совуқ ҳарорат кузатиладиган айрим йилларда алоҳида муҳофазаланадиган ҳудуд ҳайвонлари учун уларнинг қишги қирилиб кетишини олдини олиш мақсадида қишлаш учун ем-хашаклар

жамғарилиши, бунинг учун эса шу ишга масъул шахсларни доимий иш билан таъминланишини кўзда тутувчи иш ўринларини яратиш мақсадга мувофиқ ҳисобланади.

Ҳудудга атмосфера ёғинларининг тушиши асосан баҳор ва қиш фаслларига тўғри келади. 2021-2023 йилларнинг нисбатан қурғоқчил келиши сабабли ўртача максимал ёғингарчилик март-апрел ойларига тўғри келади ва у 26-30 мм ни ташкил қилган бўлса, 2022 йилнинг бу давридаги кўрсаткичи 86 мм ни ташкил қилган[10]. Ёғинларнинг умумий йиллик миқдори мазкур ҳудудда 120-140 мм атрофида бўлиб бу ҳолат ҳам чўл ўсимликлари маҳсулдорлик кўрсаткичларни йил давомида махсус ўрганишни талаб қилади ва шу ўрганишлар асосида алоҳида муҳофазаланадиган ҳудуднинг йиллик озуқа қувватини ишлаб чиқишни белгилаб беради.[1]

Оёқоғитма кўли ва унга туташ ҳудудлар тупроқ таснифига кўра нисбатан хима-хил типли тупроқларга эга бўлиб улар кўлнинг шарқий ва ғарбий қисмлари шўрхоклар билан қопланган бўлса жанубий қисми тақирли тупроқ типли эканлиги, ундан янада жанубда қумли тупроқли чўл эканлиги маълум.Оёқоғитма кўлининг шимол томони оч тусли бўз тупроқларга хос бўлса, ғарбий қисмнинг қолган ҳудуди сур-қўнғир тупроқли ҳудудга мансубдир. Ушбу тупроқ типларида ўсувчи ўсимликларнинг мансублигига кўра экиш ва кўпайтириш юзасидан тегишли ташкилотлар масъуллигида бир қатор ишларни амалга оширилиши, чора тадбирлар ишлаб чиқилиши мақсадни янада яхшироқ натижали булишини таъминлайди.

Оёқоғитма кўли 1980 йилллардан Оғитма коллектори орқали келадиган оқава сувлар, ҳамда баҳор ва қиш фаслларидаги ёғингарчиликлар

ҳисобидан ҳосил бўлган. Кўлга 2000-йилгача Зарафшон дарёсининг қолдиқ сувлари Оғитма ва Шофиркон коллекторлари орқали сув келиб тушган. Сўнгра кўлга Шофиркон, Оғитма коллекторлари ва Шўркўл канали орқали ташланма сувлар келиб қуйилган. Шўркўл каналидан Оёқоғитма кўлига 1980-2000 йилларгача 12 $м^3$/сек. сув тушган бўлса, 2010-йилдан бошлаб Шўркўл каналидан сув келиши тўхтаган. Оёқоғитма кўлига 2010-йилдан сўнг бор-йўғи 0,8-1,2 $м^3$ /сек сув тушиши кузатилган[10]. Сув танқислиги натижасида Оғитма ва Шофиркон коллекторларининг сувларидан насослар орқали қишлоқ хўжалик талабини қондириш мақсадида фойдаланилмокда.

Ҳозирги кунда Оёқоғитма кўли асосан Оғитма ташланма коллекторининг оқова сувлари асосида тўйинади. Оғитма ташланмасининг узунлиги 45-50 км, эни 2,5-3,5 м, чуқурлиги 3 м, сув ўтказиш қобилияти эса 10,5-12,3 сек./$м^3$ ни ташкил қилади. Оғитма коллектори Навоий вилоятидан қишлоқ хўжалиги эҳтиёжлари учун ишлатилган ортиқча сувни қисман Зарафшон дарёси ва Шўркўл айланмаси (ГД-18) орқали ҳам йиғиб олади.

Оёқоғитма кўлида йиғиладиган сувнинг 1/3 қисми баҳор фаслига тўғри

келади ва бу даврда кўлдаги сув миқдорининг 30-35 фоизи тўпланади. Шу даврда кўл сатҳи анча кенгайиб, қирғоқларни сув

босади. Ёзда ҳавонинг кескин даражада исиши катта миқдорда сувни буғланишига сабаб бўлади ва сув сатҳи аста-секин пасаяди. Шунингдек, июнь-август ойларида зовур сувлари қишлоқ хўжалиги экинларини суғориш учун фойдаланилган даврда сув оқими 0,5-0,6 сек/м^{3}ни ташкил қилади. Сув сатҳининг пасайишига маълум миқдордаги сувнинг ерга фильтрланиши ҳам таъсир кўрсатади.



1-расм. Оёқоғитма кўлига Оғитма ташланма коллектори орқали қуйилаётган оқава сувлар

Оёқоғитма кўли сувининг ҳарорати табиий муҳит ҳарорати билан чамбарчас боғлиқ. Оёқоғитма ҳудудида ҳаво ҳарорати ёзда 43-45°С гача кўтарилиши мумкин. Бу даврда сув ҳарорати сувнинг юзаси ва пастки қатлами кўрсатгичлари орасидаги фарқ 3-4°С ни ташкил қилади

Кўл суви кучли минераллашган бўлиб, унинг умумий минерализацияси

хлорид-сульфатли сув синфига, кальцийли сув гуруҳига тегишлидир. Оёқоғитма кўли ҳам қуйи Зарафшон сувликлари каби хлор ионларига бой (ўртача 1255,9 мг/л). Сув таркибида SO_4 ионлари миқдори

ҳам юқори 768,5-3600 мг/л, ўртача 2504,8 мг/л. Сульфат ионлари ҳам Зарафшон қуйи оқими сув ҳавзаларининикига ўхшаш.

И.А. Кисилев фикрича Ўрта Осиё кўлларининг кўпчилиги шўрхок ерларда жойлашган бўлганлиги сабабли, кўл қаерда жойлашган бўлса, ўша ерни хусусиятини акс эттиради. Оёқоғитма кўлининг яна бир хусусияти шундаки у ўз таркибида Ca^{+}, Na^{+}, Mg^{+} ионларини кўп миқдорда сақлайди, ионлар миқдори 2015 йилдан 2019 йилгача 4936,1 мг/л дан 11512,0 мг/л гача, икки ярим баробар кўпайган. Хусусан Na^{+},Ca^{+}, Cl^{-} , SO^{4-} ва бошқалар йил сайин ошиб бормоқда. Минераллашиш ёзда 13-16 г/л гача ошиб, баҳорда 10-12 г/л ни ташкил қилади. Шундай қилиб, Оёқоғитма кўли суви миксогаллин ёки шўрроқ (0,5-30%) таъмга эга бўлган сув ҳавзасидир[10].

Оёқоғитма кўлининг жануби ғарбида иссиқ минерал сувли булоқ мавжуд бўлиб гидрогеологлар тавсиясига асосан бурғулаш амалга оширилган. Бугунги кунда мазкур булоқдан доимий тарзда 45-50 °С ли сув оқиб чиқмоқда ҳамда унинг таъсир зонасида 3-4 гектарли юлғунзор тўқайи вужудга келган.



2-расм. Оёқоғитма кўлига Оғитма ташланма коллектори орқали қуйилаётган оқава сувлар

Оёқоғитма кўли атрофи Бухоро вилоятининг энг катта шўрхоклари жойлашган худудлардан бири саналади. У ерда шўрхок тақир тупроқларни учратиш мумкин. Кўл атрофларида нам шўр ботқоқ тупроқлар учрайди. Унда шўражриқ (*Aeluropus litoralis),* қуббадор сарсазан *(Halimocnemum strobilaceum)* va тузли қизилшўра (*Salicornia europaea)* каби галомезофил ўсимликлар кенг тарқалган. Қаттиқ ва юмшоқ шўр ботқоқликларда каспий қорабароғи (*Halostachys caspica),* ишқорли шохилоқ *(Kalidium caspium),* кермак (*Limonium suffriticosum),* қора чинғил (*Lycium ruthenicum),* шўражриқ *(Aeluropus littoralis)* va қорабаргўт (*Suaeda)* туркуми турлари ўсади (Бухоро

кадастри, 2020). Шунингдек кўлнинг илгари мавжуд бўлган сувли ҳудудларининг қуриб қолиши натижасида у ерларда юлғун (*Tamarix*) туркуми вакиллари учрашини кўриш мумкин. Кўлдан 3-4 км узоқликдаги майда чағилли тупроқларида шувоқ (*Artemisia*) туркуми вакиллар кенг тарқалган.

Ўзбекистон иқлим шароитида чўл муҳитида кузда фақат шўрадошлар оиласи вакилларини учратиш мумкин. Бошқа ўсимлик турлари вегетациясини кеч баҳор ёки ёзнинг бошланиши билан тугатади. Бу ҳолат чўл муҳитида қўрғоқчил иқлим шароити билан боғлиқ. Шунинг учун жазирама ёз ва кузда олиб борилган тадқиқотлар у ернинг тўлиқ ўсимлик қоплами бўйича маълумот беролмайди. Чунки асосий ўсимлик турлари баҳор фаслида ўсиб вегетациясини тугатади. Бизнинг тадқиқот олиб борган ҳудудимизда ҳам шундай ҳолат кузатилди. Оёқоғитма атрофида олиб борган дала тадқиқотларимиз айни пайтда Шўрадошлар оиласи вакиллари ўсиб мевалаган эканлигини кўрсатди.

Кейинги йилларда табиий ландшафтларга антропоген таъсирларнинг кўлами ортиб бориши, табиат компонентлари ҳисобини олишни ва шундан келиб чиқиб уларни баҳолаб бориш ва тегишли чора тадбирлар ишлаб чиқишни талаб қилади. Таъсирлар даражасининг энг юқори кўрсаткичи айниқса, тирик организмлар учун қулай яшаш муҳитларида (сув ҳавзалари, тўқайлар, ўрмонлар) яққол кўзга ташланади.

Республикамизда олиб борилаётган ислоҳотларнинг бир йўналиши табиий заҳиралардан оқилона фойдаланиш, ўсимлик ва ҳайвонот генофондини келажак авлодларга сақлаб қолишдан иборат.

Бухоро вилоятида жойлашган сув ҳавзаларининг аксарияти коллектор зовурлар ва сизот сувлари тўпланиши натижасида ҳосил бўлган. Ушбу сув ҳавзалари қуруқ чўл ҳудудининг турли биотопларидаги умуртқали ҳайвонлар амфибиялар, рептилиялар, қушлар ва сут эмизувчи ҳайвонларнинг айниқса сув ва сув олди турларини ўзига жалб қилади. Шуни ҳам таъкидлаш лозимки, сув ҳавзаларга яқин ҳудудларда ўсимлик ва буталар ҳосил қилган қулай биотопларда биохилма-хиллик, намланган ҳудудлардан узоқда жойлашган зоналарга нисбатан жуда бой ва ранг-баранг. Намланган зоналарда ҳайвонларнинг кўпайиши, уя қуриши, дам олиши, озиқланиши ва қишлаши учун имкониятлар юқорилиги кузатилади.

Аммо сўнгги йилларда республикамизда бундай зоналарнинг биохилма-хиллигини назорат қилиш имкониятлари чекланганлиги ва кўп ҳолларда ўтлоқ ва буттазорлар чорвачилик тармоқларига ижарага ажратилиши туфайли, чўлларда биохилма-хиллик камбағаллашмоқда, ва бу ҳолатларини тез-тез гувоҳи бўляпмиз.

Кўл ҳозирги вақтда 10500 га майдонни қоплаган. Сув сатҳи барқарор бўлмай, кираётган сув ҳажмига ва йил фаслига боғлиқ, яъни куз охирларида кўпайишни бошласа, баҳорнинг иккинчи ярмидан камайиб боради. Кўл қирғоғидаги ўсимликларнинг асосий қисмини қамиш *Phragmites* ҳамда юлғун *Tamarix* дан иборат тўқайзорлардан ташкил қилади ва бу қоплам

ҳавзанинг жанубий ва жанубий шарқида бирмунча зич, кўлнинг қолган бўлимларида жуда сийрак.

Кўлнинг шимолий қирғоғи чап бурчагида 50 хўжалик атрофидаги кичик Оёқоғитма овули бор. Маҳаллий аҳоли асосан чорвачилик ва балиқчилик ишлари билан шуғулланади. Кўл атрофидаги ерлардан чорва молларини боқиш учун фойдаланиб келинмоқда. Бу ҳол кўл атрофи био-хилмахиллигига салбий таъсир кўрсатмоқда.

Оёқоғитма кўли ва унинг атрофида орнитофаунанинг тур таркибини аниқлаш мақсадидаги 2002 йилдан ҳозиргача олиб борилган кўп йиллик кузатувлар ва 2024 йил октябр ойидаги кузатувлар давомида ҳудудда ҳайвонот оламининг хилма-хил турлар таркибини аниқлашга мувофиқ бўлинган. Олинган маълумотларнинг таҳлилидан аниқ бўлдики, ҳудудда умуртқали ҳайвонларнинг бир қатор кам сонли ва нодир турларининг (асосан қушлар оламининг) асосий концентрация маркази саналади.

2000-2024 йилларнинг турли мавсумларида Оёқоғитма кўли ва унинг атрофидаги фаунанинг ўрганилишидан олинган маълумотлар таҳлили асосида кўл ва унинг теварагидаги сув тармоқларида 28 турдаги балиқ турлари, 2 турдаги амфибиялар, 30 турдаги рептилиялар, 143 турдаги қушлар ва 34 турдаги сут эмизувчи ҳайвонлар қайд этилган. Ушбу турлардан 1 турдаги балиқ (туркистон мўйловдори), 5 турдаги судралиб юрувчи(эчкемар, тошбақа, шарқ бўғма илони, қум буғма илони, ҳинд бойгаси), қушларнинг 44 тури, сут эмизувчиларнинг 9 тури (кенг қулоқли кўршапалак, қат-қатлаб кўршапалак, оққоринли ўққулоқ кўршапалак, узун игнали кирпи, қорсак, олақўзан, қум мушуги, қорақулоқ, жайрон) кабилар Ўзбекистон “Қизил китоби”га ва Халқаро Қизил рўйхатига киритилган турлар қайд этилган.

Шуни ҳам таъкидлаш лозимки, ҳудудда қайд этилган қушларнинг 17 туркум, 43 оилага мансуб 143 қуш тури учраши ва бу хилма-хиллик Бухоро вилоятида учрайдиган (332 тур) қушларнинг 43% ни ташкил этади. Ҳудудда учраган қушлардан 30 тур Ўзбекистон Республикаси Қизил китобига, 14 тур IUCN Қизил рўйхатига, 28 тур CITES нинг I ва II иловасига киритилган[6-11].[40]

Оғитма кўли ва унинг атрофида қушлар хилма–хиллиги озиқа захираларининг ривожланганлиги, дам олиш, тунаш, кўпайиш учун зарур имкониятлар мавжудлиги билан бевосита боғлиқ. Масалан, кўлнинг балиқ захираси бир қатор балиқхўр қушлар–пушти бирқозон *Pelecanus onocrotalus,* жингалак бирқозон *P. crispus,* катта қоравой *Phalacrocorax carbo,* кичик қоравой *P.pygmaeus,*оддий чағалай *Larus cachinnans*, чеграва *Hydroprogne*

[40] Ўзбекистон Республикаси Қизил китобига (**UzRDB)** киритилган турлар (кенжа турлар 2019), Табиат ва табиий ресурсларни муҳофаза қилиш халқаро иттифоқи (IUCN) нинг Қизил рўйхатига (**RL)** киритилган турлар (кенжа турлар 2004), Йўқ бўлиб кетиш хавфи остидаги ёввойи фауна ва флора турларининг халқаро савдоси конвенциясининг иловаларига (**CITES I, CITES II)** киритилган турлар (кенжа турлар).

caspia, оддий чағалай *Larus genei*, дарё чигиртчиси *Sterna hirundo* ва кичик чигиртчи *S. albifrons* ва бошқа қушлар яшашини таъминлайди.

Оёқоғитма кўли ва унинг атрофидаги ҳудудларни ўрганиш, таҳлил қилиш ва баҳолаш асосида қуйидаги умумий хулоса ва таклифларни илова қилдик:

- ✓ Ҳудудда олиб борилган тадқиқотлар маълумотлари кўрсатиши бўйича кучли гармсел шамоллар 2000 – йилларгача бўлган даврда 40-50 кунни ташкил қилган бўлса, ҳозирги кунда унинг давомийлиги 90-130 кунгача етиб бораётганлиги кузатиляпти. Мазкур жараёнларнинг оқибатларини юмшатиш мақсадида Оёқоғитма кўли ва унинг атрофидаги ҳудудларда яъни Ғиждувон туманига ҳамда Шофиркон туманига тегишли қисмида 30-35 минг гектар майдонга қурғоқчиликка, шўрга, гармселга чидамли бўлган оқ ва қора саксовул, қандим, черкез каби ўсимликлар уруғидан экилиб яшил қопламалар, ўрмонзорлар барпо қилиш лозим;
- ✓ Совуқ ҳарорат кузатиладиган айрим йилларда алоҳида муҳофазага муҳтож ҳудуд ҳайвонлари учун уларнинг қишги қирилиб кетишини олдини олиш мақсадида қишги ем - хашаклар жамғарилиши, бунинг учун эса шу ишга масъул ташкилотларда ишловчи шахсларни доимий иш билан таъминланишини кўзда тутувчи иш ўринларини яратиш;
- ✓ Маълумки чўл ўсимликлари маҳсулдорлик кўрсаткичлари йил давомида махсус ўрганишни талаб қилади ва шу ўрганишлар асосида алоҳида муҳофазаланадиган ҳудуднинг йиллик озуқа қувватини ишлаб чиқишни белгилаш. Мазкур соҳада давлат лойиҳалари эълон қилиниши ва унинг бажарилиши ва натижалари рағбатлантириб борилиши лозим;
- ✓ Турли тупроқ типларида ўсувчи ўсимликларнинг мансублигига кўра ўсимликларни экиш ва кўпайтириш юзасидан тегишли ташкилотлар масъуллигида бу борадаги ишларни амалга оширилиш юзасидан аниқ, илмий асосланган амалий чора ва тадбирлар режаси ишлаб чиқилиши лозим;
- ✓ белгиланган ҳудудда биологик хилма-хилликни, турли биоресурслар миқдори ва вегетациясини кузатиш, ўрганиш, аниқ хулосага келиш учун режали тарзда ҳар мавсумда камида бир марта кузатиш ўрганиш ишларини олиб бориш;
- ✓ алоҳида муҳофазага муҳтож турларнинг биологияси, экологияси, тарқалиш географияси ва бошқа хусусиятларини мунтазам ўрганиш;
- ✓ Ўзбекистон Республикаси Кадастр агентлиги Бухоро вилоят бўлими билан келишилган ҳолда 40 минг гектарлик майдоннинг аниқ ўлчамларини ҳисобга олиб муҳофаза остига олинадиган ҳудуд майдонини белгилаш.

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РАЗВИТИЕ РЫНКА ОЦЕНОЧНЫХ УСЛУГ УЗБЕКИСТАНА

Аннотация: *Рассмотрены вопросы развития и становление рынка оценочных услуг, как вида предпринимательской деятельности; либерализации управления оценочным процессом, возрастания роли общественных профессиональных объединений в регулировании данного вида деятельности. Сформулированы пути совершенствования нормативно-правовой базы оценочной деятельности на основе системы мер по дальнейшему углублению рыночных реформ, развитию рыночных форм и методов управления оценочной деятельностью, формированию рынка оценочных услуг, созданию конкурентной среды в данной сфере деятельности. Даны предложения по повышению уровня использования технологий и методов стоимостной оценки материальных и нематериальных активов. Предложены некоторые проблемы разработки концепции современного маркетинга развития рынка оценочных услуг.*

Ключевые слова*: рынок оценочных услуг, совершенствование оценочной деятельности, реформирование экономики, общественные профессиональные объединения, маркетинговая стратегия, нормативно-правовая база оценочной деятельности, конкурентная среда на рынке оценочных услуг, стоимостная оценка, стандарты оценки, инвестиции в оценочную деятельность, информационно-аналитическая база оценочных работ, саморегулирование оценочной деятельности,*

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DEVELOPMENT OF THE APPRAISAL SERVICES MARKET IN UZBEKISTAN

Abstract: *This article examines the development and establishment of the appraisal services market as a type of entrepreneurial activity, the liberalization of appraisal process management, and the increasing role of public professional associations in regulating this type of activity. It also identifies ways to improve the regulatory framework for appraisal activities based on a system of measures to further deepen market reforms, develop market forms and methods of appraisal management, shape the appraisal services market, and create a competitive environment in this area. Proposals are provided to improve the use of technologies and methods for valuing tangible and intangible assets. Several challenges in developing a modern marketing concept for the development of the appraisal services market are also discussed.*

Key words: *appraisal services market, improvement of appraisal activities, economic reform, public professional associations, marketing strategy, regulatory framework for appraisal activities, competitive environment in the appraisal services market, cost assessment, appraisal standards, investments in appraisal activities, information and analytical base for appraisal work, self-regulation of appraisal activities,*

Формирование и становление рынка оценочных услуг как вида предпринимательской деятельности осуществляются в республике во взаимосвязи с общим ходом социально-экономических реформ. Социально-экономической базой развития этого вида услуг служат дальнейшее реформирование экономики и развитие рыночных механизмов хозяйствования. Диалектика совершенствования оценочной деятельности в этих условиях предполагает последовательную либерализацию управления оценочным процессом, возрастание роли общественных профессиональных объединений в регулировании данного вида деятельности и должна обеспечиваться на основе единых концептуальных положений

маркетинговой стратегии развития оценки как товара на рынке оценочных услуг.

В переходный период к рыночной экономике многообразие применяемых подходов и методов способствует изысканию наиболее вероятной расчетной цены оцениваемых активов, тогда как при рыночной экономике применение различных подходов и методов оценки активов является инструментом контроля объективности проведенных оценочных работ. Динамичный переход от «*нормативно-расчетной*» к «*рыночной стоимости*» обусловлен формированием рынка активов, информационной и нормативно-правовой базы оценочных работ.

За годы реформирования экономики и развития рыночных механизмов хозяйствования в республике сформирована основа нормативно-правовой базы, регулирующая проведение стоимостной оценки материальных и нематериальных активов. Но эта база еще не носит системного характера и представлена фрагментарно, не представляя единую триаду: «закон – стандарт – методика». Необходимость совершенствования нормативно-правовой базы оценочной деятельности вытекает из системы мер по дальнейшему углублению рыночных реформ, развитию рыночных форм и методов управления оценочной деятельностью, формированию рынка оценочных услуг, созданию конкурентной среды в данной сфере деятельности и обеспечению на этой основе внедрения современных технологий оценочных работ, снижения их стоимости и сокращения сроков их исполнения.

За относительно короткий срок в Узбекистане создан и функционирует целый ряд оценочных структур, добившихся делового и профессионального авторитета у потребителей и участников рынка материальных и нематериальных активов, включая иностранных инвесторов. Однако большинство оценочных структур республики имеют малочисленные трудовые коллективы, низкую оснащенность основными фондами и современными техническими средствами и не в состоянии самостоятельно решать многие вопросы, связанные с совершенствованием методологии и технологии оценочных работ, создавать необходимые программные продукты и т.д., что, в конечном счете, сдерживает процесс совершенствования этого вида предпринимательской деятельности.

Созданная сеть оценочных предприятий, особенно в регионах республики, остается недостаточной и не формирующей высокий уровень конкуренции в сфере оценочных услуг, а сложившиеся организационно-хозяйственные формы проведения оценочных работ в неполной мере обеспечивают независимость оценщиков и, как следствие этого, не способствуют повышению их профессиональной ответственности. В сфере оценочных услуг не получило в полном объеме развитие рыночных отношений.

В формировании конкурентной среды на рынке оценочных услуг хозяйствующие субъекты – их потребители слабо используют практику

проведения тендеров на оценочные работы, а оценочные структуры – механизмы скидок, льгот и взаимовыгодных условий оплаты их услуг. Развитию конкурентной среды не способствует вывод из этого рынка оценочных услуг, вовлеченных в гражданско-правовой оборот жилых помещений, садовых домиков, автотранспорта и других активов, находящихся в собственности физических лиц.

Оценочная деятельность в республике остается низко конкурентно-способной по отношению к другим видам услуг, предоставляемых рыночными и иными структурами при продвижении материальных и нематериальных активов от продавцов к покупателям. Структура издержек на эти услуги, особенно в регионах, сформировалась на основе упрощенных методов и технологий их производства и не учитывает в полном объеме необходимость создания соответствующей материально-технической и информационно-аналитической базы оценочных работ, повышения квалификации специалистов-оценщиков и т.д. Оптимизация издержек на оценочные услуги возможна только на системной основе, включающей развитие рыночных отношений в оценочной деятельности, формирование и развитие предпосылок для совершенствования технологии и методов оценочных работ и укрепления их информационно-аналитической, математической базы и программного обеспечения.

Современный уровень использования технологий и методов стоимостной оценки материальных и нематериальных активов обусловлен состоянием учета и отчетности по активам, применяемыми нормативами и информационной базой. Несовершенство современных оценочных технологий и методов предопределено неточностями прежних методов учета затрат на создание активов, недостатками в определении доходов, которые приносят активы, применением нормативных показателей (ставка дисконта, отраслевые коэффициенты и т.д.), не учитывающих специфику оцениваемых активов. Математико-экономическое и программное обеспечение стоимостной оценки активов носит фрагментарный характер, а его применение не обеспечивает существенного влияния на повышение качества и сокращение сроков оценочных работ. Основой для совершенствования математико-экономического и программного обеспечения стоимостной оценки активов являются взаимодействие и кооперация оценочных структур между собой, с рыночными структурами и потребителями оценочных услуг по формированию и поддержанию на современном уровне информационно-аналитической базы стоимостной оценки активов.

Разработка стратегических направлений совершенствования стоимостной оценки как товара должна базироваться на основных маркетинговых подходах, интенсификации производства, внедрении современных технологий, развитии взаимодействия со всеми участниками рынков различных материальных и нематериальных активов. Маркетинговая стратегия совершенствования стоимостной оценки активов связана и

обусловлена маркетинговой стратегией развития в целом рынков различных видов активов и их инфраструктуры и предопределяется общепринятыми подходами, характеризующими маркетинг товарного производства, а следовательно, связана с совершенствованием в условиях конкурентной среды механизмов удовлетворения потребительского спроса на оценочные услуги, повышением их качества и технологии производства работ, привлечения инвестиций в оценочную деятельность и т.д. (табл. 1).

Таблица 1.
Концепция современного маркетинга развития рынка оценочных услуг

Составляющие направления	Основной объект внимания	Средства достижения цели	Конечная цель
Воспроизводство оценочных услуг	Нужды собственников активов и покупателей	Расширение продажи различных видов оценочных услуг, пользующихся спросом	Получение прибыли за счет увеличения оценочных услуг и снижения издержек
Совершенствование потребительских свойств оценочных услуг	Нужды собственников и покупателей	Повышение качества оценочных услуг и вовлечение в оборот новых видов активов	Получение прибыли за счет роста объема оценочных услуг лучшего качества и расширение оценочных услуг по новым видам активов и имущественных прав
Интенсификация коммерческих усилий по сбыту оценочных услуг	Нужды производителей оценочных услуг	Коммерческие усилия и меры стимулирования реализации оценочных услуг	Получение прибыли за счет роста объема оказываемых оценочных услуг
Маркетинг рынка оценочных услуг	Нужды потребителей и производителей оценочных услуг	Коммерческие усилия по анализу состояния рынка оценочных услуг, планированию и претворению в жизнь мероприятий, рассчитанных на укрепление и поддержание выгодных оборотов активов	Получение прибыли за счет удовлетворенности потребителей оценочных услуг
Социально-этический маркетинг рынка оценочных услуг	Укрепление благополучия потребителей оценочных услуг и общества в целом	То же	Получение прибыли за счет удовлетворенности потребителей оценочных услуг и общества

Маркетинговая стратегия совершенствования стоимостной оценки активов должна базироваться на углубленных исследованиях, связанных с выработкой основных принципов расширения целевого назначения стоимостной оценки, совершенствования технологии работ, основных направлений по их информационному, математическому и программному

обеспечению, а также основных подходов к совершенствованию регулирования рынка оценочных услуг, включая развитие их нормативно-правовой базы, усиление роли саморегулирования данного вида предпринимательской деятельности, повышение конкурентоспособности оценочных структур и расширение участия отечественных оценочных структур на зарубежных рынках этих видов услуг.

Совершенствование стоимостной оценки объективно предполагает необходимость тесного взаимодействия оценочных структур с другими предпринимательскими структурами, функционирующими в качестве инфраструктуры рынка активов (биржевые, маркетинговые, консалтинговые и другие структуры), и выступает связующим фактором спроса и потребления, а следовательно, обеспечивает взаимодействие собственников активов между собой и собственников с государством. Основные направления дальнейшего совершенствования взаимодействия оценочных структур с другими субъектами инфраструктуры рынка активов вытекают из необходимости совершенствования учета требований к ней, предъявляемых хозяйствующими субъектами, участвующими в процессе решения собственниками активов (бирж, банков, налоговых органов, страховых компаний и т.д.) конкретных хозяйственных задач. Развитие такого взаимодействия возможно только в рамках скоординированной нормативно-правовой и методической базы. Исходя из интересов потребителей в получении оценочных и других услуг для решения конкретных хозяйственных задач, структуры, оказывающие эти услуги, должны быть вовлечены в процессы интеграции и расширения профиля их деятельности, способствующие повышению эффективности производства (рис.1).

Базовая схема взаимосвязи и взаимодействия оценочных и других рыночных структур

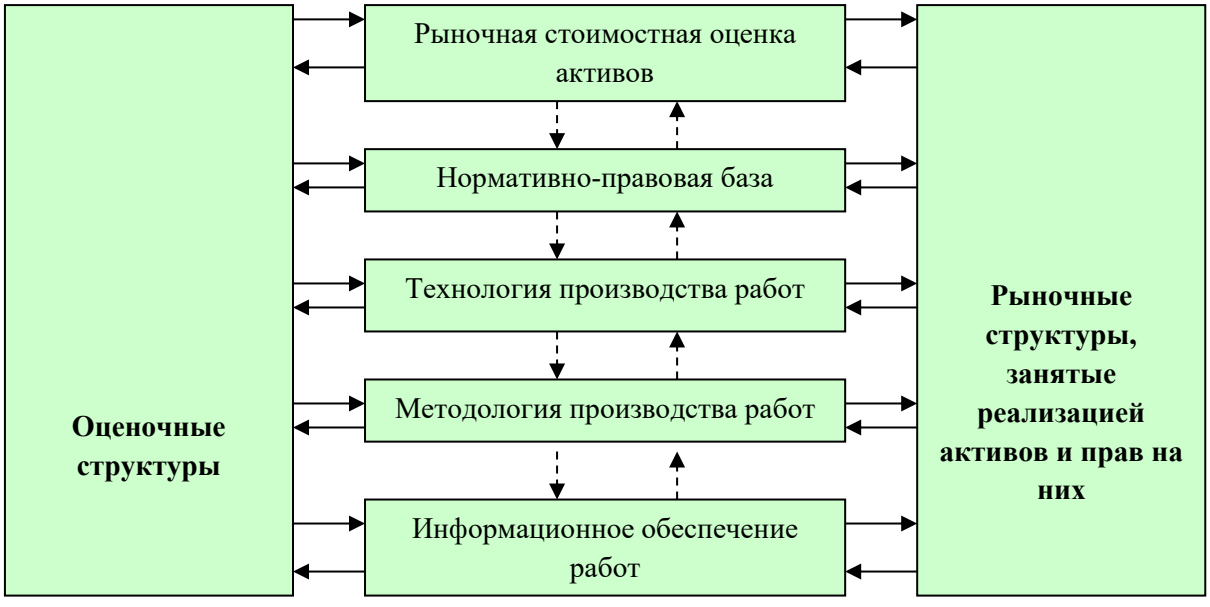


Рис. 1.

Оценочные услуги, как и другие виды предпринимательской деятельности, настоятельно требуют активизации работы по привлечению инвестиций в данный вид деятельности, что обусловлено необходимостью дальнейшего расширения сети оценочных структур (особенно в сельских регионах), их материально-технического оснащения, повышения квалификации кадров оценщиков и т.д. Привлечение инвестиций базируется на дальнейшем росте потребительского спроса на оценочные услуги со стороны всех хозяйствующих субъектов и населения.

Расширение инвестиций в оценочную деятельность предполагает необходимость повышения привлекательности оценочного предпринимательства, в том числе за счет разработки гибкой системы налогообложения. Совершенствование оценочной деятельности возможно только с участием государственного целевого инвестирования развития научных и методологических исследований в области оценочной деятельности, разработки в полном объеме национальной системы стандартов оценки, создания информационно-аналитической базы оценочных работ, их математического и программного обеспечения (рис.2).

Принципиальная схема формирования источников и использования инвестиций в оценочную деятельность

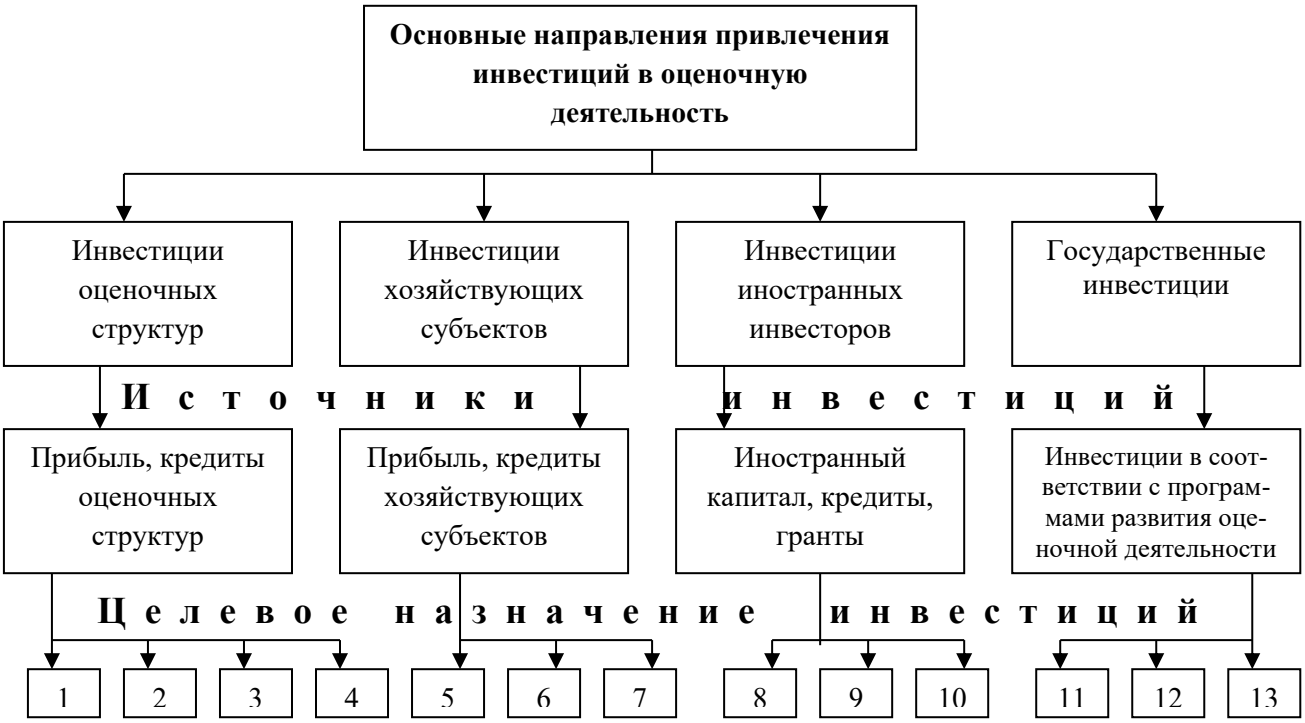


Рис. 2.

Условные обозначения

1. *Укрепление материально-технической базы.*
2. *Подготовка кадров и повышение их квалификации.*

3. Направление средств на математическое и программное обеспечение.

4. Создание информационно-аналитической базы.

5. Формирование уставного капитала кооперативных консалтинговых структур.

6. Создание информационной базы.

7. Подготовка кадров.

8. Организация иностранных оценочных структур.

9. Организация совместных предприятий по оказанию оценочных услуг.

10. Организация консорциумов по оказанию оценочных услуг.

11. Разработка нормативно-правовой и методической базы оценочных работ.

12. Информационное, математическое и программное обеспечение оценочных работ.

13. Стимулирование инвестиций в оценочную деятельность.

Углубление рыночных реформ объективно предполагает дальнейшее расширение целевого назначения стоимостной оценки активов, которое должно основываться на внедрении процедур профессиональной оценки в регулирование отношений собственников активов между собой и с государством, а также развитии рыночных механизмов хозяйствования, в том числе в управлении активами и бизнесом, повышении эффективности инвестиционных проектов, расширении форм и методов залогового кредитования фермерских и дехканских хозяйств, совершенствовании природоохранной деятельности, упорядочении механизмов восстановления ущерба, нанесенного активам или бизнесу в целом, и т.д.

Расширение целевого назначения стоимостной оценки активов объективно повышает требования к совершенствованию технологии и методологии оценочных работ, вызывает необходимость изыскания новых методов и способов их проведения с учетом особенностей конкретных видов активов и бизнеса, предопределяет целесообразность включения в оценочную документацию не только результатов проведенных оценочных работ, но и конкретных рекомендаций по улучшению использования и управления активами и бизнесом, что, в конечном счете, будет способствовать повышению эффективности затрат на оценочные работы (табл. 2).

Таблица 2.
Основные направления совершенствования технологии стоимостной оценки

Составляющие совершенствования стоимостной оценки	Объект основного внимания	Цели	Прогнозируемые результаты
Совершенствование организации оценочных работ	Оцениваемые активы	Удовлетворение потребительского спроса	Совершенствование продвижения оценочных услуг от производителя к потребителю
Совершенствование исходной информационной базы об оцениваемом активе	Информация об оцениваемых активах	Выбор оптимальной технологии производства оценочных работ	Повышение качества и сокращение сроков производства работ
Совершенствование методологического обеспечения стоимостной оценки	Методики проведения оценки	Совершенствование технологического процесса оценки	Повышение качества оценочной документации
Соблюдение требований международных и национальных стандартов оценки	Оцениваемые активы	Повышение качества оценочной документации	Повышение доверия инвесторов к стоимостной оценке
Математическое и программное обеспечение оценочных работ	Оцениваемые активы Математическая и программная база оценочных работ	Повышение качества и снижение издержек на производство оценочных работ	Сокращение субъективизма оценщика при оценочных работах
Углубление специализации оценщиков	Специалисты-оценщики	Повышение производительности труда	Повышение эффективности производства
Снижение общехозяйственных и производственных затрат	Структура себестоимости работ	Сокращение непроизводительных затрат	Повышение доходности оценочной деятельности

Совершенствование оценочной деятельности, требует формирования современной информационно-аналитической базы оценочных работ на основе тесного взаимодействия органов власти и управления, субъектов рыночной инфраструктуры, хозяйствующих субъектов и общественных организаций в разработке методических приемов, предназначенных для сбора, классификации, анализа, оценки и распространения актуальной современной и достоверной информации в области оценочной деятельности и оценки различных видов активов, вовлекаемых в гражданско-правовой оборот.

Структура этой базы должна быть дифференцирована и включать в себя законодательно-правовой, статистический, методический, математический и программный сегменты, обеспечивать позицирование активов по видам и целевому назначению, а их классификация осуществляться в соответствии с общепринятыми требованиями. Порядок формирования базы, способы сбора и обработки информации, а также порядок ее пользования должны обеспечивать свободный доступ к ней всех участников ее создания, сохранность и возможность ее поддержания на современном уровне.

На основе современной информационно-аналитической базе возможно расширить математическое и программное обеспечение оценочных работ, представляющее собой последовательный переход от фрагментального к системному характеру этой работы с одновременным взаимоувязанным вертикальным (по конкретным подходам и методам) и горизонтальным (взаимосвязь различных подходов и методов) развитием этих процессов. Развитие математического и программного обеспечения оценочных работ в первоочередном порядке должно быть сосредоточено на тех этапах технологического процесса оценочных работ, в которых в большей степени проявляется субъективизм оценщика, оказывающий существенное влияние на конечные результаты стоимостной оценки. В условиях переходной экономики Узбекистана приобрели важное значение вопросы математического и программного обеспечения этапы согласования окончательной стоимостной оценки активов на основе стоимостных оценок этих активов, полученных с использованием различных подходов и методов.

Важное значение должно придаваться повышению роли саморегулирования оценочной деятельности профессиональными объединениями на основе оптимизации государственного и общественного управления повышения его эффективности путем расширения участия этих объединений в нормативно-правовом, технолого-методическом, общехозяйственном и кадровом управлениях оценочной деятельностью, что предполагает целесообразность вовлечения этих объединений в законотворческий процесс с предоставлением им прав законодательной инициативы по актуальным вопросам развития оценочной деятельности.

В условиях формирования открытой экономики исключительно важное значение имеют вопросы интеграции оценочных структур с международными профессиональными сообществами и зарубежными рынками оценочных услуг.

Развитие этих интеграционных процессов должно базироваться на общих принципах и механизмах организации, производства и реализации оценочных услуг, соблюдении требований международных стандартов оценки, расширении саморегулирования оценочной деятельности, соблюдении требований по подготовке и переподготовке кадров оценщиков и их профессиональной страховой ответственности. Разработка и реализация системного подхода в развитии интеграционных процессов в оценочной

деятельности должны включать либеризацию управления оценочной деятельностью, усиление профессионального и этического контроля за деятельностью оценочных структур – членов общественных профессиональных объединений, совершенствования подготовки и переподготовки специалистов-оценщиков.

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САМОРЕГУЛИРОВАНИЕ ОЦЕНОЧНОЙ ДЕЯТЕЛЬНОСТИ – ВАЖНОЕ УСЛОВИЕ ДАЛЬНЕЙШЕГО РАЗВИТИЯ РЫНКА ОЦЕНОЧНЫХ УСЛУГ В РЕСПУБЛИКИ УЗБЕКИСТАН

Аннотация: *Рассмотрены вопросы повышение эффективности управления оценочной деятельностью, обеспечивающей ее соответствия международным требованиям и стандартам; оптимизация государственного и профессионального общественного управления оценочной деятельностью; выработка основных принципов и подходов по интеграции общественных объединений в управление оценочной деятельностью. Рассмотрены вопросы нормативно-правового управления; технолого-методического управления; общехозяйственного управления; кадрового управления в условиях поэтапности демократизации общества и либерализации экономики страны.*

Ключевые слова*: рынок оценочных услуг, совершенствование оценочной деятельности, общественные профессиональные объединения, стандарты оценки, саморегулирование оценочной деятельности, либерализация управления оценочной деятельностью, нормативно-правовое управление; технолого-методическое управление; общехозяйственное управление; кадровое управление. Аккредитация оценочной деятельности. Кодекс этики оценщика.*

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SELF-REGULATION OF APPRAISAL ACTIVITIES IS AN IMPORTANT CONDITION FOR THE FURTHER DEVELOPMENT OF THE APPRAISAL SERVICES MARKET IN THE REPUBLIC OF UZBEKISTAN

Abstract: *This article examines issues related to improving the efficiency of valuation management, ensuring its compliance with international requirements and standards; optimizing state and professional public management of valuation activities; and developing key principles and approaches for integrating public associations into valuation management. It also addresses issues of regulatory and legal management; technological and methodological management; general economic management; and personnel management in the context of the gradual democratization of society and the liberalization of the country's economy.*

Key words: *Appraisal services market, improvement of appraisal activities, public professional associations, appraisal standards, self-regulation of appraisal activities, liberalization of appraisal management, regulatory and legal management; technological and methodological management; general economic management; personnel management. Accreditation of appraisal activities. Appraiser's Code of Ethics.*

Одним из важных направлений развития рынка оценочных услуг на современном этапе является либерализация управления оценочной деятельностью, постепенной передаче решения части вопросов управления этим видом предпринимательства профессиональным сообществам. В этой связи объективно возникает ряд вопросов, требующих четкого и последовательного решения, среди них:

- повышение эффективности управления оценочной деятельностью, обеспечивающей ее соответствия международным требованиям и стандартам;
- оптимизация государственного и профессионального общественного управления оценочной деятельностью;
- выработка основных принципов и подходов по интеграции общественных объединений в управление оценочной деятельностью.

Основными составляющими этого управления являются:

- нормативно-правовое управление;
- технолого-методическое управление;
- общехозяйственное управление;
- кадровое управление.



Рис. 1. Принципиальная схема управления оценочной деятельностью

Рассматривая современный уровень управления оценочной деятельностью следует особо отметить:

- несоответствие этого уровня управления требованиям повышения эффективности оценочного производства;
- отсутствие в полном объеме необходимой нормативно-правовой и нормативно-распорядительной документации по управлению оценочным процессом;
- отчужденность и разобщенность хозяйствующих субъектов, занятых оценочной деятельностью, от решения общих для них организационно-хозяйственных и других вопросов;
- отсутствие глубокого и системного подхода к управлению подготовкой и переподготовкой кадров оценщиков.

В создавшихся условиях необходимость совершенствования управления оценочной деятельностью приобрела исключительно важное значение.

В целях дальнейшей либерализации оценочной деятельности, повышения ответственности за качество оценочных услуг, внедрения рыночных условий профессиональной деятельности, а также участия оценочной профессиональной общественности в регулирование процессов оценки имущества в Республике внедряется механизм саморегулирования оценочной деятельности.

Это явилось результатом принятия Указа Президента Республики Узбекистан № УП-6044 от 24.08.2020 г. О мерах по кардинальному совершенствованию лицензионных и разрешительных процедур, в котором

было предусмотрено «Органам, уполномоченным выдавать лицензии и документы разрешительного характера, а также принимать уведомления (далее — уполномоченные органы) до 1 января 2021 года провести инвентаризацию и обеспечить ведение реестра ранее оформленных лицензий и документов разрешительного характера на основе нового порядка». Данным Указом лицензирование оценочной и риэлторской деятельности было отменено.

Основные составляющие управления оценочной деятельностью

Основной задачей регулирования оценочной деятельности является обеспечение профессиональными сообществами оценщиков активного содействия органам государственной власти и управления в совершенствовании и повышении эффективности функционирования рынка оценочных услуг. При этом здесь речь не идет о подмене государственных органов власти и управления общественными структурами. Основная цель интеграции общественных структур в процессы управления оценочной деятельности заключается в выработке и реализации оптимального соотношения государственного и общественного управления этим видом деятельности в условиях демократизации общества и либерализации экономики.

В этой связи рассмотрим основные составляющие управления оценочной деятельностью.

Нормативно-правовое управление оценочной деятельностью.

В настоящее время формирование элементов нормативно-правового управления этой деятельностью осуществляется путем разработки и принятия соответствующих законов и подзаконных актов. При этом профессиональные общественные объединения оценщиков в этом процессе не занимают активной позиции. В результате формирование нормативно-правового обеспечения управления оценочной деятельностью зачастую носит фрагментальный характер и нередко не учитывает профессиональных требований к управлению оценочного процесса. В создавшихся условиях для совершенствования нормативно-правовой базы по управлению этим видом деятельностью было бы целесообразно:

- повысить роль общественных профессиональных объединений в законотворческой деятельности, предоставив им право законодательной инициативы по развитию нормативно-правовой базы управления оценочной деятельностью;

- использовать общественные профессиональные объединения оценщиков при проведении экспертизы проектов законодательных и подзаконных актов по вопросам развития оценочной деятельности.

Технологическое и методологическое управление.

Основными механизмами технологического управления оценочной деятельностью является национальная система стандартов оценки, которая носит общеобязательный характер. Кроме того, отраслевыми министерствами и ведомствами подготавливается и вводится в действие

(нередко в нарушение установленного порядка) множество инструктивно-методологических материалов, которые не всегда взаимоувязаны между собой. При этом каждое ведомство исходит из своих интересов, а в результате применение ведомственных технологий и методик ограничивает круг пользователей результатами оценочных услуг. Устранению этих недостатков и совершенствование технологического и методологического управления оценочной деятельностью могло бы способствовать создание общественного органа по координации технологического и методологического управления оценочной деятельностью, с участием представителей государственных органов и профессиональных общественных объединений имеющих непосредственное отношение к оценочной деятельности. К числу основных задач, решение которых, по нашему мнению, должно быть возложено на этот общественный орган, следует отнести:

- координацию работы по технологическому и методологическому обеспечению оценочной деятельностью;
- экспертизу технологической и методологической документации, разрабатываемой отраслевыми органами управления.

В настоящее время, значимость профессиональных общественных объединений оценщиков существенно возрастает в связи с необходимостью математического и программного обеспечения оценочной деятельностью. Решить эту задачу самостоятельно каждой оценочной структуре невозможно, в том числе по причине отсутствия необходимых для этого материальных и финансовых ресурсов. В этих условиях профессиональные общественные объединения могли бы, создав специально для этих целей соответствующие фонды за счет аккумуляции средств их членов, организовать проведение этой работы. Таким образом, в повышении роли профессиональных общественных объединений в управлении оценочной деятельностью заинтересованы и сами хозяйствующие субъекты, занятые этим видом деятельности.

На основании вышеизложенного принципиальная схема технолого-методического управления оценочной деятельностью общественными объединениями будет иметь вид, отображенный на рисунке 2.

Общехозяйственные управления.

Оценочная деятельность является разновидностью предпринимательской деятельности, которая регулируется той же нормативно-правовой базой и механизмами, что и другие виды предпринимательской деятельности. Вместе с тем, специфика оценочной деятельности предполагает необходимость решения широкого круга общих для оценочных структур общепроизводственных и общехозяйственных вопросов. Усилия по решению этих вопросов самостоятельно каждой оценочной структурой, как правило, не дают конечных положительных результатов.

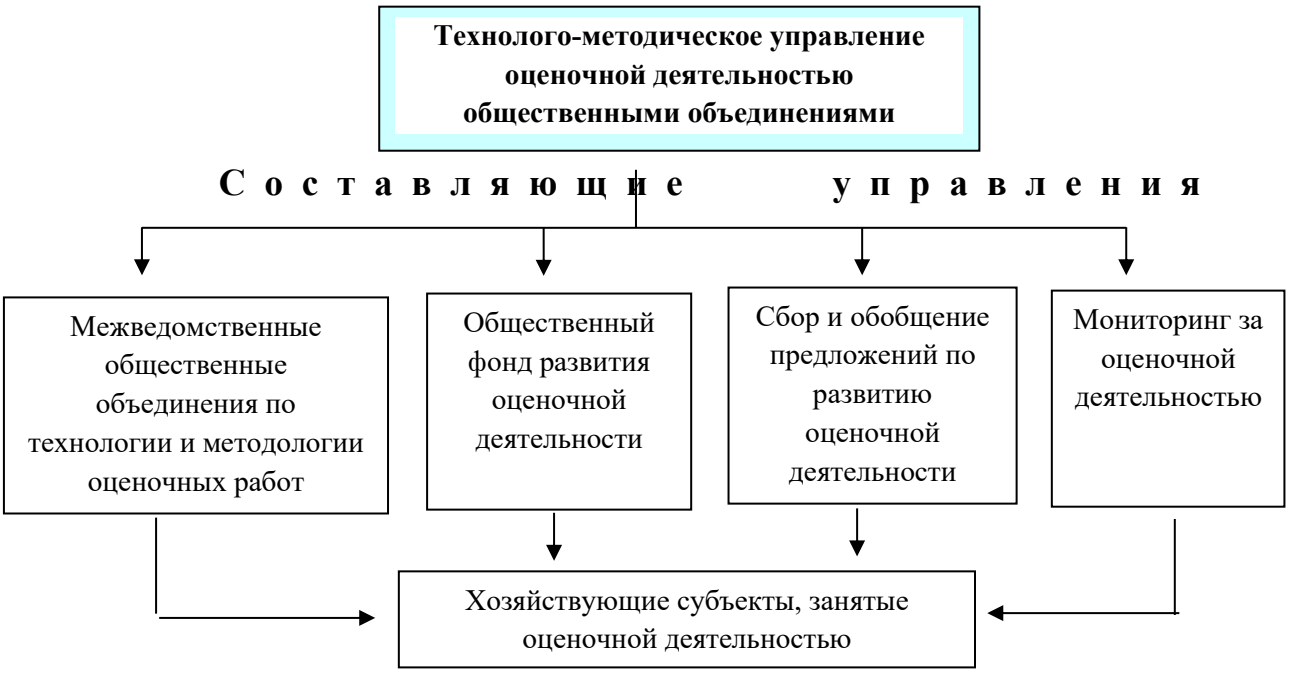


Рис. 2. Принципиальная схема технолого-методического управления оценочной деятельностью общественными объединениями

К числу таких вопросов следует отнести:

- разработка и реализация общей маркетинговой стратегии развития оценочной деятельности;
- разработка единых принципов и подходов к ценообразованию стоимостной оценки активов и бизнеса;
- обеспечение производства нормативами, типовыми формулярами, эталонами оценочной документации и др.

Главной задачей общехозяйственного управления стоимостной оценки общественными профессиональными объединениями должна являться консолидация усилий хозяйствующих субъектов, занятых оценочной деятельностью, на решении актуальных вопросов организации оценочного производства. Принципиальная схема общехозяйственного управления оценочной деятельностью общественными объединениями приводится на рисунке 3.

При этом следует подчеркнуть, что по мере развития и укрепления общественных объединений, исходя из общих интересов хозяйствующих субъектов, занятых оценочной деятельностью, сфера общехозяйственного управления оценочной деятельностью может быть расширена.

Передача решения многих вопросов общехозяйственного управления оценочной деятельностью профессиональным общественным объединениям оценщиков позволит унифицировать оценочный процесс, повысить эффективность оценочной деятельности.

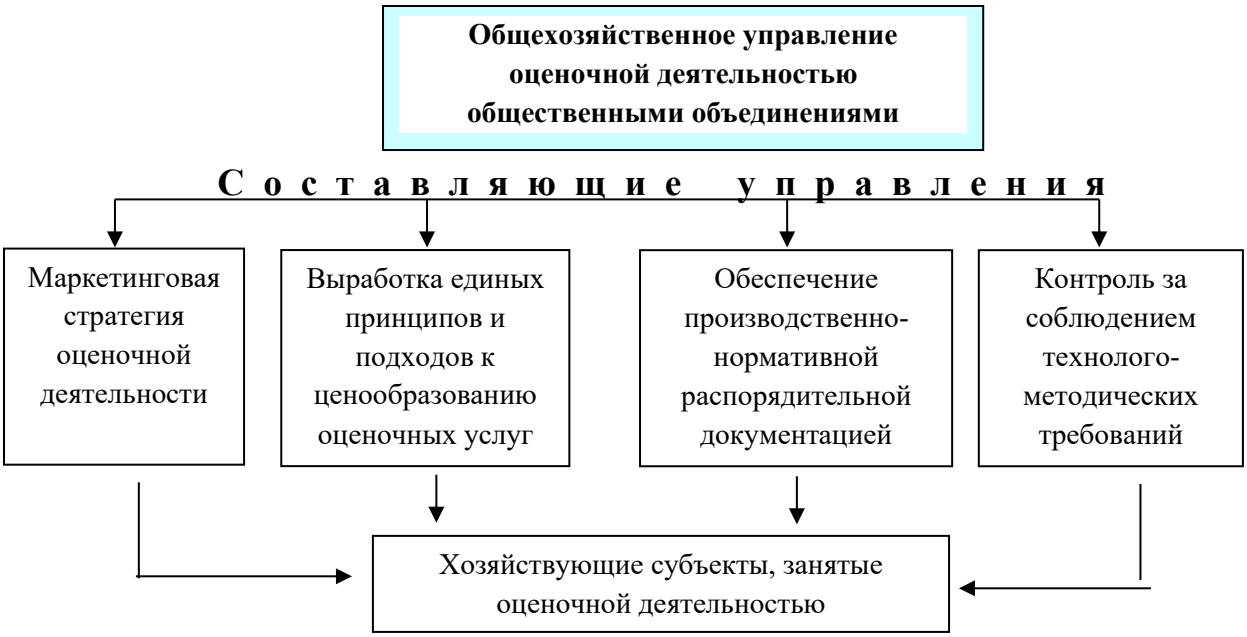


Рис. 3. Принципиальная схема общехозяйственного управления оценочной деятельностью общественными объединениями

Кадровое управление.

Совершенствование кадрового управления оценочной деятельностью в условиях дальнейшего повышения требований к оценочной документации приобрело исключительно важное значение. При этом к специалистам оценщикам по мере расширения и повышения значимости оценочной деятельностью в реформировании экономики предъявляются все более высокие профессиональные требования. В этой связи, на наш взгляд, повышение роли общественных профессиональных объединений в решении этого вопроса позволит обеспечить существенный рост квалификации оценщиков, а уровень их профессиональной подготовки – соответствующей требованиям реформируемой экономики.

Общественные профессиональные объединения, приняв на себя ряд функций кадрового управления оценочной деятельностью, могут активно содействовать государству в формировании контингента высококвалифицированных специалистов-оценщиков, отличающихся самым высоким профессиональным и этическим требованиям. При этом за государством должны оставаться организация базовой подготовки оценщиков, а за общественными профессиональными организациями – дальнейшее повышение их квалификации.

К основным составляющим кадрового управления оценочной деятельностью общественными профессиональными объединениями, на наш взгляд, следует отнести:

- содействие государственным органам управления по эффективному функционированию оценочной деятельности;

- проведение профессиональной сертификации специалистов-оценщиков;

- разработку и реализацию механизмов присвоения общественных квалификационных категорий специалистов-оценщиков;

- разработку и внедрение в практику оценочной деятельности «Кодекса

этики оценщика» и др.

Принципиальная схема кадрового управления оценочной деятельностью общественными профессиональными объединениями приводится на рисунке 4.

В приведенных основных направлениях повышения роли общественных профессиональных объединений пристального внимания заслуживает вопрос роли и места этих объединений в процессе оценочной деятельности. Мировая практика решения этого вопроса свидетельствует о более высоких требованиях, которые предъявляются специалистам-оценщикам со стороны таких общественных объединений и ассоциаций.

Аккредитацию оценочной деятельности профессиональные объединения оценщиков должны осуществлять на основе проводимой сертификации претендентов на получение аккредитации на оценочную деятельность, проверки их знаний по технологии производства оценочных работ, правовым, нормативным и этическим требованиям, предъявляемых к оценщику и оценочной документации. По результатам проводимых проверок эти общественные профессиональные объединения имеют право возбуждения ходатайств перед соответствующим органом о приостановлении или аннулировании аккредитации на оценочную деятельность.

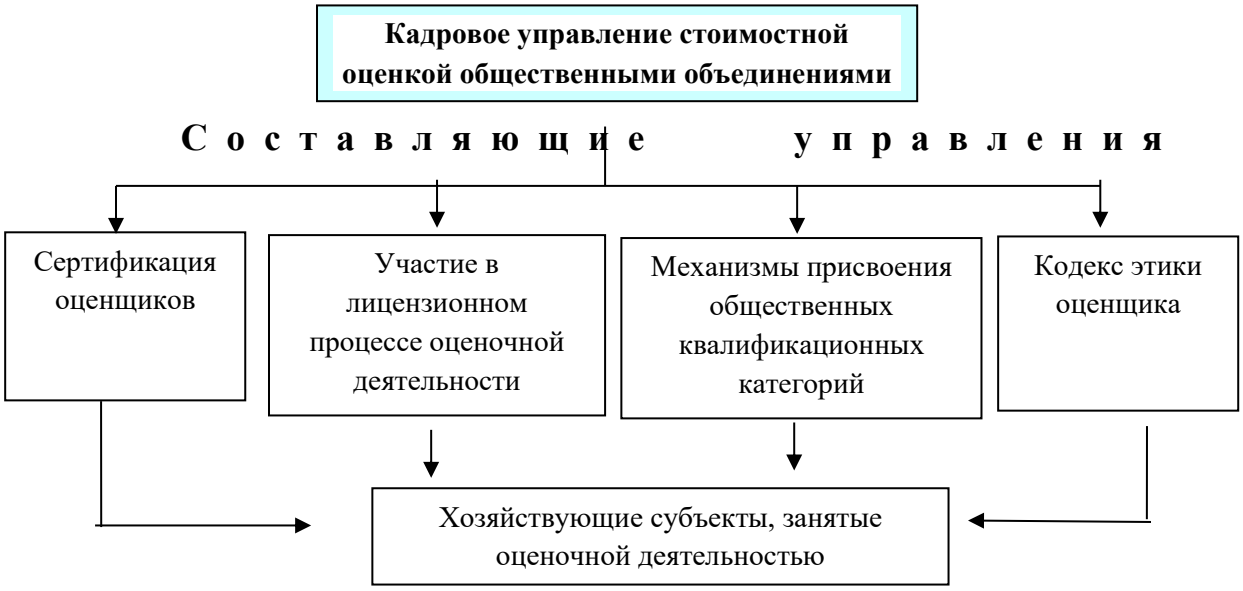


Рис. 4. Принципиальная схема кадрового управления стоимостной оценкой общественными объединениями

Важное значение в совершенствовании кадрового управления оценочной деятельностью профессиональными общественными объединениями должно придаваться разработке и внедрению в оценочную практику «Кодекса этики оценщика». Аналогичные кодексы разработаны и успешно внедрены в оценочную практику многих стран мира. Указанный кодекс призван повысить роль этических норм в совершенствовании оценочного процесса.

Обобщая вышеизложенное, следует подчеркнуть, что реализация этих основных направлений повышения роли общественных профессиональных объединений в саморегулировании оценочной деятельности должна быть тесным образом взаимосвязана с последовательностью и поэтапностью демократизации общества и либерализации экономики страны.

Использованные источники

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УДК 33

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ОСОБЕННОСТИ УЧЕТА И ОЦЕНКИ ЭФФЕКТИВНОСТИ ИСПОЛЬЗОВАНИЯ ТРУДОВЫХ РЕСУРСОВ В ОРГАНИЗАЦИЯХ

Аннотация: *Статья посвящена исследованию особенностей учета и оценки эффективности использования трудовых ресурсов в современных организациях. Рассматриваются ключевые аспекты организации кадрового учета в соответствии с требованиями трудового законодательства и стандартов бухгалтерского учета, включая классификацию персонала, документооборот и методы анализа производительности. Подчеркивается важность внедрения автоматизированных систем учета и комплексных показателей оценки для повышения эффективности управления персоналом и обеспечения достоверности управленческой отчетности.*

Ключевые слова: *трудовые ресурсы, бухгалтерский учет, оценка эффективности, производительность труда, кадровый учет, анализ использования рабочего времени, мотивация персонала.*

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FEATURES OF ACCOUNTING AND EVALUATION OF THE EFFICIENCY OF LABOR RESOURCE UTILIZATION IN ORGANIZATIONS

Abstract: *This article examines the features of accounting and evaluation of the efficiency of labor resource utilization in modern organizations. The study analyzes key aspects of personnel accounting organization in accordance with labor legislation and accounting standards requirements, including personnel classification, document flow, and productivity analysis methods. The article emphasizes the importance of implementing automated accounting systems and comprehensive efficiency indicators to improve personnel management efficiency and ensure the reliability of management reporting.*

Keywords: *labor resources, accounting, efficiency evaluation, labor productivity, personnel accounting, working time utilization analysis, personnel motivation.*

В современных условиях хозяйствования трудовые ресурсы являются ключевым фактором конкурентоспособности организаций, определяющим

объем производства, качество продукции и общую эффективность бизнеса. Трудовые ресурсы обеспечивают непрерывность операционных процессов, снижая риски кадровых потерь и существенно влияют на формирование затрат на оплату труда. Учет и оценка эффективности их использования требуют высокой степени организованности, учитывая сложность документооборота, разнообразие квалификаций и необходимость соблюдения нормативных требований трудового и бухгалтерского законодательства.

Учет трудовых ресурсов направлен на обеспечение точного отражения численности, движения и квалификационного состава персонала в отчетности. Согласно Трудовому кодексу РФ и Федеральному закону «О бухгалтерском учете», трудовые ресурсы включают широкий спектр категорий, от основных работников до вспомогательного персонала. Для целей учета они классифицируются по штатной численности, включая постоянных, временных и сезонных сотрудников, что подчеркивает необходимость регулярного анализа штатного расписания и инвентаризации кадров для подтверждения фактического состава.

Учет должен обеспечивать контроль за сохранностью квалификационного потенциала, правильное оформление трудовых договоров, расчет фондов оплаты труда и выявление резервов по оптимизации штата. Целью такого учета является предоставление достоверной информации о наличии, движении и стоимости трудовых ресурсов для принятия управленческих решений. В современных условиях учет все чаще ведется с помощью автоматизированных систем, таких как 1С: Зарплата и управление персоналом или HRM-системы, позволяющих интегрировать данные о времени, производительности и мотивации. Внедрение таких систем позволяет сократить ошибки в первичной документации и обеспечить оперативный доступ к данным о загрузке сотрудников.

Оценка эффективности использования трудовых ресурсов является неотъемлемой частью системы управления, обеспечивая рациональное распределение персонала и минимизацию потерь.

М.Б. Щепакин и соавторы указывают, что «интегрированный индекс эффективности трудовых ресурсов рассчитывается с использованием нормированных показателей и весов, определяемых экспертами, что позволяет оценить вклад персонала в конкурентоспособность предприятия» [3]. Для этого применяются аналитические методы, такие как анализ фондов рабочего времени, коэффициенты текучести кадров и показатели выработки на одного сотрудника.

Ю.В. Иртегова отмечает, что «производительность труда как основной критерий оценки эффективности представляет собой показатель результативности затрат труда на единицу времени или на единицу продукции, выражаемый через показатели выработки и трудоемкости»,

подчеркивая важность естественных, стоимостных и трудовых методов расчета для точного учета вклада персонала [1].

Использование методов оценки эффективности трудовых ресурсов помогает выявить неэффективные участки, такие как простои или перегрузки, оптимизируя затраты на персонал.

Н.Ю. Верченко акцентирует внимание на том, что «анализ динамики кадров и использования рабочего времени позволяет выявить потери, зависящие от персонала, и реализовать резервы роста без дополнительных инвестиций» [2].

Оценка эффективности трудовых ресурсов также направлена на обеспечение соответствия трудовых затрат целям организации и соблюдение нормативов.

По мнению И.И. Шаповалова, «эффективность трудовых ресурсов измеряется как отношение результатов к затратам труда, с учетом скрытых потерь времени на брак и простои, что требует активной кадровой политики, включая ежегодные аттестации и переподготовку» [4].

Учет и оценка трудовых ресурсов осложняются динамикой рынка труда и разнообразием форм занятости. Существующие метрики занятости недостаточны из-за скрытой безработицы и миграции, поэтому предлагается коэффициент эффективности КЭ, учитывающий экономическую активность и интенсивность занятости для регионального уровня.

Типичные проблемы включают несоответствие квалификации задачам, высокую текучесть и неоптимальное использование рабочего времени. Например, анализ может выявить отсутствие резервов под обучение или неправильный учет сверхурочных. Для устранения таких недостатков рекомендуется внедрение KPI-систем и регулярный мониторинг производительности.

Современные тенденции в учете и оценке трудовых ресурсов связаны с цифровизацией HR-аналитики. Организациям рекомендуется разрабатывать комплексные программы оценки, включающие ежеквартальный анализ и ежегодную аттестацию, что существенно сокращает риски, связанные с кадровыми потерями или их нерациональным использованием.

В заключение, учет и оценка эффективности трудовых ресурсов остаются ключевыми элементами устойчивого развития организации. На основе анализа современных подходов можно сделать вывод, что эффективность процесса зависит от четкой кадровой политики, применения автоматизированных инструментов и систематического анализа показателей.

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ФИЗИКА КАК КЛЮЧ К ПОНИМАНИЮ МИРА: ОТ МИКРОКОСМОСА ДО МАКРОГАЛАКТИК

Аннотация: *мы уверенны, что что задача современного учителя физики — создать среду, в которой школьники почувствуют себя исследователями и первооткрывателями*

Ключевые слова: *интерактивные симуляции и физические игры, геймификация, интерактивные эксперименты и демонстрации, Проектная деятельность и исследовательские задания, кейсы*

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PHYSICS AS THE KEY TO UNDERSTANDING THE WORLD: FROM THE MICROCOSMOS TO MACROGALAXIES

Abstract: *we are confident that the task of a modern physics teacher is to create an environment in which schoolchildren feel like researchers and discoverers*

Keywords: *interactive simulations and physics games, gamification, interactive experiments and demonstrations, project activities and research tasks, cases*

В мире, где технологии стремительно развиваются, роль учителя физики становится критически важной. Какому педагогу не хотелось бы видеть горящие глаза своих учеников, когда те сталкиваются с увлекательными тайнами природы? Однако, в действительности, многие школьники зачастую рассматривают физику как сложный и скучный предмет. Вдохновение школьников — задача не из легких, но стоит попробовать посмотреть на физику с новой перспективы.

Первым делом, учителю следует сделать акцент на практическую пользу физических знаний. Дети с интересом воспринимают то, что могут применить в реальной жизни. Экспериментальные занятия, будь то исследование электрического тока или построение простейших цепей, могут пробудить интерес и дать возможность почувствовать себя настоящими учеными. Интерактивные демонстрации, на которых ученики своими руками создают электрические схемы или наблюдают волновые процессы, сделают уроки более живыми и увлекательными.

Физика, как фундамент естествознания, пронизывает все аспекты нашего существования. От мельчайших субатомных частиц до колоссальных скоплений галактик, она предлагает нам универсальный язык для описания и понимания окружающего мира. Это не просто набор уравнений и законов, но и глубокая философская система, позволяющая заглянуть в самую суть реальности.

Ещё один важный аспект обучения физике — это вовлечение учеников в проектную деятельность. Совместные проекты, такие как создание электромагнитного генератора или изучение альтернативных источников энергии, позволяют ребятам не только применить полученные знания на практике, но и развить навыки сотрудничества и критического мышления. Когда учащиеся работают в командах, они учатся обмениваться идеями, учитывать мнения других и находить нестандартные решения. Такой подход помогает формировать у школьников чувство ответственности за конечный результат и позволяет ощутить вкус научных открытий и достижений.

Технологии также открывают широкие возможности для вовлечения учеников в изучение физики. Виртуальные лаборатории и симуляторы позволяют проводить сложные эксперименты, которые трудно реализовать в школьных условиях. Благодаря современным образовательным платформам, таким как PhET или Algodoo, ученики могут исследовать физические явления в интерактивной форме, что делает процесс обучения более увлекательным и доступным. Использование технологий позволяет учителю адаптировать учебный материал под потребности каждого ученика, учитывая его уровень подготовки и интересы.

Физика тесно переплетена с философией, предлагая ответы на фундаментальные вопросы о природе реальности, времени, пространства и сознания. Философские размышления помогают осмыслить физические теории, оценить их границы и определить направление дальнейших исследований. Квантовая механика, общая теория относительности и космология не только предоставляют научные знания, но и ставят перед нами философские дилеммы, требующие глубокого осмысления. Природа детерминизма и случайности, роль наблюдателя в определении реальности, единство сознания и материи – это лишь некоторые из вопросов, волнующих ученых и философов на протяжении многих лет

Влияние физики на общество огромно и многогранно. От разработки новых технологий и создания новых источников энергии до изменения

нашего мировоззрения и формирования научной картины мира, физика оказывает глубокое воздействие на культуру и прогресс. Физические открытия стимулируют развитие других наук, способствуют решению глобальных проблем и улучшают качество жизни людей. Медицина, энергетика, транспорт, связь – все эти области немыслимы без достижений физики. Более того, физика вдохновляет искусство, литературу и кинематограф, расширяя наше представление о мире и вселенной.

Важность популяризации физики трудно переоценить. Доступное и увлекательное изложение сложных научных концепций помогает расширить кругозор, развить критическое мышление и повысить научную грамотность населения. Книги, фильмы, лекции, научные музеи и онлайн-ресурсы играют важную роль в привлечении внимания к физике и формировании позитивного отношения к науке. Популяризация физики способствует воспитанию будущих ученых, повышает интерес к научным исследованиям и создает благоприятную среду для инноваций.

Интеграция физики в систему образования имеет решающее значение для формирования научного мышления и подготовки компетентных специалистов в различных областях. Изучение физических законов, проведение экспериментов и решение задач развивают логическое мышление, аналитические способности и умение применять знания на практике. Важно не просто заучивать формулы и определения, а понимать суть физических явлений, уметь объяснять их и прогнозировать их развитие. Современные образовательные технологии, такие как компьютерное моделирование и интерактивные симуляции, позволяют сделать процесс обучения более увлекательным и эффективным.Не менее важна и возможность интеграции физики с другими науками и дисциплинами. Интердисциплинарные проекты, такие как изучение физических процессов в биологии или применение математических моделей в физике, способствуют развитию системного мышления и расширению кругозора учеников. Такое взаимодействие раскрывает перед школьниками новые горизонты и позволяет увидеть взаимосвязь научных дисциплин, что особенно важно в современном мире, где границы между науками становятся всё более размытыми.

Инклюзивное образование в физике также играет ключевую роль в формировании будущих исследователей. Обеспечение равного доступа к обучающим ресурсам и использование индивидуализированных подходов помогает каждому ученику раскрыть свой потенциал, независимо от его начального уровня подготовки. Уроки должны быть адаптированы таким образом, чтобы каждый ребёнок чувствовал себя ценным участником учебного процесса и мог реализовать свои способности. Это способствует созданию гармоничного образовательного пространства, в котором все учащиеся получают возможность успешного обучения и личностного роста.

На фоне стремительного развития технологий на первый план выходит необходимость формирования у школьников навыков работы с большими

данными и современных аналитических инструментов. Включение в школьную программу элементов работы с реальными физическими исследованиями и данными помогает учащимся освоить принципиально новые компетенции, которые будут востребованы в профессиональной деятельности. Ученики могут участвовать в проектной деятельности, анализируя данные физических экспериментов, учиться использовать специализированное программное обеспечение, что в свою очередь подготавливает их к будущей научной или инженерной деятельности.

Важным аспектом обучения физике является развитие критического подхода к информации и умения делать обоснованные выводы. Критическое мышление играет неоценимую роль в формировании личности, способной к самостоятельному и обдуманному принятию решений. Учителя физики могут внести значительный вклад в развитие этих навыков, побуждая учеников анализировать различные источники информации, сопоставлять факты и формировать собственные гипотезы. Такая работа способствует формированию научного мировоззрения и адаптивности в быстро меняющемся мире.

Подготовка учащихся к будущему должна основываться на принципах устойчивого развития и экологической ответственности. Физические законы оказывают непосредственное влияние на окружающий мир и его ресурсы, и задача учителя — показать школьникам, как физическая наука может быть направлена на решение экологических проблем. Включение в учебный процесс проектов, посвящённых изучению возобновляемых источников энергии и технологий энергосбережения, укрепляет у учеников ответственность за будущее нашей планеты и подготавливает их к активному участию в создании более устойчивого мира.

В завершение, важно подчеркнуть, что задача современного учителя физики — создать среду, в которой школьники почувствуют себя исследователями и первооткрывателями. Интерес к физике возрастёт, если дети увидят, что она неотделима от окружающего их мира и что каждый из них может внести свой вклад в науку. Когда учитель находит подход к сердцам своих учеников, он не только обучает их, но и формирует новое поколение думающих и творческих людей, готовых решать сложные задачи завтрашнего дня.

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ГРАЖДАНСКОЕ, АРБИТРАЖНОЕ ПРАВО И ПРИНЦИПЫ ИСПОЛЬЗОВАНИЯ ИСКУССТВЕННОГО ИНТЕЛЛЕКТА В ПРАВОПРИМЕНЕНИИ

Аннотация: *статья посвящена вопросам использования искусственного интеллекта в гражданском и арбитражном праве, а также связанными с этим преимуществами и недостатками в правоприменении. В настоящем исследовании применена цельная совокупность методов научного познания, которые позволили раскрыть выбранную для изучения тему. Метод анализа использовался для описания ситуации с применением искусственного интеллекта в судебной системе. Системный метод позволил диалектически оценить как сильные стороны искусственного интеллекта, так и отрицательные факторы, которые детерминированы его использованием. Метод синтеза позволил оценить направления дальнейших исследований по применению искусственного интеллекта в судебной сфере. Рассматривается применение систем искусственного интеллекта на примере гражданского и арбитражного права, при том, что выводы данного исследования могут быть обобщены на все сферы права. Особое внимание уделено таким феноменам, как алгоритмическая дискриминация, проблема непрозрачности моделей искусственного интеллекта, датификация судебной практики, ограничение судейского усмотрения. В контексте зарубежных примеров анализируются риски снижения индивидуализации судебного решения, подмены принципа справедливости статистической нормой и утраты доверия к правосудию. Сделан вывод о необходимости критической переоценки роли искусственного интеллекта при вынесении решения, выработке комплексных правовых и этических механизмов, гарантирующих защиту фундаментальных принципов закона. Рассмотрены доводы о том, что привлечение искусственного интеллекта в упрощенное производство или приказной порядок судопроизводства, наоборот, может способствовать созданию гарантий объективности и правильности конечного решения. Подчеркивается, что одним из очевидных примеров категорий дел, в которых может быть внедрен дополнительный помощник в виде систем искусственного интеллекта, являются требования приказного производства. При обсуждении результатов исследования подчеркивается, что алгоритмизация процессов правоприменения автоматически не должна означать устранения человека из наиболее критичных процессов цифрового взаимодействия.*

Ключевые слова: *правоприменение, принципы использования, искусственный интеллект, гражданское право, арбитражное право, приказное производство, судебный приказ, предиктивная аналитика, риск дегуманизации.*

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CIVIL AND ARBITRATION LAW AND THE PRINCIPLES OF USING ARTIFICIAL INTELLIGENCE IN LAW ENFORCEMENT

Abstract*: the article is devoted to the issues of using artificial intelligence in civil and arbitration law, as well as the advantages and disadvantages of law enforcement associated with it. In this study, a comprehensive set of scientific methods was used to explore the chosen topic. The analysis method was employed to describe the situation of using artificial intelligence in the judicial system. The systematic method allowed for a dialectical assessment of both the strengths of artificial intelligence and the negative factors that are determined by its use. The synthesis method allowed us to evaluate the directions of further research on the application of artificial intelligence in the judicial sphere. The article examines the application of artificial intelligence systems in the context of civil and arbitration law, while the findings of this research can be generalized to all areas of law. Special attention is paid to such phenomena as algorithmic discrimination, the problem of opacity of artificial intelligence models, the datification of judicial practice, and the limitation of judicial discretion. In the context of foreign examples, the article analyzes the risks of reducing the individualization of judicial decisions, replacing the principle of justice with a statistical norm, and losing trust in the justice system. The article concludes that there is a need for a critical reevaluation of the role of artificial intelligence in decision-making and the development of comprehensive legal and ethical mechanisms that guarantee the protection of fundamental principles of the law. The article considers the argument that the use of artificial intelligence in simplified proceedings or the orderly procedure of legal proceedings, on the contrary, can help to create guarantees of objectivity and correctness of the final decision. It is emphasized that one of the obvious examples of categories of cases in which an additional assistant in the form of artificial intelligence systems can be introduced is the requirements of the orderly procedure. When discussing the results of the study, it is emphasized that the algorithmization of law enforcement processes should not automatically mean the elimination of humans from the most critical processes of digital interaction.*

Keywords: *law enforcement, principles of use, artificial intelligence, civil law, arbitration law, writ proceedings, court order, predictive analytics, risk of dehumanization.*

Введение.

Обзор литературы.

Наиболее весомые результаты, которые в настоящее время отличают «цифровую» среду от «нецифровой», достигаются использованием систем, имеющих обобщенное название Искусственный Интеллект (ИИ). Особенно заметно это отличие в государственно-правовой сфере. Уже сейчас ИИ применяется во всех институтах цифрового государства в качестве эффективного помощника, в том числе в судебной системе.

Отдельные вопросы цифровизации государственно – правовой сферы были рассмотрены автором настоящей статьи в работах [1], [2], [3].

Особо проблемным представляется использование ИИ в судебной сфере, поскольку именно в ней неумеренное использование ИИ несет с собой вполне понятные риски, а именно - дегуманизацию правосудия (образ чего воплощается в гипотетическом судье-роботе). Вынесение судебного решения не должно осуществляться судьей-роботом, ибо в этом случае из системы правосудия будет вычеркнут такой его принципиальный компонент как судебное усмотрение [4].

В работе [5] рассматриваются проблемы использования технологий ИИ в зарубежных правопорядках. Подчеркивается, что актуальность темы обусловлена масштабной цифровизацией правосудия и нарастающим внедрением алгоритмических систем в сферу судопроизводства в зарубежных странах (США, Китай, Япония). Особое внимание уделено таким феноменам, как алгоритмическая дискриминация, проблема непрозрачности ИИ-моделей, датификация судебной практики, ограничение судейского усмотрения. В контексте зарубежных примеров анализируются риски снижения индивидуализации судебного решения, подмены принципа справедливости статистической нормой и утраты доверия к правосудию. Сделан вывод о необходимости критической переоценки роли ИИ при вынесении решения, выработке комплексных правовых и этических механизмов, гарантирующих защиту фундаментальных принципов закона[5]. Разумеется, подобные негативные факторы являются угрозами и для отечественной судебной системы при неконтролируемом и неограниченном применении ИИ.

В работе [6] анализируются аргументы сторонников и противников замены судьи ИИ при осуществлении судопроизводства. Выражается согласие с теми учеными и практическими работниками, которые не допускают такую возможность в силу специфики судебной деятельности (оценка доказательств по внутреннему убеждению судьи) и норм российского права (оценочные нормы и судейское усмотрение при их применении). Иное существенно снизило бы уровень процессуальных

гарантий правосудия, ипо существу, его бы разрушило. Вместе с тем, некоторыми учеными делается вывод о том, что привлечение ИИ в упрощенное производство или приказной порядок судопроизводства, наоборот, поспособствовало бы созданию гарантий объективности и правильности конечного решения [6].

В работе [7] отмечаются достоинства, которые может принести использование ИИ в судах. Так, системы ИИ в делопроизводстве могли бы оптимизировать работу аппарата суда на всех этапах судопроизводства. Проблема состоит в том, что на сегодняшний день рутинная, монотонная, но необходимая работа – сортировка документов, распечатка и сканирование копий, формирование дел и повесток, отправка и оформление корреспонденции, поиск дел для приобщения новых документов – дополняет и без того непомерный груз обязанностей работников суда [7]. Очевидно, что данные функции мог бы эффективно выполнять ИИ без явных угроз дегуманизации права, о чем шла речь в работах [4], [5], [6].

В исследовании [8] рассматривается использование ИИ с точки зрения его фактического присутствия в отечественном судопроизводстве. В работе [8] отмечается, что технологии ИИ могут ускорить принятие решений, повысить точность и объективность, а также улучшить доступность правосудия. Однако также отмечается, что есть некоторые потенциальные риски, такие как нарушение конфиденциальности данных и возможность ошибок в алгоритмах. Итоговый вывод исследования [8] заключается в том, что использование информационных технологий и ИИ необходимо рассматривать не в качестве самоцели, а как одно из первостепенных задач в срезе стратегии совершенствования правовой системы, повышения эффективности защиты и восстановления прав участников правоотношений с учетом социальных и этических аспектов российского судопроизводства.

Таким образом, дозированное, обоснованное, контролируемое и рациональное применение ИИ в юриспруденции (и судебной системе, в частности) способно принести очевидный эффект. Направлениям такого применения ИИ будет посвящена настоящая статья.

Методы.

В настоящем исследовании применялась цельная совокупность методов научного познания, которые позволили раскрыть выбранную для изучения тему. Метод анализа использовался для описания ситуации с применением ИИ в судебной системе. Системный метод позволил диалектически оценить как сильные стороны ИИ, так и отрицательные факторы, которые связаны с его использованием. Применение метода синтеза позволило оценить направления дальнейших исследований по применению ИИ в судебной сфере.

Результаты.

В статье [9] справедливо отмечается, что отечественная судебная система перегружена значительным объемом дел, в которых отсутствует спор о праве и в которых участники не пытаются пользоваться механизмами

состязательности: должники не платят, не имея на то каких-либо объективных оснований, публичные органы и организации принимают решения в противоречие сформировавшимся подходам в судебной практике, а затем оспаривают судебные акты, оттягивая реальное восстановление нарушенных прав заявителя и т.п. К сожалению, сутяжничество и неудовлетворительная договорная дисциплина являются характерными чертами злоупотреблений со стороны сторон спора [9]. Формирование правовой культуры является долгим и сложным процессом, который нельзя решить в одночасье, это центральное направление государственной политики, реализуемое за счет комплексных мер - посредством повышения качества образования и качества жизни населения, стабильности экономики, обеспечения функционирования альтернативных механизмов урегулирования спора, саморегуляции материальных правоотношений, транспарентной превенции правонарушений и др. [9].

Автор статьи [9] отмечает, что в государственной судебной политике главным трендом обозначается оптимизация нагрузки судебной системы. Одна из траекторий оптимизации судебной нагрузки связана с внедрением цифровых технологий, в том числе ИИ, с целью ассистирования судье и сотрудникам аппарата суда в выполнении рутинных функций. Полномасштабная замена судьи искусственным интеллектом на текущий момент не предполагается ни в одном из правопорядков, поскольку требует комплексной оценки возможных рисков применения искусственного интеллекта (отношения с которым на текущий момент пребывают в правовом вакууме [9]). Соответствующие технологии начинают применяться в мировой практике только в альтернативных формах разрешения споров и при разрешении отдельных категорий дел. Определенного успеха в применении искусственного интеллекта в рассмотрении спора судом добились лишь некоторые страны, например США, Китай, Сингапур.

Автор настоящей статьи считает важным подчеркнуть, что именно эта тройка стран (США, Китай, Сингапур) являются лидерами «Глобального индекса по развитию и применению ИИ-2024» [10], что подтверждается аналитическим документом [11] Национального центра развития ИИ при Правительстве Российской Федерации.

Воздействие цифровизации на гражданское судопроизводство в России и за рубежом (Китай, Индия, Сингапур, Европейский Союз, США, ЮАР) рассмотрен в докторской диссертации Е.П. Русаковой [12].

Одним из очевидных примеров тех категорий дел, в которых мог бы быть внедрен дополнительный помощник в виде систем ИИ, автор работы [8] видит требования приказного производства. Рассматриваемые в соответствующих процедурах требования характеризует так называемую бесспорность, т.е. заявление взыскателя основано на доказательствах в письменной форме, не вызывающих сомнений в их достоверности, а у должника отсутствуют какие-либо возражения. Объем дел приказного производства в стране колоссальный - за первое полугодие 2023 г. судами

общей юрисдикции рассмотрено по существу более 15 миллионов дел, из которых 11 миллионов, т.е. около 70 % - это требования приказного производства [8]. Арбитражными судами за тот же период рассмотрено более 800 тысяч дел, из которых в порядке приказного производства – почти 20% [8]. Столь значительный объем требований приказного производства заставляет искать пути оптимизации судебной нагрузки, в том числе и с помощью внедрения достижений современной цифровизации.

В статье [13] автор справедливо отмечает, что в современных условиях приказное производство становится наиболее удобным институтом для полномасштабной цифровой трансформации. Потенциал цифровой трансформации приказного производства демонстрируется сегодня достаточно явно. И здесь надо отдать должное юридическим экспериментам по внедрению инструментов автоматизации выдачи судебных приказов, которые проводились в судах общей юрисдикции на территории Белгородской области в 2021 г. и в Амурской области с 2023 г.

Содержание указанных экспериментов несколько отличалось: в Белгородской области с применением одного программного комплекса подавались и рассматривались заявления о взыскании налоговой задолженности, а в Амурской области внедрена технология машинного зрения и автоматизации судо- и делопроизводства (конструктор судебных приказов «Магис»), позволяющая обрабатывать поданные в электронном виде заявления о выдаче судебных приказов и приложенные к ним документы и генерировать проекты судебных приказов [8].

В Белгороде и взыскатель (инспекция ФНС России), и мировые судьи пользовались одной и той же программой, что исключало необходимость дополнительного ввода данных, а базовые ошибки (например, в корректности исчисления периодов, определения налоговой базы, налоговой ставки, идентификации налогоплательщика и проч.) система ИИ выявляла сама за счет прописанных алгоритмов.

В Амурской области используемый продукт, с одной стороны, немного проще, он не проверяет корректность информации, а используется для пакетной загрузки документов и ввода данных о взыскателе и должнике, автоматической регистрации дела и генерации проекта судебного приказа, сопроводительных писем, материалов делопроизводства, определения об отмене судебного приказа. Взыскатели (налоговые органы, кредитные организации, управляющие компании и иные) получают доступ к программному продукту «Магис» на основании заключенного соглашения об организации электронного взаимодействия, а корректность всей информации в итоге проверяет сам мировой судья. Использование общей для взыскателя и суда платформы, без сомнения, существенно ускоряет процесс выдачи судебного приказа и сокращает число ошибок, обусловленных человеческим фактором. Как отмечается в работе [8], применяемый в Амурской области программный комплекс не ограничивает категории требований или взыскателей, но, по сути, без проверки

корректности сведений и расчетов просто формирует судебный приказ, словно презюмируя верность заявленного требования.

Разумеется, в обоих случаях обязательным остается контроль мирового судьи за формируемым ИИ судебным приказом, а используемый программный комплекс позволяет оптимизировать работу самого судебного участка за счет экономии времени на ввод данных и формирование бумажного дела. Без сомнения, скорость обработки информации при этом возрастает в разы, а при условии простоты отмены судебного приказа при подаче возражений должника в теории интересы всех лиц должны быть учтены. Конечно, следует при этом вспомнить о качестве доставки почтовой корреспонденции, проживании граждан не по адресу постоянной регистрации и о прочих особенностях, что подчеркивает важность комплексной цифровизации всех сфер жизни страны.

Несмотря на простоту и внешнюю бесспорность требований приказного производства, в литературе зачастую даже в отношении данного вида судопроизводства высказывается мнение о недопустимости полноценной замены судьи ИИ [14]. Столь категоричный подходвряд ли можно считать обоснованным, учитывая алгоритмизированную процессуальную форму данного вида судопроизводства.

В работе [15] справедливо утверждается: «Если достигается полная защита прав и свобод при минимуме затраченных ресурсов, применение технологий искусственного интеллекта в судебном процессе можно признать социально оправданным».

Поскольку процессуальная форма приказного производства рассчитана на бездействие должника, не представляющего возражения относительно исполнения судебного приказа в установленный законом срок, для обеспечения необходимого уровня защиты прав должника и взыскателя необходима реализация должной гарантии получения судебных извещений в короткий срок[8]. При обеспечении надлежащего извещения участников приказного производства можно будет предусмотреть исключительно автоматизированную выдачу судебных приказов, поскольку существующая цель приказного производства будет достигаться с меньшими организационными затратами. Это обстоятельство еще раз подчеркивает важность синхронизации всех алгоритмизируемых процессов в цифровом государстве [15].

По мнению автора работы [8], наиболее перспективным внедрение технологий ИИ выглядит в арбитражном процессе, где стороны спорных правоотношений более осознанно и профессионально должны относиться к правилам получения юридически значимых извещений. Кроме того, уже существующие сервисы электронного судопроизводства, зарекомендовали себя в профессиональном сообществе как эффективные механизмы получения информации о ходе рассмотрения дела и подачи документов в суд в электронном виде. Изначально цифровизация судебной сферы сводилась к внедрению в работу судов Системы электронного документооборота (СЭД),

которая нашла широкое применение в деятельности судов в виде электронных сервисов «Электронное правосудие» для арбитражных судов и «ГАС Правосудие» для судов общей юрисдикции. Данные системы позволяют сторонам дела подавать документы онлайн, вставать в электронную очередь на ознакомление с материалами дела, отслеживать информацию об изменениях в деле и назначенных судебных заседаниях и даже проводить онлайн-заседания (что стало особенно востребованно участниками процесса в «ковидные» времена). Указанные сервисы также предоставляют удобную как для государственных органов, так и для пользователей систему регистрации, поиска, передачи, учета и хранения данных. В данном срезе и на указанном этапе вопросы цифровизации судебной сферы воспринимались как однозначно положительные и прогрессивно влияющие на эффективность судопроизводства в России.

Предположим, и взыскатель, и должник имеют подтвержденную учетную запись на портале Госуслуг и ассоциировали ее с кабинетом в сервисе «Электронное правосудие» и получают юридически значимые сообщения в электронной форме, а система автоматически удовлетворяет заявление взыскателя, руководствуясь презумпцией обоснованности требования. В таком случае рисков нарушения прав должника выдачей судебного приказа в силу самого факта подачи заявления взыскателя будет меньше: получив копию заявления о выдаче судебного приказа, а также копию самого судебного приказа, должник сможет представить возражения относительно исполнения судебного акта в установленный срок. Здесь статус участников предопределяет возможность возложения на них большего объема рисков от своего поведения.

Примерно так работает упомянутая выше система «Магис» в Амурской области, если судья, понадеявшись на корректность требования взыскателя, не проверит заявление и приложенные к нему документы. Однако, представляется сомнительным, чтобы такие же ограничения можно было установить в отношении физических лиц, не являющихся индивидуальными предпринимателями [8].

Продолжая идею Белгородского эксперимента, в статье [8] обсуждается идея его масштабирования в условиях всей судебной системы в стране. Требования ФНС основаны на данных ведомства, в автоматическом режиме собираемых по каналам СМЭВ от различных органов государственной власти. Федеральная налоговая служба уже продолжительный период использует большое количество цифровых сервисов, обеспечивает их корректное функционирование и актуализацию сведений, что минимизирует человеческий фактор в вопросах взыскания обязательных платежей. Представляется, что и это требование может быть разрешено в автоматическом режиме за счет использования ИИ. По мнению автора статьи [8], вероятность ошибки здесь невелика, поэтому и проверка судьей заявления взыскателя может не осуществляться. Достаточно лишь предоставить возможность должнику оспорить выданный судебный приказ.

Приказное производство в отечественном цивилистическом процессе имеет своей целью оптимизацию судебной нагрузки, не выполняя при этом задачи рассмотрения спора по существу. Большинство требований приказного производства не предполагают объективную проверку заявленных взыскателем требований, а процессуальная форма приказного производства рассчитана на бездействие должника, не оспаривающего в установленный срок судебный приказ. Таким образом, судебный приказ может генерироваться ИИ в автоматическом режиме при подаче заявления взыскателем в электронной форме [8] при условии (как уже было сказано выше) своевременного и надлежащего уведомления должника о заявленном требовании, о вынесенном судебном приказе.

Еще одной областью использования ИИ, где риск дегуманизации (связанный с вытеснением человека из сферы права) минимален, является прогнозная, или предиктивная (от англ. predictive) аналитика, под которой понимается использование данных, статистических алгоритмов и методов машинного обучения для определения вероятности будущих результатов на основе исторических данных. Данный аспект использования ИИ рассмотрен в статье [16], в которой отмечается, что использование юридической предиктивной аналитики несет в себе очевидные плюсы. К положительным моментам можно отнести следующее [16]:

1) Повышение эффективности работы юриста. Собственно, ради этого ИИ внедряется в юриспруденцию. Использование юридического искусственного интеллекта является прорывом в юридической деятельности. Способность к сбору и обработке больших данных дает высокую степень репрезентативности результатов выборки, а это значит, что ИИ сможет подобрать наиболее подходящие законодательные нормы и примеры судебной практики по интересующему вопросу. В юридической сфере существенно расширить и ускорить автоматизацию всех процессов уже сейчас позволяют современные российские и зарубежные нейросети, такие как «PerplexityAI», «AcademicAI», «ChatGPT5 Thinking»; сервисы технологических решений в юридических сфере от российского разработчика PravoTech: «Картотека арбитражных дел» и «Мой арбитр», система «Casebook» (для мониторинга судебных дел и проверки контрагентов) и «Управляй (делами)» (для управления юридическими процессами), система «Caselook» (для поиска и анализа судебной практики), а также системы конструкторов договоров и обработки текстов и документов (например, «Doczilla») и многие другие. В этом смысле ИИ открывает перед российским юристом широкие возможности по достижению желаемых результатов наиболее эффективным, наименее трудозатратным способом, расширяя многократно уже имеющийся у такого юриста опыт, знания и навыки, а также предлагая быстрый, точный, взвешенный и наиболее рациональный способ решения юридической задачи. При грамотном использовании, применение систем ИИ позволяет юристам выбрать оптимальный метод расстановки приоритетов существующих задач (так

называемая, scoretask - оценка рабочих задач), а также, зачастую, получить их готовое решение.

2) Снижение числа случаев преждевременного или необоснованного обращения в суды и, как следствие, снижение процессуальных издержек сторон. Логично предположить, что, пропустив обстоятельства конкретного казуса через программу искусственного интеллекта и увидев малую вероятность выигрыша в суде, любой юрист воздержится от обращения в суд, предпримет попытки по досудебному урегулированию спора, чем исключит риск несения судебных издержек. Прогнозирование поведения суда, статистический анализ вырабатываемых правовых позиций, предиктивная аналитика дают участникам правоотношений инструменты, позволяющие существенно повысить эффективность судебной защиты, оптимизировать издержки;

3) Снижение судебной нагрузки и сокращение сроков рассмотрения дел. Использование предиктивной аналитики в судах поможет в рассмотрении сложных дел: анализ всех материалов дела, определение предмета доказывания, определение правильного круга лиц, на чьи права и обязанности может повлиять решение суда, подбор правовых норм и судебной практики, подготовка проектов как промежуточных, так и итогового судебного акта. Такая работа, выполненная ИИ приведет к тому, что для профессионального судьи рассмотрение любого дела будет менее трудозатратно.

Следует отметить и риски, которые несет в себе применение ИИ в таком аспекте [16]. Скорее всего, судье будет проще согласиться с прогнозом программы, нежели перепроверять ее выводы. С учетом этого квалификация судьи, его критическое мышление, беспристрастность, способность сформировать собственное мнение приобретают новый, особый смысл. Конечно, ИИ сможет оценить каждое доказательство в отдельности, а также достаточность и взаимную связь доказательств в их совокупности, выявить противоречия и предложить варианты решения. Но и судья должен проделать такую же работу, оценить доказательства по своему внутреннему убеждению, основанному на всестороннем, полном, объективном и непосредственном исследовании имеющихся в деле доказательств. И в идеале, когда выводы, к которым пришел суд, совпадут с решением, предлагаемым ИИ [16].

В ином случае судья вынужден будет выяснить, почему этого не произошло, и, скорее всего, усилить собственную мотивировку в решении, если судья не соглашается с проектом решения, созданного программой. Не стоит забывать, что программы предиктивного правосудия будут использоваться и в проверочных инстанциях, а значит, соответствующий искусственный интеллект, помимо материалов дела, будет анализировать и решение суда первой инстанции, что будет являться дополнительным стимулом для более полного изложения мотивов принятого решения [16].

Надо сказать, что на подобные риски при использовании судьей решений, выработанных ИИ, обращают исследователи и других стран, например Франции[17]. Даже при легитимном использовании ИИ при рассмотрении дела, у судьи не может быть полномочий по делегированию ИИправа принятия решений[17]. Рольинструментов ИИ должна быть определена таким образом, чтобы использование этих инструментов не создавало препятствий для принятия судьейрешения. Ни при каких обстоятельствах судья не должен делегировать всеили часть своих полномочий по принятию решений системе ИИ. ИнструментыИИ не должны ни ограничивать, ни регулировать полномочия судьи по принятию решений, например в контексте принятия автоматизированного решения. Когда решение судьи (частично) основано на выводах, вытекающих изиспользования инструментов ИИ, они должно быть должным образом обоснованы в тексте решения [17].

В статье [17] говорится об обеспечении возможности проверки ввода данных и аргументации системы ИИ. В тех случаях, когда решение, скорее всего, будет основываться, полностью или частично, на данных или результатах, предоставленных инструментом ИИ, сторонам и (или) их адвокатам должна быть предоставлена возможность получить доступ к этому инструменту и оценить его характеристики, используемые данные и релевантность результатов, которые он предоставляет. В результате такназываемое «обучающее программное обеспечение» должно использоватьсятолько в той мере, в какой возможна проверка того, как система ИИ достиглапредлагаемого результата, и отличий выводов, сформулированных системойИИ, от личной позиции судьи[17].

В статье [16] особое внимание обращено на необходимость ускоренного внедрения доверенных технологий ИИ в судебную сферу. Дело в том, что в настоящее время частный бизнес является существенно более оснащенным средствами информационных технологий, чем государственные органы, в числе которых судебные. Судебные органы, будучи лишенными возможностей, предоставляемых информационными технологиями, поставлены в заведомо проигрышную позицию по отношению к лицам, чьи правовые конфликты они разбирают. И поскольку на современном этапе не представляется возможным обойтись без формирования информационно-прогностического пространства, государству следует обеспечивать суду возможность получать доступ к совокупности организационных, управленческих, правоприменительных информационных ресурсов, формируемых как самим государством, так и иными участниками информационных отношений. Конечно же, в данном случае речь идет о степени оснащенности судов. Перед судебной системой всегда будет стоять задача по поддержанию надлежащего технологического уровня судов, постоянному улучшению используемых и внедрению новых программных комплексов, в том числе ИИ [16].

Определенный риск в использовании предиктивных программ ИИ связан с тем, что так или иначе, они будут учитывать личность судьи, что представляется недопустимым [16]. В ряде стран были проведены эксперименты, в которых компьютерные программы изучали решения судов, и ими были обнаружены определенные закономерности решений, принимаемых теми или иными судьями. В итоге ИИ менял прогноз результата рассмотрения дела в зависимости от судьи, к которому дело попадет. В работе [16] отмечается, что и сейчас никто не может запретить изучать дела конкретного судьи, но когда это делает ИИ, вероятность предсказания результата увеличивается, что может нарушить принцип беспристрастности суда, ведь результат с большой долей вероятности будет заранее известен.

С этой точки зрения можно в принципе раскритиковать предиктивное правосудие как в некотором смысле снижающее роль и значимость судебной власти и профессионального судьи. Однако на этот момент можно посмотреть и с другой стороны [16]. К примеру, когда в суд поступает обычное дело о взыскании суммы долга за неоплаченный товар, вероятность скорого результата в виде взыскания задолженности для всех очевидна. Цель обращения в суд была заставить ответчика заплатить через механизмы принудительного взыскания, и она успешно достигается.

Некоторые исследователи высказывают опасения, что использование программ предиктивного правосудия ставит суд в определенную зависимость от таких программ, что в свою очередь, может привести к нарушению основополагающего принципа деятельности судебной власти - независимости суда [18]. С этим можно согласиться, однако не следует эти риски переоценивать. Ведь и сегодня суд зависит от работы справочных правовых систем, от работы программных комплектов, установленных в суде, и в целом суд зависим от современных технологий. Однако постулат, что каждый судья принимает решение самостоятельно, независимо от количества примененных в процессе рассмотрения дела технологий, нивелирует подобные риски. Единственное, что у судьи всегда должна быть процессуальная возможность применять или не применять те или иные технологии, в том числе ИИ[16].

Вообще стоит признать, что несмотря на рассматриваемые риски, право в целом и правоприменительная деятельность являются весьма благодатной сферой для внедрения технологий ИИ, опирающихся как на детерминированные (выдающие предопределенный результат), так и на недетерминированные (имеющие на выходе несколько верных результатов) алгоритмы [19]. Позитивное право есть совокупность формализованных правил, элементарных алгоритмов, близких по строению к программным кодам, а практика применения права предоставляет прекрасные возможности для анализа результатов реального действия правовых предписаний и обучения нейросетей [19].

Как отмечается в работе [20], «повсеместная компьютеризация, разработка и внедрение информационных технологий и информационных систем достигли такого уровня, что обусловили трансформацию современного правопорядка, приобретение им принципиально новых качеств, изменения в его действии в пространстве, во времени и по кругу лиц».

Технологии неизбежно проникают во все элементы правовой системы, юридическая наука не может игнорировать постановку общих целей использования человеческого потенциала и искусственного интеллекта, возможностей цифровых технологий в удовлетворении интересов граждан. При этом научно-техническая революция и информационный взрыв не меняют сущности государства и права, но серьезно изменяют их формы [21]. Изменение форм государства и права под влиянием цифровизации - процесс объективный, а потому избежать проникновения технологий ИИ, например, в гражданское и арбитражное судопроизводство не удастся[19].

В теоретическом плане принято говорить о двух категориях ИИ. Некоторые исследователи выделяют даже три категории ИИ на основе возможностей технологии: слабый, сильный и суперсильный искусственный интеллект[19]. Слабый ИИ (или ИИ узкого назначения) определяется как набор алгоритмов, ориентированных на решение прикладных, узкоспециализированных задач. В рамках слабого ИИ условно говорят о трех типах: (a) традиционный ИИ, имитирующий умственную деятельность и способный делать прогнозы и выводы на основе анализа; (b) адаптивный ИИ, в рамках которого модель может обучаться и динамически адаптироваться к изменениям окружающей среды за счет обратной связи в режиме реального времени; (c) генеративный ИИ, который может создавать новый контент (текст, изображение, аудио и видео) в ответ на запросы пользователя, называемые промптами. Растущие возможности генеративного ИИ, а также его способность выполнять заметно более широкий по сравнению с традиционными моделями ИИ спектр задач рассматриваются некоторыми исследователями как шаг к эволюции традиционных алгоритмов ИИ в сторону так называемого сильного ИИ.

Универсальный (сильный) ИИ, или ИИ общего назначения, - это гипотетическая (пока еще) концепция системы ИИ, способной к решению любого класса задач, которые могут быть выполнены человеком. Российской Национальной стратегией [22] сильный ИИ определен как тип искусственного интеллекта, который способен выполнять различные задачи, взаимодействовать с человеком и самостоятельно (без участия человека) адаптироваться к изменяющимся условиям (п. 5 Стратегии). Среди возможных свойств сильного ИИ выделяют способность к автономному принятию решений и самостоятельной постановке задач, построению логических умозаключений, стратегическому планированию и действиям в условиях значительной неопределенности, а также возможность самообучения.

Появление моделей сильного ИИ прогнозируется не ранее 30-х - 40-х гг. XXI века. При этом некоторые специалисты убеждены, что создание сильного ИИ вообще невозможно, поскольку мышление человека неалгоритмично и часто имеет невербализуемый характер, который в принципе не может воспринять программа. Данный скепсис по поводу создания сильного ИИ связан с мнением ряда ученых, в числе которых Нобелевский лауреат Роджер Пенроуз, что человеческий мозг является квантовым компьютером[23], а потому его возможности в плане решения неалгоритмизируемых задач (там, где требуется озарение и инсайт) заведомо превосходят возможности ИИ в аналогичных неалгоритмизируемых задачах.

Суперсильный ИИ (Artificial Superinte lligence) - теоретическая концепция, формулирующая возможность создания в отдаленной перспективе систем ИИ, которые будут многократно превосходить разум человека. Вместе с тем, даже универсальный (сильный) ИИ не может заменить людей в судебном процессе, в связи с чем обсуждение применения суперсильного (и очень абстрактного) ИИ в судопроизводстве смысла сегодня не имеет.

В Стратегии [22] указан ряд особенностей машинного обучения, требующих учета при внедрении ИИ в гражданском процессе. Во-первых, для поиска вычислительной системой непредвзятого решения требуется ввести репрезентативный, релевантный и корректно размеченный набор данных. Во-вторых, алгоритмы работы нейронных сетей крайне сложны для интерпретации и, следовательно, результаты их работы могут быть подвергнуты сомнению и отменены человеком. Отсутствие понимания того, как ИИ достигает результатов, является одной из причин низкого уровня доверия к современным технологиям искусственного интеллекта и может стать препятствием для их развития (п. 8 Стратегии). В работе [21] отмечается, что первая из отмеченных особенностей потребует обработки данных о результатах рассмотрения гражданских дел судами общей юрисдикции и арбитражными судами, накопленными в электронных хранилищах, а в перспективе, возможно, и судебных актов за предыдущий период (с середины 90-х гг. XX в.), оцифрованных с применением технологий компьютерного зрения. Вторая особенность поначалу может стать серьезным препятствием при подготовке судебных актов, лишая их мотивировки и значимого воспитательного значения.

Принято говорить о трех основных способах машинного обучения. Первый из них - это «обучение с учителем», вид машинного обучения, при котором обучение модели происходит на входных данных, предварительно размеченных для решения конкретной задачи. Разметка данных - процесс добавления меток в «сырые» данные, нацеленный на то, чтобы показать модели целевые ответы, которые она должна предсказывать. Как отмечается в работе [21], такой способ машинного обучения применим, для обучения систем, ориентированных на выработку и принятие юрисдикционных актов, главным образом, по типовым делам (например, судебных приказов или

решений по несложным делам), а также для систем предиктивного правосудия.

Второй способ - это «обучение без учителя», вид машинного обучения, при котором модель не получает заранее размеченных данных, а выявляет закономерности между ними самостоятельно. Типичный пример обучения без учителя - обнаружение аномалий. В гражданском и арбитражном процессе такой способ наиболее применим при построении систем автоматизированной проверки судебных актов судами апелляционной и кассационной инстанций [21].

Третий способ - это «обучение с подкреплением», когда модель обучается во взаимодействии со средой, оптимизируя свое поведение на основе получаемого за различные действия «вознаграждения». Данный вид машинного обучения позволяет адаптироваться к изменяющейся среде, а также моделировать большое количество различных сценариев работы системы, учитывающих поведение других участников.

Интенсивное развитие технологий ИИ заставляет ученых задуматься о проблеме доверия к ним. Не случайно в обновленной Стратегии (п. 5) появилось понятие «доверенных технологий искусственного интеллекта», отвечающих стандартам безопасности, разработанных с учетом принципов объективности, недискриминации, этичности, исключающих при их использовании возможность причинения вреда человеку и нарушения его основополагающих прав и свобод, нанесения ущерба интересам общества и государства. Очевидно, что в гражданском процессе перспективой внедрения обладают только такие доверенные технологии искусственного интеллекта, отвечающие высоким стандартам и разработанные не только с учетом перечисленных выше принципов, но также и всех иных принципов гражданского процессуального права [21]. При этом считается [24], что именно гражданские процессуальные принципы являются тем базисом, на основе которого должна происходить модернизация законодательства и оценка необходимости и эффективности применения новых технологий. Ключевое значение обретает и еще один аспект, связанный с мерой открытости судебного процесса. «Электронизация»правосудия стала одним из основных направлений развития принципа открытости гражданского судопроизводства, но при этом дальнейшее развитие открытости по данному пути должно проходить при соблюдении баланса частных и публичных интересов, без передачи функций по осуществлению правосудия роботизированной системе, элементы такой системы должны быть лишь техническим помощником, но не субъектом правосудия [25]. Стоит также подчеркнуть, что открытость судопроизводства жизненно важна для обучения нейронных сетей, применяемых в правовой сфере.

Вообще, многие правоведы категоричны в отрицании возможности широкого внедрения ИИ в правосудие. Некоторые исследователи убеждены, что до тех пор, пока отечественный законодатель не примет принципиальное решение о делегировании ИИ специальной процессуальной

правосубъектности, небиологическому интеллекту exofficio не дозволяется отправлять правосудие по гражданским, административным и уголовным делам, причем ни в каком качестве, будь то «судья-компаньон» или же «полноправный судья» [26]. Однако возникает естественный вопрос, должно ли такое решение быть лишь волей законодателя либо итогом широкого социального компромисса? По многим причинам регулирование ИИ, в том числе и в судебной сфере, сегодня носит характер этических принципов. Примером может стать получившая известность в научном сообществе Европейская этическая хартия об использовании искусственного интеллекта в судебных системах и окружающих их реалиях 2018 г. Еще один непростой аспект - это правосубъектность ИИ, ставшая сегодня предметом ожесточенных дискуссий, участие в которых не охватывается рамками настоящей статьи. Как справедливо отмечается, признание искусственных агентов (в том числе ИИ) в качестве субъектов права - это в определяющей мере вопрос волевого решения больше, чем исследования их природы; лучшим аргументом в пользу отказа либо наделения искусственных агентов юридической личностью будет аргумент прагматичный, не концептуальный. При этом прагматизм может быть связан с нормативностью, подход к юридической личности искусственных агентов будет проникнут императивностью и ролью, которую они будут призваны сыграть в нашем будущем социальном порядке. Прагматичность, эффективность судебной защиты, реализуемой с применением технологий ИИ, является ключевым условием его внедрения в цивилистическом процессе. В работе [19] подчеркивается, что если (и только если) достигается полная защита прав и свобод при минимуме затраченных ресурсов, применение технологий ИИ в цивилистическом процессе можно признать социально оправданным.

Если принять за основу гипотезу о невозможности полной автоматизации судебного процесса и замены судьи ИИ, возникает вопрос: возможна ли автоматизация и интеллектуализация отдельных элементов гражданского и арбитражного судопроизводства? Сегодня можно говорить в большей степени уже о содержательном, нежели техническом, проникновении в судебную деятельность функционирующих нелинейно технологий, способных выполнять задачи интеллектуального характера[27].

В статье [28] поставлен вопрос о трех основных проблемах применимости и приемлемости ИИ в правосудии. Первая - это проблема правильной квалификации использования специальных знаний при определении возможностей ИИ в правовой сфере вообще и категории «электронное правосудие» в частности. Вторая проблема, тесно связанная с первой, заключается в том, что «объективность» ИИ во многом иллюзорна, ибо решение искусственным интеллектом тех или иных задач подчинено той идеологии, которая заложена в него разработчиками (человеком). Третья проблема связана с приемлемостью использования ИИ для целей правосудия, имея в виду антропоцентричность права, его социальное назначение. Все три проблемы, безусловно, должны приниматься во

внимание в контексте дискуссии по проблемам цифровизации как нового антропологического вызова.

Вместе с тем, уже сейчас видно, что перспективными направлениями применения технологии ИИ в гражданском и арбитражном процессе являются [19]: 1) интеллектуальное управление движением дела; 2) интеллектуальная поддержка судопроизводства; 3) автоматизированные подготовительные процедуры; 4) предиктивное (предсказательное) правосудие; 5) судебное доказывание и судебно-экспертная деятельность; 6) рассмотрение и разрешение дела по существу с применением технологий ИИ; 7) интеллектуальная проверка судебных актов; 8) интеллектуализация исполнения судебных решений. Сквозное значение может обрести применение технологий ИИ в судебной аналитике, помогающей судам и участникам процесса в формировании правовой позиции, выработке стратегии судебной защиты, оценки издержек на разрешение дела в суде.

Обсуждение и выводы.

Необходимость весьма осторожного и сдержанного допуска ИИ в сферу права обоснована в статье [29], при этом обоснование своей позиции авторы видят в положениях Указа Президента РФ по сохранению и укреплению традиционных российских духовно-нравственных ценностей [30].

По мнению автора настоящей статьи, неконтролируемое применение ИИ в критичных областях, в том числе сфере права, несет риски гораздо большие, нежели возможный положительный эффект.

Алгоритмизация процессов как правотворчества, так и правоприменения автоматически не должна означать устранения человека из наиболее критичных процессов цифрового взаимодействия. Подчеркнем еще раз, что рассмотрение даже типичных дел не может быть доверено «судье-автомату». При решении дел судья обязан руководствоваться не только нормами действующего законодательства (которые, действительно, вместе с примерами судебной практики могут быть представлены в удобном интерактивном цифровом виде), но и учитывать разнообразные обстоятельства конкретных дел, руководствуясь при вынесении решений не только правовыми, но и моральными принципами. Вынесение решения не может осуществляться судьей-роботом, поскольку в противном случае из системы правосудия будет неизбежно устранен такой основополагающий его компонент как судебное усмотрение, олицетворяющий собой высокие идеалы права и верховенство гуманистического толкования законов над алгоритмическим.

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ВОЗМОЖНОСТИ И ПРОБЛЕМЫ ПРОЦЕССА УРБАНИЗАЦИИ СУРХАНДАРЬИНСКОЙ ОБЛАСТИ

Аннотация. *В этой статье рассматриваются история процесса урбанизации Сурхандарьинской области и основные факторы, влияющие на него. Также анализируются вопросы экономических преимуществ и недостатков области на основании научных выводов.*

Ключевые слова: *урбанизация, демография, инфраструктура, экологические проблемы, агропромышленный.*

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OPPORTUNITIES AND CHALLENGES OF THE URBANIZATION PROCESS IN THE SURKHAN-DARYA REGION

Abstract. *This article examines the history of the urbanization process in the Surkhandarya region and the main factors influencing it. The study also analyzes the economic advantages and disadvantages of the region based on scientific findings.*

Keywords: *urbanization, demography, infrastructure, environmental issues, agro-industrial.*

Введение.

В настоящее время процесс урбанизации является одним из самых актуальных социально-экономических и демографически важных факторов в мировом масштабе. Переселение населения в города с целью улучшения уровня жизни, развитие инфраструктуры, концентрация промышленности и сферы услуг играют важную роль как основные факторы урбанизационного процесса. Сурхандарьинская область была образована в 1941 году, её площадь составляет 20,1 тыс. кв. км. Область расположена на юго-востоке нашей республики, в Сурхандарьинско-Шерабадской долине, и одной из её

отличительных особенностей является геополитическое положение — она граничит с Афганистаном, Туркменистаном и Таджикистаном. По данным City Population на 1 июля 2025 года, постоянное население области составляет 2 миллиона 945 тысяч человек, при этом темпы роста населения в области являются одними из самых высоких в республике.

Процесс урбанизации Сурхандарьинской области в основном относится к периоду после обретения независимости. До этого времени произошло множество изменений, в том числе распад Советского Союза, в результате чего экономическая система страны изменилась и процессы урбанизации замедлились. Вследствие этого многие промышленные предприятия были закрыты или сократили свою деятельность. В таких сложных условиях благодаря проводимым в нашей стране реформам, направленным на развитие рыночной экономики, постепенно начали формироваться новые хозяйственные субъекты, промышленные предприятия и предпринимательская деятельность.

Основная часть.

Согласно данным Государственного комитета Республики Узбекистан по статистике, в настоящее время Сурхандарьинская область административно-территориально состоит из 13 районов, 8 городов, 114 посёлков городского типа и 865 сельских населённых пунктов**.** Одной из особенностей урбанизационного процесса области является её расположение на юге страны, в гористой местности с сухим и континентальным климатом, то есть в жарком регионе, что замедляет процесс урбанизации. Однако из-за относительно высокого уровня рождаемости темпы роста населения здесь остаются высокими. Кроме того, по сравнению с другими регионами транспортная инфраструктура области развита слабо, а также с геополитической точки зрения её стратегически невыгодное расположение оказывает определённое влияние на процесс урбанизации.

По данным 2018 года, уровень урбанизации в Сурхандарьинской области составлял **35,5 %**, и по этому показателю область опережала лишь Хорезмскую область. Низкий уровень урбанизации объясняется, прежде всего, высокой рождаемостью и естественным приростом населения в сельской местности. Рельеф Сурхандарьинской области в основном гористый, и поскольку природные ресурсы сосредоточены именно в горных районах, использование их сопряжено с определёнными трудностями, что также влияет на низкий уровень урбанизации. В связи с этим доля области в промышленном производстве республики невелика, а промышленность региона развита слабо. В экономике области важную роль играет сельское хозяйство. В результате многие города региона имеют агропромышленный характер**.** В городах в основном расположены предприятия по очистке хлопка, текстильные и пищевые фабрики. Малое количество крупных производственных центров и комплексных территориальных образований свидетельствует о том, что доля сельскохозяйственного сектора в валовом внутреннем продукте области остаётся высокой**.**

Основная часть городских населённых пунктов Сурхандарьинской области расположена в районах Термез**,** Денов и Кумкурган. Хотя промышленный потенциал города Термеза невелик, в годы независимости политическое, транспортное и географическое значение областного центра заметно возросло. В частности, создание крупного международного аэропорта способствует развитию внешних связей с зарубежными странами. Географическое положение региона, наличие транспортной сети, а также значение сельскохозяйственной продукции, экспортируемой в страны СНГ, имеют важное значение (А.С. Солиев и др., 2018). Кроме того, в годы независимости начался процесс миграции из сельских районов в областной центр — город Термез. Следует отметить, что эта миграция связана не только с поиском работы, но и с желанием получить образование, воспользоваться сервисными услугами и улучшить условия жизни. С начала 2000-х годов за счёт государственных программ и международного финансирования в целях улучшения инфраструктуры Термеза, Денова и других центральных городов были реализованы ряд проектов: строительство многоэтажных домов, объектов здравоохранения, образовательных учреждений, а также развитие транспортно-коммуникационных сетей. Рост плотности городов усилил нагрузку на инфраструктуру. Процесс урбанизации в области привёл к демографическим изменениям, в частности, к увеличению доли молодёжи и населения среднего возраста за счёт миграции в города. Эти процессы не только изменили структуру рынка труда, но и повысили спрос на объекты социальной инфраструктуры — школы, детские сады и учреждения здравоохранения.

Вторым по величине городом области является Денов, а остальные города региона относятся к категории малых городов. В Деновском районе проживает около 78,3 тысячи человек. Развитие малого и среднего бизнеса в Денове способствовало расширению промышленного и сервисного секторов, что, в свою очередь, привело к росту доходов населения. Среди городских населённых пунктов области производство и сфера обслуживания наиболее развиты в Термезе, Денове, Джаркургане и Шурчи. В частности, на долю города Денова приходится 9,6 % населения, 13,1 % валового продукта и 28 % потребительских товаров региона. В городе действуют такие предприятия, как АО “Denov vino-araq” (Деновский винно-водочный завод)**,** ОАО “Denov yog‘ ekstraksiya” (Деновский маслоэкстракционный завод), а также предприятия по производству молочной, консервной и хлопкоочистительной продукции, доля которых в промышленности города значительна. Город Шурчи отличается сравнительно более высоким уровнем производства промышленной продукции и товаров народного потребления по сравнению с территориальной концентрацией населения, что связано с деятельностью АО “Sho‘rchi don mahsulotlari” (Шурчинские зерновые продукты). Эти два города региона в основном специализируются на лёгкой промышленности, что также отражается в структуре потребительских товаров. Следует отметить, что на сегодняшний день промышленный потенциал региона

остаётся довольно слабым, а его диверсификация носит ограниченный характер.

Как известно, транспортная инфраструктура играет важную роль в формировании городов. В связи с этим в районах Бойсун, Кумкурган и Шерабад расширение транспортной сети способствует формированию городских центров. В будущем, под влиянием создаваемой в этих районах экономической зоны “Boysun Farm”, ожидается повышение туристско-рекреационного значения территории. Благодаря удобному транспортному положению населённых пунктов, в данных районах наряду с урбанизацией будет наблюдаться и дальнейшая индустриализация. Кроме того, в связи со строительством новой железной дороги посёлок Дарбанд также имеет потенциал соответствовать требованиям точки роста, что является важным фактором.

В настоящее время количество посёлков городского типа в области достигло 114. Большинство таких агропосёлков сосредоточено в районах Олтинсой **и** Ангор. Присвоение статуса посёлка городского типа крупным сельским пунктам в основном основывалось лишь на численности населения, однако это не оказало значительного влияния на экономическое развитие региона. Кроме того, многие из этих посёлков не соответствуют критериям городских населённых пунктов. Следует отметить, что посёлки Шаргун и Сариасия, несмотря на то что в основном ориентированы на сельское хозяйство, в последние годы демонстрируют развитие социальной сферы — увеличивается количество торговых центров и предприятий сферы услуг. Планируется также создание новых промышленных зон, логистических центров и туристических направлений.

Живописная природа и бескрайние горные просторы области своими удобствами привлекают людей для организации отдыха и рекреационной деятельности. В настоящее время к числу таких очаровательных уголков природы относятся Сина Вахшивор, Бойсун, Мачай и другие. В будущем такие сёла, как Омонхона, Джайрахона, Сангардак, обладающие рекреационным и лечебным потенциалом, будут развиваться и войдут в число городских населённых пунктов. Следует особо подчеркнуть, что процесс урбанизации, в свою очередь, приводит и к экологическим проблемам. Расширение городов усиливает давление на окружающую среду, вызывает сложности в управлении отходами, снабжении водой, а также приводит к загрязнению воздуха — что является одной из наиболее актуальных проблем. В горных районах процесс урбанизации сталкивается с трудностями при строительстве и расширении дорог, поскольку создание новых ландшафтных зон требует значительных затрат. По сравнению с равнинами, сложный горный рельеф повышает расходы на организацию транспортных связей, из-за чего строительство дорог здесь всегда проходит трудно. В будущем для эффективного управления и развития процесса урбанизации Сурхандарьинской области важно расширять социальные программы, направленные на вовлечение молодёжи, а также поддерживать

инновационные решения, направленные на улучшение инфраструктуры. Это позволит сделать процесс урбанизации более устойчивым и сбалансированным.

В заключение следует отметить, что развитие и управление процессом урбанизации в Сурхандарьинской области, основанное на гармоничном сочетании экономических, социальных и экологических факторов, должно способствовать улучшению условий жизни населения и повышению общего социально-экономического потенциала региона. Урбанизация является неотъемлемым и сложным процессом развития современного общества, в котором наряду с увеличением числа городов отражаются также улучшение уровня жизни людей, изменение среды обитания, экономических возможностей и системы культурных пространств. Процесс урбанизации приносит ряд положительных преимуществ, таких как создание новых рабочих мест, повышение качества системы здравоохранения и образования, развитие транспортной инфраструктуры, улучшение уровня и качества жизни населения. Развитие внутреннего туризма, создание новых возможностей для молодёжи, а также рост науки, техники и технологий в городах создают основу для повышения их международной конкурентоспособности. В Сурхандарьинской области процесс урбанизации протекает неравномерно: растёт спрос на город Термез, в то время как в малых городах и сёлах по-прежнему наблюдается нехватка услуг. Недостаточное развитие внутренних и железных дорог, логистических сетей затрудняет доставку продукции, рабочей силы и услуг в города. Кроме того, нехватка жилья и коммунальных услуг отрицательно сказывается на качестве городской среды. Для решения этих проблем целесообразно улучшить местные дороги, развивать межрайонные связи, расширять возможности железнодорожного транспорта и строить логистические центры. Также необходимо увеличить количество авиарейсов, в том числе международных, а прежде всего — улучшить туристический потенциал региона, чтобы привлечь больше туристов. Организация дистанционной работы и услуг в сельской местности позволит снизить потребность населения в переезде в города и сделать урбанизационный процесс более сбалансированным и устойчивым.

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ИСПОЛЬЗОВАНИЕ ЗЕМЕЛЬНОГО ФОНДА В ПРЕДГОРНЫХ И ГОРНЫХ ЗОНАХ: ГЕОГРАФИЧЕСКИЕ И ЭКОЛОГИЧЕСКИЕ АСПЕКТЫ

Аннотация: *В данной статье проведён научный анализ экологико-географических аспектов использования земельного фонда в предгорных и горных районах Узбекистана. В исследовании использованы методы экологико-географического анализа, картографирования, геоинформационные технологии (ГИС) и данные дистанционного зондирования. Результаты показывают, что процессы деградации почв, эрозии и засоления усилились, что привело к сокращению пахотных земель. В статье предложены меры по рациональному использованию земельных ресурсов, борьбе с эрозией, восстановлению лесов и повышению экологической культуры населения. Полученные результаты подтверждают необходимость создания научно обоснованной системы управления для обеспечения экологической устойчивости в горных и предгорных регионах.*

Ключевые слова: *земельный фонд, экологико-географический подход, предгорные районы, горные регионы, эрозия, ГИС-технологии, экологическая устойчивость.*

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USE OF LAND IN THE FOOTHILL AND MOUNTAIN ZONES: GEOGRAPHICAL AND ECOLOGICAL ASPECTS

Abstract: *This article presents a scientific analysis of the ecological and geographical aspects of land use in the foothill and mountain regions of Uzbekistan. The study employed ecological-geographical analysis, cartographic methods, GIS technologies, and remote sensing data. The findings reveal that land degradation, erosion, and salinization processes have intensified in these areas, leading to a reduction in arable land. The article proposes measures for efficient land resource management, anti-erosion practices, forest restoration, and enhancement of public ecological awareness. The results demonstrate the need to*

establish a scientifically grounded management system to ensure ecological stability in foothill and mountain zones.

***Keywords**: land fund, ecological-geographical approach, foothill areas,*

Введение

Как отметил Президент Республики Узбекистан Шавкат Мирзиёев: «Земля — бесценное богатство нашего народа, рациональное использование — основа наших национальных интересов». Это утверждение особенно актуально для предгорных и горных районов с сложными природными условиями. В этих регионах рельеф местности сложный, водные ресурсы ограничены, а антропогенное давление с каждым годом усиливается. В результате наблюдаются такие экологические проблемы, как эрозия почв, сокращение лесных массивов, уменьшение водных источников и утрата биологического разнообразия.

Предгорные и горные регионы, занимающие значительную часть территории Узбекистана, являются не только источником природных богатств, но и важным ресурсом для сельского хозяйства, животноводства и туризма. Поэтому необходимо усилить экологико-географический подход к использованию земельного фонда. Цель исследования — изучить экологическое состояние использования земельного фонда в предгорных и горных районах, проанализировать существующие проблемы и разработать научно обоснованные предложения.

Материалы и методы

Исследование проводилось в предгорных и горных зонах Узбекистана, в частности в районах Зарафшанского хребта, предгорьях Кызылтепа и у подножия Гиссарского хребта. Для изучения состояния земельного фонда использовались данные Министерства экологии, охраны окружающей среды и изменения климата Республики Узбекистан, Комитета по геологии, а также материалы ФАО и ЮНЕП.

Применялись методы экологико-географического анализа, картографирования, дистанционного зондирования, модели ГИС (геоинформационные системы), а также опросы среди местного населения и фермерских хозяйств. С помощью ГИС-анализа были определены участки, подверженные эрозии, зоны с высоким уровнем засоления и темпы изменения лесного покрова, а также оценены их экологические последствия.Данные дистанционного зондирования позволили проследить динамику сокращения растительного покрова, состояние водных ресурсов и рост антропогенной нагрузки в период с 2000 по 2025 годы. Эти анализы позволили сделать точные экологико-географические выводы о стабильности земельного фонда в предгорных и горных зонах.

Результаты

Результаты исследования показали, что использование земельного фонда в предгорных и горных зонах стало экологически нестабильным. За последние двадцать лет площадь земель, подверженных эрозии, увеличилась

на 18 %, что привело к сокращению пригодных для сельского хозяйства участков. Наибольший ущерб наблюдается на участках у подножия гор, где применялись неправильные агротехнические методы.В предгорных зонах сокращение естественного растительного покрова на 25–30 % привело к снижению биологического разнообразия. Из-за превышения экологических норм по численности скота на пастбищах произошло уплотнение почвы, замедлился процесс восстановления трав, что усилило эрозионные процессы. По данным ГИС-анализа, на 45 % горных склонов существует средний и высокий риск эрозии. Особенно опасными зонами признаны юго-восточные склоны Зарафшанского хребта, окрестности Нураты и предгорья Кызылтепа.

В орошаемых предгорных районах неправильное использование водных ресурсов и чрезмерный полив привели к усилению засоления в низменных участках. В результате плодородие почвы снизилось, а урожайность в некоторых местах за последние десять лет уменьшилась на 10–15 %.

Обсуждение

Полученные результаты свидетельствуют о необходимости совершенствования экологико-географического подхода к использованию земельного фонда в предгорных и горных зонах. Во-первых, для снижения эрозии почв необходимо внедрять меры, такие как террасирование склонов, посадка многолетних растений, восстановление лесных массивов. Во-вторых, следует организовать пастбищное хозяйство на основе сезонной ротации, адаптировать численность скота к экологическим нормам и укрепить кормовую базу.В горных регионах целесообразно внедрить систему использования земельных ресурсов, основанную на высотной зональности. Например, на высоте 800–1200 метров — садоводство и виноградарство, на 1200–1800 метрах — леса и луга, выше — охрана природных пастбищ.Наряду с усилением экологического контроля важно повысить экологическую культуру населения, особенно фермеров, проживающих в горных и предгорных районах, через проведение экологических тренингов. Сохранение земельных ресурсов — это не только государственная политика, но и осознанное участие населения.Кроме того, технологии ГИС и дистанционного зондирования доказали свою эффективность как инструмент мониторинга земельного фонда. С их помощью можно в режиме реального времени определять степень деградации, картографировать экологически опасные зоны и разрабатывать конкретные меры по их защите.

Выводы

Глубокий анализ экологико-географических аспектов использования земельного фонда в предгорных и горных зонах показал необходимость создания научно обоснованных систем управления для обеспечения устойчивости этих территорий. На основе результатов исследования сделан следующий общий вывод: предгорные и горные регионы являются экологически уязвимыми зонами, где процессы деградации и эрозии почв

протекают интенсивно; для устойчивого управления земельным фондом требуется интеграция экологико-географического подхода, современных технологий, участия местного населения и экологического образования. Такое совершенствование использования земли способствует не только сохранению экологического баланса, но и социально-экономическому развитию региона.

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КОМПЛЕКСНАЯ ОЦЕНКА МОРФОФУНКЦИОНАЛЬНОГО СОСТОЯНИЯ ПОЧЕК ПРИ СОЧЕТАНИИ МЕТАБОЛИЧЕСКОГО СИНДРОМА, СТРЕССА И АЛИМЕНТАРНОГО ОЖИРЕНИЯ

Аннотация: *В данной работе рассматриваются основные морфофункциональные изменения почек при сочетании метаболического синдрома, алиментарного ожирения и стрессовых факторов, характерных для современного населения Узбекистана. Анализируется влияние нарушений обмена веществ, гиподинамии и психоэмоционального напряжения на развитие ранних признаков нефропатии, а также подчеркивается необходимость комплексного подхода к диагностике данных состояний. В статье представлены результаты экспериментального исследования, проведённого по методике Н.А. Мухамедова (2021), основанной на сочетании ультразвуковых и биохимических методов оценки функции почек. Особое внимание уделено взаимосвязи между стрессовыми факторами и степенью выраженности почечных нарушений.*

Ключевые слова: *ожирение, стресс, почки, нефропатия, диагностика, фильтрация, биомаркеры, ультразвук, Узбекистан*

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COMPREHENSIVE ASSESSMENT OF THE MORPHOFUNCTIONAL STATE OF THE KIDNEYS IN A COMBINATION OF METABOLIC SYNDROME, STRESS AND ALIMENTARY OBESITY

***Abstract**: This paper examines the main morphofunctional changes in the kidneys associated with a combination of metabolic syndrome, alimentary obesity, and stress factors characteristic of the modern population of Uzbekistan. It analyzes the impact of metabolic disorders, physical inactivity, and psychoemotional stress on the development of early signs of nephropathy and emphasizes the need for an integrated approach to diagnosing these conditions. The article presents the results of an experimental study conducted according to the methodology of N.A. Mukhamedov (2021), based on a combination of ultrasound and biochemical methods for assessing kidney function. Particular attention is paid to the relationship between stress factors and the severity of renal impairment.*

***Keywords**: obesity, stress, kidneys, nephropathy, diagnostics, filtration, biomarkers, ultrasound, Uzbekistan*

Введение

В условиях современной медицины одной из актуальных проблем клинической нефрологии и эндокринологии Узбекистана является рост частоты заболеваний, связанных с метаболическим синдромом, ожирением и стрессовыми воздействиями. Изменения образа жизни, урбанизация, несбалансированное питание и снижение физической активности приводят к увеличению числа пациентов с алиментарным ожирением, что, в свою очередь, оказывает выраженное негативное влияние на морфофункциональное состояние почек. Нарушения углеводного и липидного обмена, гиперинсулинемия, артериальная гипертензия и системное воспаление, являющиеся основными компонентами метаболического синдрома, создают благоприятные условия для развития нефропатий различного генеза. На фоне хронического психоэмоционального стресса данные патологические процессы усугубляются, формируя сложные взаимосвязанные механизмы повреждения почечной ткани.

Методика комплексной ультразвуковой и биохимической оценки морфофункционального состояния почек при метаболическом синдроме и алиментарном ожирении (по Н.А. Мухамедову, 2021). Данная методика разработана и адаптирована Н.А. Мухамедовым (Ташкентский институт усовершенствования врачей, 2021 г.) для комплексного исследования структурных и функциональных изменений почек у пациентов с метаболическим синдромом на фоне алиментарного ожирения и стрессовых воздействий. В основе подхода лежит сочетание ультразвуковой диагностики с оценкой эхогенности паренхимы, толщины коркового слоя и скорости клубочковой фильтрации с биохимическим анализом крови и мочи. Применяется определение уровней креатинина, мочевины, цистатина С и микроальбуминурии, что позволяет выявить ранние признаки нефропатии до развития выраженных клинических симптомов. Актуальность данной методики для условий Узбекистана обусловлена высокой распространённостью метаболических нарушений и недостаточной

диагностикой начальных стадий почечной дисфункции у лиц с избыточной массой тела. Использование интегрированного подхода по Н.А. Мухамедову обеспечивает возможность раннего выявления компенсаторно-приспособительных реакций почек, оценки степени их повреждения и контроля динамики изменений в ходе терапии.

По результатам проведённого исследования, выполненного по методике комплексной ультразвуковой и биохимической оценки морфофункционального состояния почек по Н.А. Мухамедову (2021), установлено, что у 68 % обследованных лиц с метаболическим синдромом и алиментарным ожирением выявлены признаки начальных морфологических изменений почечной паренхимы. В частности, в 45 % случаев отмечено повышение эхогенности коркового слоя, у 32 % — умеренное утолщение стенок интерлобарных сосудов, что свидетельствует о развитии микрососудистых нарушений. Средний показатель скорости клубочковой фильтрации у обследованных составил 78 ± 6 мл/мин, что на 15–20 % ниже нормативных значений для данной возрастной категории. Также у 41 % испытуемых зафиксирована микроальбуминурия, отражающая ранние проявления почечной дисфункции. Биохимические показатели у обследованных пациентов демонстрировали статистически значимое повышение уровней креатинина и цистатина С по сравнению с контрольной группой ($p < 0,05$), что указывает на скрытые функциональные нарушения почечной фильтрации. Интересно, что у лиц с выраженными признаками хронического стресса степень изменения морфофункциональных показателей была выше примерно на 25 %, чем у обследованных без стрессовых факторов, что подтверждает роль психоэмоционального напряжения как дополнительного патогенетического звена поражения почек.

Таблица 1.
Оборудование, использованное при комплексной оценке морфофункционального состояния почек у пациентов с метаболическим синдромом и алиментарным ожирением

№	Наименование оборудования	Назначение	Производитель	Примечание
1	Ультразвуковой сканер SonoAce R7	Визуализация структуры почек, измерение эхогенности и толщины коркового слоя	Samsung Medison (Южная Корея)	Использовался для оценки морфологических параметров
2	Биохимический анализатор BS-240	Определение уровней креатинина, мочевины, цистатина С и микроальбуминурии	Mindray (КНР)	Применялся для количественной оценки биохимических показателей
3	Автоматический тонометр Omron M6 Comfort	Измерение артериального давления и оценка	Omron Healthcare (Япония)	Использовался для контроля системных гемодинамических

		сосудистого компонента метаболического синдрома		параметров

Заключение

Основываясь на полученных данных, можно заключить, что сочетание метаболического синдрома, алиментарного ожирения и стрессовых факторов формирует своеобразный «патофизиологический треугольник», в вершине которого находятся почки — орган, наиболее чувствительный к системным нарушениям обмена и гемодинамики.

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КОРРЕКЦИЯ СТРЕСС-ИНДУЦИРОВАННЫХ ИЗМЕНЕНИЙ ПОЧЕК АНТИОКСИДАНТАМИ И АДАПТОГЕНАМИ

Аннотация*: В данной работе рассматриваются особенности влияния стрессовых факторов на функциональное состояние почек и возможности их коррекции с использованием антиоксидантов и адаптогенов. Анализируется механизм развития стресс-индуцированных нарушений, сопровождающихся активацией процессов перекисного окисления липидов и снижением активности антиоксидантной системы. Представлены экспериментальные данные, подтверждающие эффективность применения природных адаптогенов и антиоксидантов при восстановлении структурно-функционального состояния почечной ткани. В статье предоставляется характеристика используемой методики моделирования стресс-индуцированных изменений почек, а также результаты экспериментальных исследований, проведённых в лабораторных условиях. Освещаются актуальные аспекты нефропротекторного действия исследуемых веществ, что имеет практическое значение для дальнейшего развития биомедицинских исследований в Узбекистане.*

Ключевые слова: *стресс, почки, антиоксиданты, адаптогены, окисление, нефропатия, коррекция, эксперимент, биомедицина, Узбекистан*

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CORRECTION OF STRESS-INDUCED KIDNEY CHANGES WITH ANTIOXIDANTS AND ADAPTOGENS

Abstract*: This paper examines the impact of stress factors on renal function and the potential for their correction using antioxidants and adaptogens. The*

mechanism underlying the development of stress-induced disorders, accompanied by the activation of lipid peroxidation and decreased antioxidant activity, is analyzed. Experimental data are presented confirming the effectiveness of natural adaptogens and antioxidants in restoring the structural and functional state of renal tissue. The article describes the methodology used to model stress-induced renal changes, as well as the results of experimental studies conducted in laboratory conditions. Relevant aspects of the nephroprotective effects of the studied substances are highlighted, which has practical implications for the further development of biomedical research in Uzbekistan.

Keywords: *stress, kidneys, antioxidants, adaptogens, oxidation, nephropathy, correction, experiment, biomedicine, Uzbekistan*

Введение

В условиях нарастающего техногенного и экологического стресса, характерного для ряда регионов Узбекистана, особую актуальность приобретает изучение стресс-индуцированных изменений в органах и системах, включая почки. Нарушение функций почек при воздействии хронического стресса сопровождается окислительным стрессом и снижением антиоксидантной защиты организма. В данной связи исследование эффективности антиоксидантов и адаптогенов в коррекции подобных патологических изменений представляет собой важное направление современной экспериментальной и клинической медицины Узбекистана.

Методика экспериментального моделирования стресс-индуцированных изменений почек и их коррекции антиоксидантами и адаптогенами.. Данная методика основана на подходах, разработанных Н. В. Лазаревой, и адаптирована к условиям экспериментальных исследований, проводимых в Узбекистане. Суть методики заключается в воспроизведении стресс-индуцированного состояния у лабораторных животных (обычно белых крыс) путем применения иммобилизационного или холодового стресса, что сопровождается активацией процессов перекисного окисления липидов и нарушением функциональной активности почек. Для оценки степени повреждения используют биохимические показатели крови и мочи (креатинин, мочевина, малоновый диальдегид, активность каталазы и супероксиддисмутазы), а также гистоморфологические исследования тканей почек. В целях коррекции стресс-индуцированных нарушений применяются антиоксиданты (например, токоферол, аскорбиновая кислота) и адаптогены растительного происхождения (экстракт элеутерококка, родиолы розовой и др.), вводимые в профилактическом или лечебном режиме. Методика Лазаревой зарекомендовала себя как достоверный и воспроизводимый способ изучения механизмов стресс-реакции и эффективности фармакологических средств, что делает её актуальной для современных биомедицинских исследований в Узбекистане, направленных на

профилактику и терапию нефропатий, связанных с воздействием стрессовых факторов окружающей среды.

Результаты проведённого исследования показали, что у животных, подвергавшихся воздействию стресс-фактора без применения корректирующих средств, наблюдалось выраженное ухудшение функционального состояния почек. Так, уровень креатинина в сыворотке крови увеличился в среднем на 42 %, а концентрация мочевины — на 38 % по сравнению с контрольной группой. Одновременно отмечалось повышение содержания малонового диальдегида на 57 %, что свидетельствует об активации процессов перекисного окисления липидов и развитии окислительного стресса. Гистологический анализ выявил дистрофические изменения эпителия канальцев и умеренную инфильтрацию интерстициальной ткани, что подтверждает повреждение почечной паренхимы под воздействием хронического стресса. Введение антиоксидантов и адаптогенов в составе комплексной терапии способствовало значительному снижению проявлений стресс-индуцированных нарушений. Уровень креатинина снизился на 35 %, а содержание малонового диальдегида — на 40 % по сравнению с группой стресса без коррекции. Активность антиоксидантных ферментов (каталазы и супероксиддисмутазы) повысилась в среднем на 28 %, что указывает на восстановление антиоксидантного потенциала организма. Морфологическая структура почек у животных, получавших коррекцию, была близка к норме, что свидетельствует о выраженном нефропротекторном эффекте применённых средств и подтверждает эффективность методики для изучения механизмов стресс-резистентности и фармакологической защиты почек.

Таблица 1.
Используемое оборудование и материалы при исследовании стресс-индуцированных изменений почек

№	Наименование оборудования	Назначение	Производитель	Примечание
1	Центрифуга лабораторная ЦЛН-1	Разделение сыворотки крови и осадка клеток	Россия	Использовалась при биохимических анализах
2	Спектрофотометр СФ-2000	Определение концентрации биохимических показателей (креатинин, МДА и др.)	Россия	Обеспечивает высокую точность измерений
3	Микротом МПС-2	Приготовление гистологических срезов почечной ткани	Германия	Применялся для морфологических исследований

Заключение

Основываясь на проведённом эксперименте и полученных результатах, можно сделать вывод, что почки — весьма чувствительный индикатор стресса, способный «сигналить тревогу» задолго до системных нарушений. Однако природа, как всегда, предусмотрела выход: антиоксиданты и адаптогены продемонстрировали способность не просто снижать последствия окислительного стресса, но и восстанавливать функциональное равновесие организма.

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СОВРЕМЕННЫЕ МОЛЕКУЛЯРНО-ГЕНЕТИЧЕСКИЕ МЕТОДЫ ВЫЯВЛЕНИЯ И КОНТРОЛЯ ЛЕКАРСТВЕННО-УСТОЙЧИВОГО ТУБЕРКУЛЁЗА

Аннотация: *Часто встречается резистентность микобактерий туберкулеза к стрептомицину и изониазиду,в статье описывается история развития лекарственно резистентного туберкулеза и различие его встречаемости на разных территориях СНГ. Анализируется влияние лекарственно резистентного туберкулеза, лечение и профилактические мероприятия Однако остается проблемой растущая резистентность к препаратам.*

Ключевые слова: *микобактерии туберкулеза, лекарственная устойчивость, генетические мутации, эффективность лечения.*

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ADVANCED MOLECULAR-GENETIC METHODS FOR DETECTION AND CONTROL OF DRUG-RESISTANT TUBERCULOSIS

Annotation: *The resistance of mycobacterium tuberculosis to streptomycin and isoniazid is often found, the article describes the history of the development of drug-resistant tuberculosis and the difference in its occurrence in different territories of the CIS. The impact of drug-resistant tuberculosis, treatment and preventive measures is analyzed. However, the growing resistance to drugs remains a problem.*

Key words: *Mycobacterium tuberculosis, drug resistance, genetic mutations, treatment efficacy.*

В последние годы на фоне снижения заболеваемости туберкулезом легких растет число случаев, вызванных микобактериями с множественной лекарственной устойчивостью (МЛУ), что приводит к снижению эффективности лечения.[1]

Эффективный контроль над туберкулезом особенно сложен среди пациентов с туберкулезом с МЛУ, для которого характерна резистентность к

изониазиду и рифампицину, двум наиболее мощным препаратам против туберкулеза, используемым в стандартном лечении первой линии. Эксперты Всемирной Организации Здравоохранения сообщают, что к концу 2014 года 153 страны сообщили о циркуляции в регионе штаммов туберкулеза с лекарственной устойчивостью, 80 из которых имеют системы непрерывного наблюдения. Показано, что факторы резистентности, существенно усугубляющие передачу туберкулеза, устойчивых к препаратам первой, а также второй линии и показывают важность проведения более широких генно-молекулярных исследований в данной области [22].

Определение генетического полиморфизма монорезистентных микобактерий туберкулеза к изониазиду и эпидемиологическая оценка лекарственно-устойчивых форм туберкулеза, разработка стратегии ведения, направленной на снижение МЛУ-ТБ типа туберкулеза в Узбекистане.[16]

Современная наука рассматривает туберкулез как многофакторное заболевание, при котором факторы окружающей среды тесно взаимодействуют с геном человека и возбудителем Туберкулез с лекарственной устойчивостью затрудняет лечение больных с резистентными штаммами туберкулеза и ставит под угрозу глобальный процесс по достижению целей, поставленных ВОЗ в Стратегии по ликвидации туберкулеза в мире

Однако остается проблемой растущая резистентность к препаратам, выделяют следующие основные группы причин роста лекарственно-устойчивого туберкулёза: бактериологические, фармакологические, клинические и социально- административные . [2, 16, 24,]

Исследованиями установлено, что резистентность к различным противотуберкулезным препаратам(ПТП)возникла при несоответствующем применении, неправильном назначении, плохом качестве лекарств, несоблюдении схем лечения пациентами [2].

В современной фтизиатрии несоблюдение необходимых требований в лечебной практике является важной причиной недостаточно эффективной терапии наряду с природной резистентностью. Важной проблемой становится приобретенная устойчивость *Mycobacterium tuberculosis* к антибиотикам. Резистентность к одному из препаратов переходит на устойчивость к нескольким одновременно, и появление в медицинской практике полностью лекарственно-устойчивых форм патогенов может сделать данную патологию неизлечимой.

На сегодняшний день глобально отмечается рост случаев лекарственной устойчивости (ЛУ) возбудителя туберкулеза, в частности, множественно лекарственной устойчивости (МЛУ) и широкой лекарственной устойчивости (ШЛУ)возбудителя туберкулеза. Выявлено, что ЛУ отрицательно сказывается на результатах лечения и повышает экономические затраты на лечение туберкулеза, в особенности, когда имеется устойчивость к изониазиду и рифампицину.

ВОЗ выделяет следующие виды ЛУ: [2016]

- первичная лекарственная устойчивость – это ЛУ у больного туберкулезом, который ранее не получал ПТП или лечился ими не более 1 месяца. Изучение первичной ЛУ с использованием генетических методов позволяет прогнозировать эпидемиологическую ситуацию в регионе, так как отражает степень распространения инфекции среди населения;

- приобретенная (вторичная) лекарственная устойчивость – это ЛУ, формируемая в процессе лечения ПТП или выявленная при повторных случаях туберкулеза и подтвержденная при помощи генотипирования.

Повторные случаи, в том числе рецидивы туберкулеза, могут быть также результатом повторной инфекции [2].

Различают следующие разновидности МЛУ *Mycobacterium tuberculosis* монорезистеность – ЛУ *Mycobacterium tuberculosis* только к одному ПТПу первого ряда;

полирезистентность – ЛУ к двум или более ПТП, исключая резистентность одновременно к изониазиду и рифампицину;

МЛУ– особая категория среди полирезистентных штаммов, где имеется устойчивость одновременно к изониазиду и рифампицину независимо от резистентности к другим препаратам;

ШЛУ – представляет собой форму МЛУ с устойчивостью как минимум к рифампицину и изониазиду, а также к любому из фторхинолонов и к одному из инъекционных лекарственных средств второго ряда – канамицину, амикацину, капреомицину. [3]

Такие штаммы могут быть устойчивы к 9 препаратам. Возникновение устойчивых к антибактериальным препаратам вариантов – закономерное явление, выражение приспособления видов к окружающей среде [21].

Развитие ЛУ микобактерий расценивается как проявление одной из форм изменчивости бактериальной клетки под влиянием химиопрепаратов. Устойчивость к рифампицину, выявленная с применением фенотипических или генотипических методов, при наличии или отсутствии устойчивости к другим ПТП. Ситуация сложна увеличением числа штамов *Mycobacterium tuberculosis* МЛУ, а также видов с повышенной способностью к трансмиссивности, таких как штаммы семейства Beijing *Mycobacterium tuberculosis* [18].

Если полирезистентные штаммы и МЛУ можно лечить препаратами второй линии, то ШЛУ, имеющая устойчивость к антибиотикам второй линии, не оставляет вариантов лечения для клинициста. Эффективность лечения больных туберкулезом МЛУ/ШЛУ *Mycobacterium tuberculosis* составляет, только 54% МЛУ и 28% с высокой ЛУ, с позитивным терапевтическим исходом в сравнении с чувствительными к лекарствам 83% случаев [18].

В настоящее время в мире 600 тысяч больных туберкулезом, выделяющих *Mycobacterium tuberculosis* с МЛУ, при этом зарегистрировано только 125 тысяч случаев. Низкая эффективность лечения (до 52%) у этих больных обусловлена несвоевременным выявлением ЛУ, поздним началом

использования рациональной химиотерапии, что ведет к развитию распространенных деструктивных изменений в легких, удлинение сроков прекращения бактериовыделения, хронизации процесса. [7.8]

Яблонский П.К. [2016] указывает, что резкое утяжеление структуры ЛУ происходит за счет роста МЛУ и ШЛУ, которые составили 81,9% по сравнению с предыдущими годами (28,5% в 1984-1988 гг). При внелегочном туберкулезе рост ЛУ *Mycobacterium tuberculosis* продолжался опережающими темпами. Автор указывает, что быстрое утяжеление процесса наблюдалось за счет прироста МЛУ/ШЛУ штаммов – с 10,5% до 69,5%. [21].

Исследователи отмечают, что при туберкулезном спондилите – наиболее тяжелой и частой форме костно-суставного туберкулеза – из 78 изолятов *Mycobacterium tuberculosis* с профилем устойчивости МЛУ/ШЛУ 70 (89,7%) принадлежали к генотипу Beijing. Темпы прироста ШЛУ при легочном туберкулезе превышали таковые при внелегочном туберкулезе – с 26,8% до 39,5%. Авторы полагают, что ситуацию с ЛУ *Mycobacterium tuberculosis* при всех локализациях заболевания можно охарактеризовать как напряженную с непредсказуемыми последствиями [6.7.8]

В настоящее время выделяют истинную генетическую и приобретенную резистентность [16]:

истинная генетическая устойчивость, являясь видовым признаком возбудителя, связана с отсутствием мишени действия антибиотика либо, плохой проницаемости клеточной стенки, в отдельных случаях проявляется в виде эффлюкса. Так, *Mycobacterium tuberculosis* обладает истинной генетической устойчивостью ко многим антимикробным препаратам, относящимся к семействам пенициллинов, β-лактамов, макролидов, карбапенемов, цефалоспоринов, тетрациклинов;

приобретенная устойчивость *Mycobacterium tuberculosis* образуется за счет развития точечных мутаций в хромосомах и формировании новых генов, контролирующих синтез новых белков-ферментов, разрушающих конкретные ПТП.

Приобретенную ЛУ подразделяют на первичную и вторичную. Первичная ЛУ определяется у больных, заразившихся лекарственно-устойчивыми штаммами *Mycobacterium tuberculosis*, при том, что эти пациенты ранее не принимали противотуберкулезные препараты. Вторичная ЛУ развивается в процессе лечения больного туберкулезом, процесс развития данного феномена занимает 3-6 месяцев от начала терапии [11,14,17].

Опасность для больных представляют мультирезистентные штаммы одновременно устойчивые к изониазиду и рифампицину. Известно, что заболевания, вызванные подобными изолятами *Mycobacterium tuberculosis*, имеют прогрессирующий характер и тяжело поддаются терапии. Имеются результаты анализа клинических изолятов МЛУ *Mycobacterium tuberculosis* с множественными мутациями генов, часть из которых касается изониазид.

Этот препарат стал самым широко используемым препаратом при лечении туберкулеза вызванных лекарственно-чувствительными штаммами микобактерий, наряду с рифампицином и пиразинамидом. Кроме того, монотерапия изониазидом в профилактических целях использовалась при лечении скрытого туберкулеза [15,18].

Установлено, что ингибирование синтеза миколовых кислот – компонента клеточной стенки *Mycobacterium tuberculosis* изониазидом приводит к лишению кислотоустойчивости. Наличие миколовых кислот у *Mycobacterium tuberculosis* делает её устойчивой ко многим видам лечения, и их синтез абсолютно необходим для выживания этого возбудителя.

Ряд исследований показали, что изониазид проявляет свое действие против активных микобактерий в присутствии кислорода. Препарат не активен в анаэробных условиях в отношении бактерий, находящихся в латентном состоянии. Наряду с этим, немаловажное значение имеет температурный режим, так при 37°C активность усиливается и снижается при 4°C, что показывает связь изониазида с ферментативной активностью в бактериальной клетке. Дальнейшее проявление антибактериальной активности, которого зависит от активизирования внутри бактериальной клетки фермента каталазы-пероксидазы – KatG [20].

Подобно другим ПТПпрепаратам у *Mycobacterium tuberculosis* резистентность к изониазиду появились вскоре после его внедрения в практику и достигла высоких показателей за последние 20 лет. Известно несколько внутриклеточных мишеней данного препарата – комплекс ферментов, участвующих в синтезе миколовых кислот. Мутации в генах, кодирующих эти белки (inhA, acpM и kasA) могут вызывать устойчивость к изониазиду.

По данным Бурмистровой И.А. [2018] устойчивость к изониазиду при сохранённой чувствительности к рифампицину встречается у 12,1% бактериовыделителей. Полихимиорезистентность с фиксированной устойчивостю к изониазиду значительно осложняет прогноз заболевания. [5,6]

По мнению ряда авторов, устойчивость к изониазиду не только повышает риск формирования МЛУ, но и является важнейшим фактором неблагоприятного отдалённого результата лечения [9].

Наряду с этим, устойчивость микобактерий к изониазиду происходит за счет гиперпродукции мишеней действия активных форм препарата. К примеру, белки, участвующие в транспорте предшественников миколевой кислоты и ее биосинтезе: ацилированный белок-носитель (ген *acpM*), синтетаза (ген *kasA*) и редуктаза (ген *inhA*) белка-носителя. Большая часть мутаций выявляются в промоторных областях перечисленных генов. Степень резистентности, связанной с гиперпродукцией мишеней, обычно ниже, чем при мутациях в генах каталазы-пероксидазы. Общая распространенность устойчивости к изониазиду превышает 13% [23,24]

Отсутствие ускоренной диагностики туберкулеза с устойчивостью возбудителя к изониазиду с сохраненной чувствительностью к рифампицину может быть причиной низкой эффективности терапии и приводить к амплификации ЛУ, в том числе к формированию МЛУ.

Выявление ЛУ культуральными методами на плотных питательных средах занимает не менее 10-12 недель. Используемые в настоящее время молекулярно-генетические методы быстрого определения МЛУ возбудителя отвечают на поставленную задачу, но, не являются общедоступными, требуют особого оснащения лаборатории, дополнительного обучения персонала. Молекулярно-генетический картриджный метод позволяет одновременно выявлять ДНК *Mycobacterium tuberculosis* в диагностическом материале и мутации в гене rpoB, ассоциированные с развитием ЛУ к рифампицину, часто сопряженной с устойчивостью и к изониазиду. Исследования показали высокую чувствительность (96-100%), специфичность (100%), биобезопасность метода [7.8]

Петрова Л.В. [2019] изучала влияние применения в алгоритме микробиологической диагностики 344 больных туберкулезом с МЛУ молекулярно-генетического метода ПЦР-РВ на эффективность химиотерапии. Показано, что применение ПЦР-РВ для определения в образцах диагностического материала мутаций, ассоциированных с ЛУ к рифампицину, изониазиду и фторхинолонам, и раннее назначение на основании данного исследования соответствующей схемы химиотерапии с последующей коррекцией схемы лечения по результатам фенотипических методов тестирования ЛУ позволяет в среднем с 3,6 до 2,5 мес. Сократить сроки прекращения бактериовыделения, определяемого методом посева.[13,16]

При исследование изучали частоту, спектр и характер первичной ЛУ *Mycobacterium tuberculosis*, выделенных от больных инфильтративным туберкулезом легких за 9-летний период. Выявлено повышение частоты ЛУ *Mycobacterium tuberculosis* в 1,4 раза, а также увеличение резистентности к большему количеству ПТП. Установлено увеличение удельного веса МЛУ возбудителя в 3 раза. [11,12]

Авторами исследованы ЛУ, спектр мутаций, обусловливающих резистентность к рифампицину и изониазиду, жизнеспособность, цитотоксичность и проведено генотипирование 111 клинических изолятов *Mycobacterium tuberculosis*. Сполиготипирование выявило 28 сполиготипов; наибольшее число штаммов принадлежало к генетическим семействам Beijing и LAM. Типирование 59 штаммов сполиготипа SIT1 (Beijing) позволило дифференцировать 19 вариантов IS*6110*-RFLP-профилей: 13 были индивидуальны, 6 представлены кластерами. Кластеры A0 и B0 включали наибольшее число штаммов *Mycobacterium tuberculosis* 21 (35,6%) и 17 (28,8%) соответственно. Высокая частота МЛУ и ШЛУ штаммов Beijing была ассоциирована с мутациями *rpoB* Ser531→Leu и *katG* Ser315→Thr. Уровень устойчивости к изониазиду *in vitro* МЛУ/ШЛУ штаммов МБТ

различных генотипов, особенно LAM, был высоким при сочетании мутаций *katG* Ser315→Thr и *inhA*_T15 [12,13,16].

Олигонуклеотидный микрочип позволяет идентифицировать суммарно, 99 мутаций, а формат анализа «один образец-одна стадия ПЦР-один биочип» позволяет за один день выявлять *Mycobacterium tuberculosis* со МЛУ и ШЛУ. С использованием разработанного подхода проведен анализ 63 штаммов *Mycobacterium tuberculosis*, характеризующихся разными профилями ЛУ, и определен спектр мутаций, встречающихся в штаммах *Mycobacterium tuberculosis* с МЛУ и с ШЛУ. Приведена оценка диагностической значимости включения дополнительных генетических локусов при определении устойчивости микобактерий [10].

Проведена оценка эффективности режимов химиотерапии, включающих противотуберкулезный препарат бедаквилин, у 23 больных туберкулезом легких с МЛУ и ШЛУ возбудителя в Амурской области. Применение бедаквилина совместно с другими ПТП показало высокую эффективность по критериям негативации мокроты, а также рубцеванию полостей распада ранее неэффективно леченных больных. Схемы химиотерапии с включением бедаквилина показали удовлетворительный профиль безопасности [18,19].

Аксеновой В.А. и соавт. [2018] представлена характеристика очагов туберкулезной инфекции, находясь в которых дети заболели туберкулезом с МЛУ. Установлено, что риск развития у детей туберкулеза с МЛУ возможен при контакте с больным туберкулезом при неустановленной ЛУ к рифампицину, что необходимо учитывать при назначении режима химиотерапии.[2,3,6]

Высокая эффективность лечения пациентов с впервые выявленным туберкулезом легких может быть достигнута при изначальном назначении схемы химиотерапии по данным картриджного теста с последующей коррекцией по результатам метода пропорций на жидких средах в автоматизированной системе учета роста *Mycobacterium tuberculosis*. При этом условии сроки заживления деструктивных изменений в легких не зависели от ЛУ *Mycobacterium tuberculosis* [7.8.9]

В процессе химиотерапии изучены частота и характер побочных реакций на ПТП второго ряда у 324 больных туберкулезом с МЛУ возбудителя. Побочные реакции, вызванные одним или двумя ПТП, не оказали отрицательного влияния на эффективность лечения. По мере нарастания числа плохо переносимых препаратов установлено снижение показателя благоприятных исходов заболевания, и при этом высокая достоверная причинно-следственная корреляционная связь определялась между неблагоприятными исходами и плохой переносимостью больными 3 ПТП и более [18,19].

Проведена сравнительная оценка эффективности химиотерапии туберкулеза у 185 пациентов с туберкулезом легких, определенной с помощью картриджной тест-системы GeneXpert MTB/RIF и определенной

посевом на жидких средах. Назначение химиотерапии по результатам теста GeneXpert MTB/RIF, с последующей коррекцией по результатам посева на Bactec MGIT 960, достоверно способствует у больных туберкулезом с МЛУ возбудителя улучшению результатов лечения как по скорости прекращения бактериовыделения, так и по скорости закрытия деструкций, по сравнению с группой, где коррекцию лечения проводили только по результату посева на жидкие среды. При этом использование теста GeneXpert MTB/RIF значительно сокращает число случаев коррекции химиотерапии или перехода на другой режим [16,17].

Региональные исследования в Республике Узбекистан показали, что распространенность МЛУ туберкулеза среди впервые выявленных больных составила 23%, а среди рецидивов 62%. Результаты стратегии DOTS показали неэффективность терапии препаратами первой линии среди некоторых пациентов. Высокий уровень туберкулеза с МЛУ выявлен в РКК. 13% пациентов, которые никогда не лечились от туберкулеза, были инфицированы штаммом с МЛУ

По данным Сайфутдинова З.А., в 2010-2021 гг. было проведено тесты на чувствительность к изониазиду у 10 815 культур Mycobacterium tuberculosis, и результаты исследования показали, что устойчивость к этому препарату составила 58%. Однако исследования в некоторые годы показали, что этот показатель составлял 73% (2011 г.), 61% (2012 г.) и 66% (2016, 2018).

Учитывая важность мутаций в гене InhA в развитии штаммов МЛУ ТБ, более широкое исследование этой мутации одновременно показало, что Mycobacterium tuberculosis индуцирует перекрестную резистентность к препарату протеонамид/этионамид, который входит на 2-линию противотуберкулезных препаратов. Хотя, мутация в гене InhA, обнаруженная молекулярно-генетическим методом (17%), была ниже, чем устойчивость к этионамиду/протионамиду, выявленная фенотипическим ТЛЧ (31%), ранняя диагностика (в течение 2-3 дней) и своевременное применение соответствующей терапии пациентам сокращает интервал выдачи результатов до 45 дней.

На сегоднешний день осуществляются попытки совершенствования профилактических и лечебных мероприятий по туберкуллезной инфекции. Подтверждено совпадение спектра ЛУ МБТ заболевших из контакта детей и взрослых с источником инфекции [1,2].

Разрабатываются попытки разработки модели больного с лекарственно устойчивым туберкулезом легких. Дальнейшее изучение лекарственной устойчивости создает перспективные возможности для ограничения резистентности туберкллезной инфекции.

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ТЕХНИЧЕСКИЕ ХАРАКТЕРИСТИКИ И ЭНЕРГЕТИЧЕСКАЯ ЭФФЕКТИВНОСТЬ МИКРОГЭС, МИРОВОЙ АНАЛИЗ И ИНЖЕНЕРНЫЕ РЕШЕНИЯ

Аннотация: *в статье рассмотрены технические характеристики и энергетическая эффективность микро-гидроэлектростанций (микроГЭС) на основе мирового анализа и инженерных решений. Проведён обзор современных тенденций развития микроГЭС в различных странах мира, включая Азию, Европу, Африку и Америку. Представлены классификация микроГЭС по установленной мощности и напору, а также структурные элементы установки: гидротурбина, асинхронный генератор, конденсаторная система возбуждения и блок управления.*

Ключевые слова: *микроГЭС, гидроэнергетика, асинхронный генератор, энергетическая эффективность, магнитное насыщение, коэффициент полезного действия, реактивная мощность, PID-регулятор, LC-компенсация, MATLAB/Simulink, Smart Grid, возобновляемая энергия.*

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TECHNICAL CHARACTERISTICS AND ENERGY EFFICIENCY OF MICROHYDRO POWER STATIONS, WORLD ANALYSIS AND ENGINEERING SOLUTIONS

Abstract: *the article presents a comprehensive analysis of the technical characteristics and energy efficiency of micro-hydropower plants (microHPPs) based on global trends and engineering solutions. The paper reviews the current state and development of micro-hydropower technologies in different regions of the world, including Asia, Europe, Africa, and the Americas. It outlines the classification of microHPPs by installed capacity and head, as well as their main*

components — hydraulic turbine, asynchronous generator, capacitor excitation system, and automatic control unit.

Keywords: *micro hydropower, microHPP, asynchronous generator, energy efficiency, magnetic saturation, power factor, PID control, LC-compensation, MATLAB/Simulink, Smart Grid, renewable energy, distributed generation.*

ВВЕДЕНИЕ

Современное развитие мировой энергетики характеризуется ростом спроса на электроэнергию и стремлением к снижению негативного воздействия на окружающую среду. В этих условиях особое внимание уделяется возобновляемым источникам энергии, среди которых гидроэнергетика занимает одно из ведущих мест. Микро-гидроэлектростанции (микроГЭС), являясь частью распределённой генерации, обеспечивают электроснабжение удалённых регионов, горных районов и сельских поселений без необходимости подключения к централизованным сетям.

Преимуществами микроГЭС являются высокая надёжность, автономность работы, низкие эксплуатационные затраты и экологическая чистота. Они не требуют больших плотин и резервуаров, что минимизирует воздействие на экосистему. По данным Международного агентства по возобновляемым источникам энергии (IRENA, 2024), суммарная установленная мощность малых и микроГЭС в мире превышает 80 ГВт, из которых около 12 % приходится на микроуровень (установки мощностью до 100 кВт).

Современное состояние микроГЭС

Мировая тенденция демонстрирует устойчивый рост числа микроГЭС, особенно в странах Азии, Африки и Южной Америки, где электроэнергия недоступна для миллионов людей. В Китае, Индии, Непале и Вьетнаме реализованы национальные программы по поддержке автономных гидроустановок. В Европе и Северной Америке микроГЭС часто интегрируются в гибридные энергетические комплексы вместе с солнечными и ветровыми системами. По данным International Hydropower Association (IHA, 2023), доля малых и микроГЭС составляет около 7 % мирового гидроэнергетического потенциала.

В странах Европейского Союза активно развиваются установки мощностью 5–50 кВт, ориентированные на локальные фермерские хозяйства и небольшие предприятия. В Африке микроГЭС применяются для обеспечения питьевого водоснабжения и освещения в сельской местности.

Технические характеристики и классификация микроГЭС

МикроГЭС классифицируются по установленной мощности и напору воды. В общем виде различают:

- ПикоГЭС (до 5 кВт) — для индивидуальных домохозяйств;
- МикроГЭС (5–100 кВт) — для небольших сообществ и сельскохозяйственных объектов;

- МиниГЭС (100–1000 кВт) — для малых населённых пунктов или промышленных зон.

Основные параметры, определяющие работу микроГЭС:

- Высота напора (H, м);
- Расход воды (Q, м³/с);
- КПД гидротурбины (η_t);
- КПД генератора (η_g);
- Общий коэффициент полезного действия станции: η = η_t × η g × η_мех.

Основные элементы конструкции микроГЭС

Конструктивно микроГЭС состоит из следующих основных узлов:

1. Гидротурбина — преобразует потенциальную энергию потока в механическую.
2. Асинхронный генератор — вырабатывает электрическую энергию.
3. Система возбуждения (конденсаторная батарея) — обеспечивает самовозбуждение генератора.
4. Система управления и защиты — стабилизирует напряжение, частоту и нагрузку.
5. Нагрузочный блок и распределительное устройство.

Асинхронные генераторы с короткозамкнутым ротором чаще всего применяются в микроГЭС благодаря простоте конструкции, низкой стоимости и надёжности. Для автономной работы используются конденсаторные батареи, создающие необходимую реактивную мощность для возбуждения магнитного поля.

Энергетическая эффективность микроГЭС

Энергетическая эффективность микроГЭС определяется совокупным КПД всех звеньев преобразования энергии. Типичные значения составляют:

- КПД гидротурбины — 75–90 %;
- КПД асинхронного генератора — 80–88 %;
- Суммарный КПД установки — 65–78 %.

Повышение эффективности достигается за счёт оптимального выбора гидротурбины под конкретный расход и напор, корректного подбора ёмкости конденсаторов, а также внедрения автоматических систем управления. Важную роль играет точная настройка коэффициента мощности cosφ, позволяющая минимизировать потери реактивной мощности.

ФАКТОРЫ, ВЛИЯЮЩИЕ НА ЭФФЕКТИВНОСТЬ

На эффективность микроГЭС влияют:

- Гидравлические потери в подводящих каналах и турбинных аппаратах;
- Электрические потери в обмотках генератора и линиях передачи
- Механические потери на трение и вентиляцию;
- Нелинейные эффекты магнитного насыщения в сердечнике машины.

Учёт магнитного насыщения особенно важен при низких скоростях вращения, характерных для микроГЭС с ковшовыми и осевыми турбинами.

В таких случаях применяются математические модели, учитывающие коэффициент магнитного насыщения k_t, что позволяет повысить точность расчётов выходного напряжения и момента.

ПУТИ ПОВЫШЕНИЯ ЭНЕРГЕТИЧЕСКОЙ ЭФФЕКТИВНОСТИ

Для повышения эффективности микроГЭС применяются следующие технические решения:

1. Внедрение интеллектуальных систем управления на базе микроконтроллеров (Arduino, STM32);
2. Использование комбинированных LC-схем для стабилизации напряжения;
3. Применение адаптивных PID-регуляторов для регулирования реактивной мощности;
4. Оптимизация гидравлических трактов и профилей ковшей турбин;
5. Использование современных материалов с низкими потерями в магнитопроводах.

На этапе проектирования важно проводить многопараметрическую оптимизацию, учитывающую совместное влияние гидравлических, электрических и магнитных характеристик. Применение методов компьютерного моделирования (MATLAB/Simulink, ANSYS Fluent) позволяет получить точные прогнозы работы системы.

Заключение

МикроГЭС представляют собой эффективное и экологически безопасное решение для децентрализованного энергоснабжения. Их развитие способствует повышению энергетической независимости регионов и снижению углеродного следа. В мировой практике наблюдается устойчивый рост числа микроГЭС благодаря снижению стоимости оборудования и совершенствованию методов автоматического управления.

Перспективные направления включают интеграцию микроГЭС в гибридные энергосистемы, использование интеллектуальных сетей (Smart Grid) и развитие систем хранения энергии. Повышение энергетической эффективности возможно за счёт цифровизации проектирования, оптимизации режимов работы асинхронных генераторов и применения адаптивных алгоритмов управления.

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НАУЧНОЕ И ПРАКТИЧЕСКОЕ ЗНАЧЕНИЕ ТВОРЧЕСТВА АРХИТЕКТОРОВ XX-XXI ВЕКОВ

Аннотация: *В статье раскрыты особенности стилей архитектурная бионика и биотек в творчестве архитекторов современности Ф.Л.Райта, С. Калатравы, Н. Фостера, Н. Гримшоу и их научное и практическое значение в мировой архитектуре. Приведены примеры и анализ архитектурных зданий и сооружений с наиболее интересными архитектурно - композиционными решениям.*

Ключевые слова: *Ф.Л.Райт, С. Калатрава, Н. Фостер, Н. Гримшоу, архитектурная бионика, био-тек, хай - тек, дизайн, экология, здания и сооружения.*

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THE SCIENTIFIC AND PRACTICAL SIGNIFICANCE OF THE WORK OF ARCHITECTS OF THE XX-XXI CENTURIES

Abstract: *The article highlights the distinctive features of the architectural styles of bionics and biotech in the works of contemporary architects F. L. Wright, S. Calatrava, N. Foster, and N. Grimshaw, as well as their scientific and practical significance in global architecture. It provides examples and an analysis of buildings and structures showcasing some of the most notable architectural and compositional solutions.*

Keywords: *F. L. Wright, S. Calatrava, N. Foster, N. Grimshaw, architectural bionics, bio-tech, high-tech, design, environmental sustainability, buildings and structures.*

Современная архитектурная тенденция показывает, что дизайн стал гораздо более многогранным, чем в предыдущие годы. Архитектура становится ни просто функциональным, утилитарным объектом, а становится инструментом, чтобы передавать эмоции, выражает личные премудрости и их поиски гармонии с природой. Дизайнеры становятся амбициозными в своих стремлениях соединить природу и человека, перерабатывая концепции, изучают опыт зодчих прошлых веков и создают новые художественные и функциональные решения [12].

В последние годы бионика становится главным трендом в архитектуре. Современные города ищут равновесие между природой и технологичным комфортом. Всем хочется жить среди зелени, в окружении природы, но со всеми удобствами и комфортом. Бионическая архитектура как раз и отвечает на эти пожелания, объединяют принципы живой природы с самыми современными строительными технологиями. Дизайнер использует формы, структуры и текстуру живой природы при проектировании зданий и сооружений [13].



Рис. 1. Лето, лес.



Рис. 2. Природа и красота

Бионика в архитектуре ни просто модное веяние, а становится необходимостью. Стремление подражать природе это ни только красота, но продиктовано и здравым смыслом. Сама живая природа является выдающимся инженером, которая за миллионы лет смогла создать эффективные, саморегулирующиеся системы при этом не причиняя вреда для среды обитания. Благодаря инновационным материалам дизайнеры создают сооружения разных форм и объёмов из металла, стекла и пластика. Архитектурная бионика является инновационным стилем, которая берёт все самое лучшее от природы: рельефы, контуры, принципы формообразования и взаимодействия с окружающим миром [6]. Такие примеры находятся в различных частях света: Сиднейский оперный театр в Австралии, Сады у Залива с Сингапуре, Храм Лотоса в Индии, Небоскреб «Мэри Экс», Лондон, научно-развлекательный комплекс в Валенсии - Город Искусств и Наук и во многих других странах [9].

Хотя многие и считают, что бионика стала одним из главных мировых трендов в современном дизайне зданий, однако бионика в архитектуре это вовсе не новый термин. Еще в далёкие времена в Древнем Египте и Греции использовались принципы архитектурной бионики [3]. В конце XIX в. американский архитектор Луис Генри Салливан впервые стал использовать термин «бионическая архитектура» [5]. По его концепции предполагалось использовать элементы конструкций, которые существовали в природе при проектировании и строительстве зданий.

В дальнейшем эти идеи развил и его ученик - американский архитектор Фрэнк Ллойд Райт [7]. В 1939 году в США, Пенсильвании он

построил дом над водопадом, в которой озвучил новаторскую концепцию об органической архитектуре, где были достигнуты гармония здания с окружающей природой. Ф. Л. Райт сделал акцент на пространстве, которое снаружи и внутри было взаимопроникаемо. Дом над водопадом - знаменит тем, что здесь был воплощен мощный идеал - что и сегодня можно научиться жить в гармонии с природой [13].

Второе здание в стиле органической архитектуры - построенное Ф.Л.Райтом - Музей Гуггенхайма. Нью-Йорке в 1959г. В музее настоящее время находится одна из крупнейших в мире коллекций произведений искусства эпохи классического модернизма конца XIX - первой половины XX веков: таких мастеров как, как Дега, Клее, Пикассо, Ф. Марк, Леже, А. Колдер, Й. Мондриан, Кокошка, Кандинский, Миро, Бекман, Раушенберг и многих других.

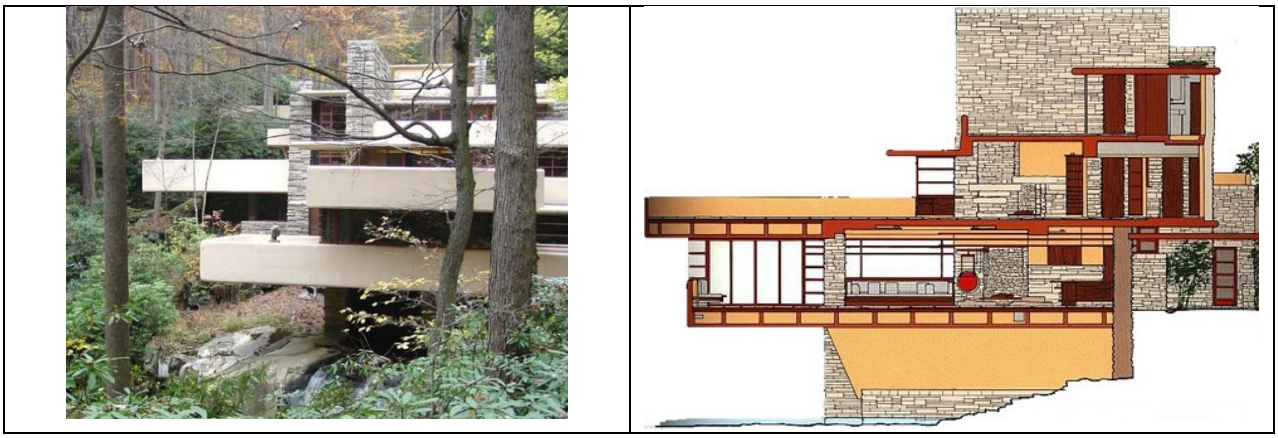


Рис 3, 4. Дом над водопадом. США. Пенсильвания, Арх. Ф.Л.Райт.



Рис. 5. Ф. Л. Райт. Музей Гуггенхайма. Нью-Йорк. 1959г.

Затем идеи архитектурной бионики подхватили архитекторы по всему миру: Норман Фостер, Хавьер Сеносьян, Сантьяго Калатрава, Йорн Утзон, Майкл Соркин и Заха Хадид. А пионером архитектурной бионики в России считается Юрий Лебедев. В 1984 г. при ЦНИИТИА создана Центральная Научно-исследовательская и экспериментально-проектная лаборатория архитектурной бионики (ЦНИЭЛАБ). Эта лабораторией архитектурной бионики под руководством архитектора Ю. С. Лебедева была проделала

большая теоретическая и практическая работа, по обобщению мирового опыта, и по созданию собственных оригинальных наработок. В творческий коллектив лаборатории, входили архитекторы, конструктора, биологи, математики и специалисты других направлений, которые успешно решали междисциплинарные задачи архитектурного формообразования на основе выявленных в живой природе законов и принципов формообразования [5].

Архитектурная бионика, и био-тек – это архитектурный стиль, для которых характерно использования в архитектуре принципов бионики - прикладной науки, технических устройств, систем принципов организации, свойств, функций и структур живой природы. Такие здания напоминают формы растений или животных, иногда они похожи на коконы насекомых, раковину моллюска. Поэтому дизайнеры всё больше обращаются к футуристическим конструкциям, чтобы воплотить свои идеи используя решения, подсказанные самой природой [8].

Самые известные сейчас строения, представляющие этот стиль: Национальный космический центр Великобритании архитектора Николаса Гримшоу, Город искусств и наук, Художественный музей Милуоки- Сантьяго Калатрава, Лондонский «Огурец» по проекту Нормана Фостера.

Дизайнеры внимательно изучают, как благодаря природным системам можно экономить ресурсы, и здания становятся более экологичными и умными.

Такой пример - знаменитый лондонский небоскреб The Gherkin (30 St Mary Axe), спроектированный Норманом Фостером. Здание имеет обтекаемую торпедообразную форму и зеленоватый оттенок стекла, поэтому за это в народе дом прозвали «огурцом», вдохновлена природой и оптимизирует аэродинамику. Небоскрёб построен в 2001 - 2004 годах по проекту архитектора Нормана Фостера в Лондоне. Фасад почти полностью застеклён, с прозрачным куполом, поэтому в нем много естественного света и воздуха, благодаря солнечным батареям сокращаются расходы на электроэнергию. А общая площадь стеклянного фасада равна площади пяти футбольных полей [11].



РИС. 5. НЕБОСКРЕБ «МЭРИ ЭКС», ЛОНДОН

Внутри здания находятся офисы, а на верхних этажах расположены рестораны с видом на центр Лондона. Проект здания в течение многих лет получил множество наград: премию Стирлинга, архитектурную премию Emporis Skyscraper Award [7].

Изучая живые организмы, как системы, дизайнеры начинают понимать связь между функцией и формой в архитектуре [4]. Но задача дизайнеров состоит не только в их сравнении, а еще и в осмыслении их единства, возможности объединения, и их сочетания. Все эти принципы нашло отражение в проектах испанского архитектора С. Калатравы. Например входящий в комплекс художественного музея Милуоки в США, павильон Квадраччи является кинетической структурой, напоминающую птицу. В павильоне соединены образ передовых технологий и бионическая структура. Так ребра, соединенные вместе на крыше, представляют образ крыльев птицы, не только внешне, но и структурно, функционально [15].



Рис. 6. Комплекс художественного музея Милуоки в США, павильон Квадраччи

Датчики, которые установлены на крыше, контролируют погодные условия, подают сигнал «крыльям», которые, в свою очередь, раскрываются или закрываются, регулируя инсоляционный и температурный режим павильона. "Крылья" павильона расправляются и складываются в течении дня несколько раз, это привлекает толпу зрителей, которые могут находится на пешеходном мосту, расположенного рядом. Прочность конструкции

архитектуры «хай-тека» и «био-тека» достигает своей безукоризненности благодаря использованию высокотехнологичных материалов [15].

Талантливый архитектор, скульптор и инженер, Сантьяго Калатрава, создал ряд динамичных проектов, в которых благодаря науке бионики максимально использовал защиту внутреннего пространства от нагревания.

В творчестве архитектора происходит симбиоз архитектуры, скульптуры и высокотехнологичной инженерии.

При создании зданий и сооружение Калатрава берёт вдохновение у природы и они всегда гармоничны с окружающей средой.

Коммуникационная башня Монтжуик в Барселоне, была построена специально для трансляции Летних Олимпийских игр в Барселоне. Его необычная изогнутая форма стала не только узнаваемым олимпийским символом, но и оригинальной достопримечательностью города. При строительстве башни были применены еще несколько интересных инженерных решений, например, раздвижные двери, которые открываются, не в бок, а вверх и вниз, напоминающие веки человеческого глаза.



Рис. 7. Коммуникационная башня Монтжуик в Барселоне. 1992 г,

Железнодорожный вокзал в аэропорту Лиона (1994 г.), можно сравнить с гигантской птицей, которая расправляет крылья. Бетонное основание вокзала создаёт контраст с воздушной стальной конструкцией крыши, создавая впечатление легкости и полета. А стеклянные стены наполняют интерьер естественным светом, центральный зал высотой в 40 метров поражает просторностью и элегантностью [15].



Рис. 8. Железнодорожный вокзал Гар-де-Лион-Сент-Экзюпери. Франция. Арх. С. Калатрава.

Яркими работами в стиле био-тек выделяется британский архитектор - Николас Гримшоу. Самым "бионическим" его сооружением является знаменитые сады "Эдем" (1998-2001 гг.). Полусферические купола теплиц сделаны из светопроницаемого пластика. Внешне они очень напоминают гигантские капли росы на траве или цепочку из мыльных пузырей. Такой необычный дизайн комплекса ботанических садов Эдем был вдохновлен мыльными пузырями, которые с легкостью адаптируются к любой поверхности, на которую опускаются. В одном из таких "пузырей", хотя его конструкция не намного тяжелее воздуха внутри, раскинулся самый большой тропический лес за пределами тропиков, теплицы Н. Гримшоу, созданные из специального пластика, напоминают капли росы на траве [2].



Рис. 9. Ботанические сады Эдем. Н. Гримшоу Графство Корнуолл, Великобритания. 1998-2001 гг.

На их геодезические купола из стальных шестиугольных рам натянут фторполимерный материал ETFE. Такие панели на основе ETFE весят на 99% меньше, чем стеклянные, но при этом материал пропускает больше ультрафиолета и дневного света, это было важно для растений. Благодаря тому, что диаметр стальных рам очень мал (всего 193 мм), Сады Эдема являются самым "легким" ботаническим садом - конструкция весит 465 тонн, при том, хотя внутри нее содержится 426 тонн воздуха. Несмотря на легкость, комплекс имеет большие размеры - под самым большим куполом

тропического леса, высотой 50 метров, с легкостью поместился бы Лондонский Тауэр [14].

Тренды в архитектурном дизайне для городских зданий отражают стремление к устойчивости, гибкости и социальной ответственности. Благодаря современным технологиям и новым подходам дизайнеры создают здания, которые не только красивы, но и удобны для жизни, работы и отдыха. Поэтому следуя этим тенденциям, можно обеспечить качественное и гармоничное развитие городского пространства [1]

Человек – является частью природы, его детищем, творением. Поэтому, жилое пространство, где он проводит большую часть своей жизни должно продолжать идею натуральности. Именно эта концепция и лежит в основе философии биотека. Поэтому здания этого стиля экологичны, безопасны, не конфликтую с окружающей средой, а являются её естественной частью, гармонично вписываются в биосферу нашей планеты [3]

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ШАҲАР ВА ҚИШЛОҚ АҲОЛИ ПУНКТЛАРИНИ АРХИТЕКТУРАВИЙ ЛОЙИҲАЛАШДА ИННАВАЦИОН ТЕХНОЛОГИЯЛАРНИ ҚЎЛЛАШ ТАМОЙИЛЛАРИ

Abstract: *The article examines issues of socio-economic and technical integration, as well as the organization of landscape architecture and design in urban and rural settlements. The study outlines the objectives of socio-economic integration and the organization of landscape architecture and design for both urban and rural areas.*

Калит сўзлар: *шаҳарсозлик, қишлоқ хўжалиги, аҳоли жойлашуви, режалиштириш,иннавацио ечимлар, инфрасттруктура, лойиҳалаштириш.*

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PRINCIPLES OF APPLYING INNOVATIVE TECHNOLOGIES IN ARCHITECTURAL DESIGN OF URBAN AND RURAL SETTLEMENTS

Abstract: *The article discusses issues of socio-economic and technical integration, as well as the organization of landscape architecture and design in urban and rural settlements. The study outlines the objectives of socio-economic integration and the organization of landscape architecture and design for both urban and rural areas.*

Keywords: *urban planning, agriculture, population distribution, planning, innovative solutions, infrastructure, design.*

Замонавий шаҳарсозлик ушбу соҳа мутахассислари олдида инновацион ечимларни талаб қиладиган тобора мураккаб вазифаларни қўймоқда. Шаҳарлашган ҳудудлар уларда содир бўлаётган барча жараёнлар - хизмат кўрсатиш соҳаси, транспорт инфратузилмаси, атроф-муҳит мониторинги ва бошқаларни рақамлаштириш йўлида ривожланмоқда.

Маълумки, қишлоқ аҳоли пунктларининг ижтимоий-иқтисодий ривожи уларни шаҳар билан интеграцияси давлатимизнинг қишлоқ аҳолиси фаровонлигини ошириш ва бу борадаги ишларни такомиллаштириш давлат дастурларининг асосий қисмларини ташкил этади. Қишлоқ аҳолиси яшаш жойларининг сифатли тараққиётини таъминлаш ва натижали ривож-ланишига эришиш, бу тараққиётни тезлаштириш, уларни жойлашув ва ривожини мақсадли режалаштириш, уни тизимлаштириш ва бошқариш бугунги кундаги энг долзарб муаммолардан биридир.

Мамлакатимизнинг ижтимоий ва иқтисодий тараққиётининг таянч омиллари ҳисобланган аграр масала ва унинг барқарор ривожини ва уни босқичма-босқич тараққий эттириш мамлакатнинг барча ишлаб чиқариш тармоқларига мослаб уйғунлаштирилган ҳолда ривожлантириб бориш мураккаб масаладир. Бугуни кунда шаҳардан узоқ, ўзининг ижтимоий-иқтисодий тараққиёт йўли автоном равишда шаклланиб келаётган баъзи қишлоқ аҳоли пунктларининг сезиларли даражада орқада қолганлигининг гувоҳи бўламиз.

Замонавий аҳоли пунктлари ва уларнинг аҳолиси жамиятнинг инновацион ривожланишининг асосий агентлари ҳисобланади. Шаҳар илм-фан ва таълим марказига, билимли ва ижодкор кадрлар, молиявий ресурслар тўпланган жойга айланади. Шаҳарда шаклланган махсус ижодий муҳит жамият учун инновацион ечимларнинг асосий етказиб берувчиси ҳисобланади.

Аҳоли жойлашуви ва тараққиёти бўйича ижтимоий масалаларни самарали ҳал қилиш амалга оширилаётган урбанизациялаштириш жараёни жойларда мақсадли бошқаришни талаб қилади. Шаҳарда шаклланган махсус ижодий муҳит жамият учун инновацион ечимларнинг асосий етказиб берувчиси ҳисобланади.

Шуни таъкидлаш керакки, кейинги пайтларда шаҳарлар ҳудудлари ўз чегараларини бетўхтов кенгайтириб, унинг тараққиёти таъсири қишлоқ ҳаёти фаолиятига катта таъсир этмоқда. Бунга сабаб бугунги кунда қишлоқ ва шаҳарнинг интеграцияси табиий равишда ўзаро боғланишига талаб юзага келмоқда. Шунинг учун ҳам бу объектларнинг перспектив ривожланиш масалаларини структив режалаштиришда қишлоқ инфраструктураси билан уйғунликда бўлиши мақсадга мувофиқ. Шуни ҳам таъкидлаш жоизки, шаҳар инновацион технологиялар ва ечимларнинг асосий истеъмолчиларидан бири - шаҳарсозлик, технологик ва бошқарув, мегаполиснинг энг долзарб муаммоларини ҳал қилиш учун зарур. Барқарор ривожланиш; транспорт инфратузилмасини ривожлантириш; қаттиқ чиқиндиларни бошқариш; аҳоли учун хавфсиз яшаш муҳитини яратиш; экологик муаммоларни ҳал қилиш каби соҳалар ҳудуддаги шаҳар ўзгаришлари соҳаларда инновацион ечимларга талабни келтириб чиқаради

Қишлоқ жойлашуви инфраструктураси лойиҳаланишида аҳоли пунктини зоналаштириш яъни меҳнат, дам олиш, маиший таътил каби муҳим соҳалари зоналарини тўғри режалаш-тириш жуда муҳ имдир.

Қишлоқларни қайта қуришни ташкиллаштириш, унинг эстетик қиёфасини шакллантириш, автоном тараққиётини бартараф этиб, шаҳар билан интеграциялашда табиий, функционал талаблардан келиб чиқиш, аҳоли яшаш пунктларини майдаларини йириклаштириб, қишлоқ жойларни табиий ресурслари ва тарихий маданий потенциалини сақлаб қолган ҳолда экологик, ижтимоий ва иқтисодий масалаларини турғунлашган, мувозанатлашган, комплекслашган янги сифатли поғонага кўтариш лозим. Қишлоқ жойларини қайта қуриш ва унинг истиқболли тараққиёти XXI аср

жахон мамла-катлари муаммоси бўлиб қолмоқда. Бу борада кўплаб концепциялар мавжуд. XX аср кириб келган “Барқарор тараққиёт” тушунчаси бу турғун ижтимоий-иқтисодий тараққиёт бўлиб, ўзининг табиий асосларини бузмасдан жамиятни узлуксиз прогрессга эл-тувчидир. Инновацион технологиялар шаҳарсозлик фаолиятининг барча даражаларида (кейинги ўринларда "Шаҳарсозлик" ихтисослиги бўйича шаҳарсозлик фаолияти деганда биз ҳудудий режалаштириш, шаҳарсозлик, ҳудудни режалаштириш ва ободонлаштиришни назарда тутамиз) ҳам мунтазам шаҳар муаммоларини ҳал қилиш, ҳам замонавий шаҳарни барқарор ривожлантириш мақсадларини амалга ошириш учун зарурдир. Барқарор тараққиёт – бу ривожланган жамиятгина эриша оладиган жараён бўлиб, эндиликда буни ноосфера (бирламчи табиатнинг махсулидан фарқли уларок инсон заковати билан яратилган дунё) деб атай бошлади. Бу ҳақда рус олимаси З.А.Гаевская шундай деган эди: “Идея устойчивого развития связана не просто с преоделением антропоцентризма и принятием вместо него биоцентризма, а с их интеграцией в единую коэволюционную систему человек-общество-природа, способную к ноосферогенезу”. Ўзбекистон шароитида аҳоли сони кундан кунга ўсиб халқ фаровонлиги ҳам кетма-кет ошмоқда. Аммо мамлакатимизда суғорила-диган ерлар уй-жой ва йўл қурилиши ҳисобига кескин камайиб, аҳолини керакли озиқ-овқат махсулотлари билан таъминланиши мууаммолар келтириб чиқармоқда. Водийларда мол боқиш учун ажратиладиган далалар йўқ ҳисоби. Бу ҳол бугунги кунда ўз ечимини топиши ва шунингдек (давлат дас-турларида) ўз аксини топиши лозим. Ҳудудларда қишлоқлар, посёлкаларнинг бош режа-лари уларга яқин шаҳ арнинг режалари билан мосланган структуравий ишланмаларни талаб қилади. Демак, фикримизча архитектуравий ландшафт ва тегишли дизайн лойиҳаларини амалга оширишдан олдин жойларда ўрганилиши, ҳар бир ҳудуд ўзига хос демо-график таҳлил хулосалари асосида бажарилиши лозим. Бугунги кунни яна бир муаммоларидан бири аҳ олиси зич жойлашган қишлоқлар, айниқса катта шаҳарларга яқин аҳоли пунктларида ҳудуд етиштираётган турли мах-сулотларни қайта ишлаш, улардан турли (қуруқ мева ва бошқа озиқ-овқат махсулотлар) экспорт учун махсулотлар тайёрланадиган ишлаб чиқариш корхоналари ташкил этиш қишлоқ аҳолисини, айниқса, ёшларни ўз ман-зилларидаги турғунлигини таъминлаган бўлар эди. Юқорида айтилган фикр мулоҳ азалар албатта лойиҳа концепцияларининг яратилишида уларга асос бўлади.

Бугунги жамият тараққиётининг жараёни шуни кўрсатадики, шаҳар ва қишлоқлараро кечинаётган алоқалар доирасида шаклланаётган тизимлар биз хоҳлаймизми, йўқми кенгайиб боради. Улар ўртасидаги ижтимоий, иқтисодий, маданий алоқалар ўз-ўзидан боғланаве-ради. Янги-янги иннавацион технологияр вужудга келабошлайди. Аммо бу жараённинг стихияли равишда бўлмасдан, балким илмий, режавий шаклланишини

бошқаришни, бу тизимларни илмий - режавий асосда ташкиллаштиришни тақозо қилади.

Қишлоқ хўжалиги махсулотларини саноатлаштирилишга ҳамда унинг аҳолиси турмуш тарзини шаҳар ҳаётига яқинлашишга шунингдек, аҳоли яшаш пунктларини йириклашишига, тизимларни шаклланиб бориши қишлоқ ва шаҳарлараро янгича алоқа тизимини барпо бўлишига имкон беради. Транспорт тизимини замонавий талабларга мослаш, шаҳар ва қишлоқ ўртасида шаклланган барча структуравий омилларни функциявий ишлаши ва тараққий этишини таъминлаб боради. Республика қишлоқларининг жойлашуви ва уларнинг ривожланиши анъаналарини ўрганиш шуни кўрсатадики, мавжуд бошқа омиллардан ташқари қишлоқнинг сифатли ривожланиши тўғридан-тўғри шаҳар жойлашуви структура-ларининг қандай тараққий этганлигига боғлиқ бўлади. Шунинг учун ҳам қишлоқни қайта қуриш, инфраструктуравий тизимини шакл-лантиришда унинг ён шаҳари структураларини қандай тараққий этганлиги ва қишлоқ инфраструктураларини ўзаро боғлиқлигига қараб ва қишлоқнинг қандай ривожланганлик даражасига қараб дифференциал (табақаланган) ҳолда ёндашувни талаб қилади. Унинг архитектуравий ва ландшафт дизайни қиёфаси юқорида айтилган ўзаро боғланиш даражаси-нинг чамбарчаслиги, қишлоқнинг тараққиёт даражасига боғлиқ бўлади.

Шаҳарсозлик соҳасида тадқиқотчилар асосан “инновация” тушунчасининг таърифини технологик инновациялар ва уларни амалиётга татбиқ этиш билан боғлайдилар.

Шаҳарсозликнинг инновацион таркибий қисми шаҳарсозлик инфратузилмаларини яратиш ва ривожлантиришда инновацион технологиялардан фойдаланиш асосида шаклланади, бу пировардида ривожланишни фазовий ташкил етишнинг самарали стратегиясини шакллантириш имконини беради ва замонавий стратегик режалаштиришнинг мақсади ҳисобланади.

Инновацион технологияларнинг мақсади ишлаб чиқарилаётган маҳсулот сифатини ошириш ва ишлаб чиқариш соҳасини яхшилашдан иборат. Илғор инновацион технологияларни жорий етиш ҳам иқтисодий, ҳам моддий-ижтимоий ресурс имкониятларидан мукаммал ва самарали фойдаланишга қаратилган.

Шундай қилиб, юқорида қайд қилинган фикр мулоҳазалардан келиб чиқиб, қишлоқни меъморий ландшафтини ва уни тўлдирувчи меъморий муҳит дизайнининг ечими ишлаб чиқариш, саноат объектларини, ижтимоий-маданий масканларни, маориф, бозор ва бошқа структуравий тизимларнинг чамбарчаслигига боғлиқдир.

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АНАЛИЗ РАЗЛИЧНЫХ ПОДХОДОВ К ОПРЕДЕЛЕНИЮ КАТЕГОРИИ МОДАЛЬНОСТИ, СУЩЕСТВУЮЩИХ В ЛИНГВИСТИКЕ

Аннотация: *В данной статье рассматривается категория модальности в русском и английском языках. Лексическими средствами являются модальные слова. Некоторые лингвисты говорят о модальных словах как о самостоятельной части речи. Их синтаксическая функция - функция вводного члена предложения.*

Ключевые слова: *лингвистика, модальность, развитие достижений логики, семиотики, психологии, концептов, специфика языкового выражения и его функциональные свойства.*

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ANALYSIS OF VARIOUS APPROACHES TO DEFINING THE CATEGORY OF MODALITY IN LINGUISTICS

Abstract: *This article examines the category of modality in Russian and English. Modal words are lexical devices. Some linguists consider modal words an independent part of speech. Their syntactic function is that of an introductory clause.*

Key words: *linguistics, modality, development of achievements in logic, semiotics, psychology, concepts, the specificity of linguistic expression, and its functional properties.*

Лингвистика прошла долгий и извилистый путь в исследовании модальности, основываясь на достижениях логики, семиотики и психологии. Однако модальность до сих пор не получила полного объяснения в связи с ее многоплановостью, специфичностью языкового выражения и функциональными особенностями. Исследователи дают разные определения категории «модальность».

Проблема модальности широко исследовалась в лингвистике. Её исследовали такие учёные, как Ш. Балли, В.В. Виноградов, А.А. Потебня,

И.Д. Арутюнова, А.Дж. Томсон, И. Хайнрих, Б.Ф. Маттис, С.С. Ваулина, Н.С. Валгина и другие.

Модальность может иметь значение утверждения, приказания, пожелания, допущения, достоверности, ирреальности и др. В определении О.С. Ахмановой говорится о том, что модальность может иметь несколько значений, одним из которых является достоверность. В предложении говорящий или пишущий оформляет мысль, которую хочет сообщить слушающему или читающему. Предложения отличаются друг от друга по цели высказывания, по эмоциональной окраске, а также по степени истинности или ложности заключенной в них информации, то есть по степени достоверности. В отличие от повествовательных и вопросительных предложений, которые дифференцируются по субъективной модальности, побудительные предложения с глаголом-сказуемым в повелительном наклонении не различаются по степени достоверности передаваемого содержания. В этом предложении модальное слово выражает не степень достоверности, а интенсивность побуждения.

Таким образом, мы имеем три однотипных структуры, три уровня, в каждом из которых имеется своя истина, своя ложь и своя неопределенность. Уровень категоричности высказывания снижается по мере продвижения от знаний к уверенности, а затем к области неуверенности [1].

Факты действительности и их связи, являясь содержанием высказывания, могут мыслиться говорящим как реальность, как возможность или желательность, как долженствование или необходимость. Оценка говорящим своего высказывания с точки зрения отношения сообщаемого к объективной действительности называется модальностью. Модальность в русском языке выражается формами наклонений, особой интонацией, а также лексическими средствами - модальными словами и частицами [5]. Академик А.А. Шахматов решительно заявил о наличии в языке помимо наклонений и других средств выражения модальности. Он писал, что модальность, природа и характер которой имеют своим источником единственно волю говорящего, его эмоциональные побуждения, может получать несколько различных словесных выражений: во-первых, в форме глагольного сказуемого, посредством изменения его основы и окончаний; во-вторых, в особых служебных словах, сопровождающих сказуемое или главный член предложения; в-третьих, в особенном порядке слов в предложении; в-четвертых, в особенной интонации сказуемого или главного члена односоставного предложения [2]. В данной работе мы рассмотрим мнение российских ученых, касаемо разграничения модальности и наклонения, а также модальные слова и частицы.

В учебнике современного русского языка модальные слова - это выделившиеся в самостоятельную часть речи неизменяемые слова, обозначающие отношения всего высказывания или отдельной его части к реальности с точки зрения говорящего, грамматически не связанные с другими словами в предложении.

В предложении модальные слова выступают в качестве синтаксически изолированных единиц - вводных слов или словосочетаний, а также в качестве слов-предложений, в которых выражается оценка ранее сказанного с точки зрения его достоверности-недостоверности.

По лексическому значению модальные слова делятся на две большие группы:

1) модальные слова со значением утверждения: конечно, несомненно, бесспорно, безусловно, без всякого сомнения и т.д.;

2) модальные слова со значением предположительности: вероятно, по-видимому, наверное, должно быть, небось и так далее [4].

Этот разряд частиц выражает точку зрения говорящего на действительность, на сообщение о ней. В свою очередь модальные частицы делятся на следующие подгруппы:

1) Утвердительные частицы: да, точно, определенно, так, ага и др.;

2) Отрицательные частицы: нет, не, ни, вовсе не, отнюдь не и т.д.;

3) Вопросительные частицы: разве, неужели, ли (ль), неужто, что ли, ужели и т.д.;

4) Сравнительные частицы: как, как бы, будто;

5) Частицы содержащие указание на чужую речь: дескать, мол, якобы;

6) Модально-волевые частицы: да, бы, пусть, давай [5].

В современной лингвистике не существует однозначного мнения относительно природы и содержания категории модальности. Конец XX века в лингвистике ознаменовался увеличением интереса к языку не как к знаковой, а как к антропоцентрической системе, целью изучения которой является речемыслительная деятельность человека. В связи с этим появилось множество различных направлений в науке, таких как: когнитивная лингвистика, лингвокультурология, этнопсихолингвистика, психолингвистика, межкультурная коммуникация и другие. Модальность - явление многоаспектное, и поэтому в лингвистической литературе существует различное множество мнений и подходов по поводу сущности данного феномена. Все перечисленные лингвистические направления ставят одну задачу - выявить те ментально-психологические процессы, результатом которых и является речь человека. Эти ментальные процессы неразрывно связаны с модальностью.

Важно отметить, что модальность реализуется то на грамматическом, то на лексическом, то на интонационном уровне и имеет различные способы выражения. Она выражается различными грамматическими и лексическими средствами: модальными глаголами, словами, частицами, междометиями, наклонениями и другими средствами.

Итак, модальность - это категория, выражающая отношение говорящего к содержанию высказывания, отношение последнего к действительности. Так как модальность является многоаспектным феноменом, в лингвистической литературе высказываются различные мнения и доводы. К сфере модальности относят противопоставление

высказываний по характеру их коммуникативной установки; градации значений в диапазоне «реальность - ирреальность»; разную степень уверенности говорящего в достоверности формирующейся у него мысли о действительности. Таким образом, модальность может реализоваться на грамматическом, лексическом и интонационном уровне и иметь различные способы выражения; она выражается различными грамматическими и лексическими средствами: модальными глаголами, словами, формами наклонений.

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ЭКОНОМИЧЕСКОЕ ЗНАЧЕНИЕ РАЗВИТИЯ ЭКОТУРИЗМА В СЕВЕРНЫХ НУРОТИНСКИХ ГОРАХ И ПРЕДГОРНЫХ РАЙОНАХ

Аннотация: *в статье раскрывается научно-практическое значение особо охраняемых природных территорий, таких как Нуротинский горно-предгорный заповедник, Арнасайский орнитологический заказник и Кызылкумско-Нуротинские резерваты, расположенные вокруг Северных Нуротинских гор. Представлены предложения, рекомендации и методические указания по их дальнейшему развитию. Также показано экономическое значение этих территорий в перспективе развития экотуризма.*

Ключевые слова: *заповедник, заказник, резерваты, экотуризм, особо охраняемые территории, экологическая устойчивость, миграционные птицы, орнитология.*

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THE ECONOMIC SIGNIFICANCE OF DEVELOPING ECOTOURISM IN THE NORTHERN NUROTA MOUNTAINS AND FOOTHILL AREAS

Annotation: *The article reveals the scientific and practical significance of specially protected natural areas such as the Nurota mountain-foothill reserve, the Arnasay ornithological sanctuary, and the Kyzylkum-Nurota reserves located around the Northern Nurota Mountains. It presents proposals, recommendations, and methodological guidelines for their future development. The economic importance of these territories for the future development of ecotourism is also highlighted.*

Keywords: *reserve, sanctuary, protected areas, ecotourism, ecological sustainability, migratory birds, ornithology.*

Введение.

В последние годы вследствие усиления воздействия человека на природно-географическую среду наблюдаются негативные изменения в окружающей природе, что, в свою очередь, приводит к нарушению экологического равновесия и возникновению ряда экологических проблем. Подобные проблемы происходят не только в нашей республике, но и по всему миру, что требует их изучения на международном уровне. Вопрос охраны природы остаётся одной из актуальных тем современности. Рост численности населения и развитие науки и техники требуют более рационального использования природных ресурсов, освоения новых территорий и, следовательно, более глубокого вмешательства человека в природные процессы. Исходя из этого, под охраной природы понимается эффективное использование и воспроизводство природных ресурсов, улучшение природной среды, а также сохранение отдельных природных комплексов и объектов в их естественном состоянии.

Таким образом, охрана, улучшение и рациональное использование природной среды представляют собой важнейшую научную и практическую задачу современности. Эта проблема является комплексной и многосторонней, затрагивающей социально-политические, экономические и научные аспекты. Оптимизация взаимодействия общества и природной среды (рациональное использование, охрана и преобразование) должна осуществляться на основе прочной научной теории. В современной физической географии существует общепринятое понятие о сложной

пространственной дифференциации географической оболочки (ландшафтной оболочки), то есть о её делении на природно-территориальные комплексы различного уровня — ландшафты. Соответственно, охрана природы направлена на сохранение целостности ландшафтов, их функций и природного равновесия. Для защиты природной среды от загрязнения необходимо повышать продуктивность территорий и акваторий, восстанавливать ландшафты и земли, нарушенные в результате транспортных и строительных работ. При этом важно решать задачи, стоящие перед наукой, культурой, здравоохранением, а также различными отраслями народного хозяйства, и сохранять для нынешнего и будущих поколений уникальные природные комплексы, представляющие собой ценность. Это особенно важно, поскольку под воздействием усиливающегося влияния человека природа может утратить свои естественные качества.

Основная часть.

Для охраны природных комплексов создаются заповедники, заказники и природные парки, обеспечивающие сохранение природы (ландшафта). Охрана ландшафтов требует установления особого режима на отдельных территориях. Необходимость введения специального режима охраны отдельных участков территории обусловлена осознанным отношением человека к природным богатствам, которые в условиях научно-технической революции резко изменяются и сокращаются под воздействием хозяйственной деятельности человека. Такие участки называются заповедниками, резерватами, природными парками, памятниками природы и заказниками. При их классификации можно руководствоваться следующими признаками и выделить следующие типы:

1. **Основная цель и характер режима использования охраняемой территории:** полное запрещение хозяйственной деятельности; ограниченное использование в научных и туристических целях; воспроизводство (восстановление) природных ресурсов; охрана объектов, имеющих просветительское или мемориальное (памятное) значение и т.д.;
2. **Степень сложности охраняемых объектов:** отдельные компоненты природного ландшафта или весь ландшафт, отдельные виды природных ресурсов;
3. **Продолжительность установленного и ограниченного режима:** полностью запрещено ли использование ресурсов или оно ограничено на определённый срок.

Особо охраняемые или заповедные территории, ландшафты, заповедники, различные виды заказников, природные парки и памятники природы организуются в соответствии с вышеуказанными признаками. В настоящее время заповедные территории, то есть природные объекты, полностью изъятые из хозяйственного использования, являются основным и практическим методом охраны природы. Тем не менее, охраняемые территории и акватории играют важную роль в деле защиты природы. Их

функции весьма разнообразны. Наряду со специфическими и региональными задачами каждая охраняемая территория способствует решению общих проблем охраны природы. Охраняемые территории и акватории служат эталоном естественного состояния природных комплексов. В природных комплексах, относительно мало изменённых человеком, можно изучать географические, геофизические, биологические и другие процессы. Знание процессов, характерных для различных типов природных территорий и аквальных комплексов, имеет важное значение для проектирования преобразований природы и прогнозирования последствий воздействия человека на географическую среду.

В последние годы количество заповедных территорий на нашей планете неуклонно растёт. По данным ООН, в начале 1970-х годов в мире насчитывалось 1204 заповедника и национальных парка. О быстром росте охраняемых территорий свидетельствует тот факт, что треть из них была создана, начиная с 1960-х годов. В настоящее время количество охраняемых природных территорий на Земле превышает 20 тысяч. Таким образом, как уже отмечалось выше, формы охраняемых ландшафтов, то есть заповедных территорий, весьма разнообразны. В частности, в нашей республике насчитывается 2 национальных парка и более 10 заповедников, большинство из которых были созданы после 1970 года. Их географическое расположение и особенности различны, однако все они находятся под государственной охраной. Несмотря на различия в природных особенностях охраняемых ландшафтов, их организационная структура и функциональные характеристики во многом схожи, а взаимодействие компонентов ландшафта формирует разнообразные природные облики.

Охрана природы направлена на сохранение целостности ландшафтов и поддержание равновесия между их природными компонентами. Существует множество форм охраны ландшафтов, к которым относятся: заповедники, заказники, резерваты и народные парки. Охрана природы в некоторых районах требует защиты природных комплексов (ландшафтов) в их естественном состоянии с установлением специального режима. Такие особо охраняемые территории представляют собой природные объекты или участки, полностью изъятые из хозяйственного использования и находящиеся под охраной. Эти участки называются заповедниками, резерватами, природными парками, памятниками природы и заказниками. Единая классификация охраняемых территорий пока не разработана, однако при их разграничении принимаются во внимание следующие признаки:

1. **Основная цель и характер режима использования охраняемой территории:** полное запрещение хозяйственной деятельности; ограниченное использование в научных и туристических целях; воспроизводство (восстановление) природных ресурсов; охрана объектов, имеющих просветительское или мемориальное (памятное) значение и т. д.;

2. **Степень сложности охраняемых объектов:** отдельные компоненты природного ландшафта или весь ландшафт, отдельные виды природных ресурсов;

3. **Продолжительность установленного ограничения:** полностью запрещено ли использование ресурсов или оно ограничено на определённый срок.

В чём состоят основные задачи и цели заповедников? В заповедниках природные комплексы сохраняются в их естественном состоянии. Они служат эталоном для сравнения с соседними территориями, освоенными и изменёнными человеком. Такие эталоны позволяют определить, насколько хозяйственная деятельность человека является благоприятной или неблагоприятной для природы, а также дают возможность контролировать целесообразность тех или иных способов практического использования природных ресурсов. Основные задачи и цели заповедников заключаются в сохранении существующих природных комплексов в их естественном виде. Они служат образцом для соседних территорий, подвергшихся воздействию человека. Эти эталоны позволяют сравнивать последствия хозяйственной деятельности и оценивать, насколько выбранные методы природопользования являются рациональными и экологически оправданными.

Нуротинский государственный горно-ореховый заповедник. В изучаемом нами регионе расположен Нуротинский государственный заповедник. Он был создан в 1975 году на склонах Нуротинского хребта, его площадь составляет 40 тысяч гектаров. В заповеднике обитают архары и горные бараны, занесённые в «Красную книгу», а также дикие кабаны и выдры. Кроме того, охраняются виды животных, планируемые к занесению в «Красную книгу», такие как малый сокол (сапсан) и другие. По мнению учёных, в заповеднике сохранилось более 2,5 тысяч редких видов. Дикий баран Севертцова может служить важным объектом для выведения новых пород домашних баранов, адаптированных к местным условиям. Основная задача Нуротинского заповедника заключается в изучении и охране горно-ореховых ландшафтных зон, а также в разработке методов сохранения экологии барана Севертцова.

Арнасайский пустынно-озёрный заказник. На северных склонах Северного Нуратауского хребта, в районе Аидар, Тузкан и Арнасай, в результате паводка 1969 года, когда из бассейна Сырдарьи через Чардаринское водохранилище и коллекторно-дренажные воды из Мирзачуля поступили избыточные воды, образовалось большое озеро — Арнасайское озеро, длиной около 160 км и шириной в наиболее водоёмких местах до 30 км. В 1977 году, в 60 км к северу от города Джизака, была образована территория площадью 63 тыс. га — Арнасай. Этот заказник позднее был преобразован в Арнасайский государственный орнитологический заказник, который служит для регулирования численности местных и миграционных птиц.

Государственный орнитологический заказник создан с целью развития птицеводства (местных и миграционных видов), звероводства и рыбного хозяйства. На его территории встречаются солончаки, болота и лёссовые равнины. Озеро Тузкан также входит в состав заказника. На лёссовой равнинной части заповедника произрастают типичные для пустыни эфемеры, тюльпаны, осока, ковыль и другие растения. Тугайные заросли в основном состоят из камышей и кустарников, где обитают ондатра, дикие кабаны, волки, барсуки, тугайные кошки и другие животные. В акватории зимой и весной собираются утки, гуси, лебеди, крохали, фазаны и другие виды птиц. Кроме того, здесь разводятся рыбы — сазан, сом, усач, белый амур, краснопёрка и другие. В 1987 году Арнасайский заказник был преобразован в орнитологический заказник. Основной задачей Арнасайского заказника является изучение и охрана птиц, обитающих в пустыне и на искусственно образованной акватории.

Нурата-Кызылкумский биосферный резерват. Создаваемый Нурата-Кызылкумский биосферный резерват является вторым биосферным резерватом в странах Центральной Азии (после Киргизии), поддерживаемым международным сообществом и соответствующим современным международным требованиям и стандартам. Этот биосферный резерват расположен на стыке Джизакской, Самаркандской и Навоийской областей нашей страны. Данный регион находится в переходной зоне между горными системами Средней Азии — бассейнами рек Зарафшан и Сырдарья — и равнинными пустынями. Он охватывает южную часть одной из крупнейших пустынь планеты — пустыни Кызылкум, а также озёра Айдаркуль и Тузкан и северо-западные отроги Памиро-Алайской горной системы — хребты Нурата и Койташ.

Этот регион уникален не только своими природными ландшафтами, но и богатой флорой и фауной. Например, именно здесь находится единственное в мире место обитания эндемического подвида архара, занесённого в Международную Красную книгу — сева́рсового горного барана (Ovis ammon severtzovi). На данной территории расположено более ста историко-археологических памятников. Следует также отметить, что в этой зоне существуют два отдельных охраняемых природных участка. В 1975 году здесь был создан Нурата́нский государственный горно-ореховый заповедник, площадь которого составляла 40 тысяч гектаров. Он был организован с целью сохранения уникальных ландшафтов (экосистем), растительного и животного мира Нурата́нского горного хребта, а прежде всего — эндемического подвида архара, сева́рсового горного барана.

Ранее на этом месте существовал Арнасайский заповедник, который в 1987 году был реорганизован и преобразован в Арнасайский государственный орнитологический заказник. С целью сохранения редких, гнездящихся и водоплавающих птиц Арнасайским орнитологическим заказником была создана вторая охраняемая природная территория. Однако наличие двух охраняемых природных зон не решило проблему сохранения

биологического разнообразия. Напротив, в последние десятилетия ситуация значительно обострилась. Основными угрозами являются хозяйственная деятельность человека, бесконтрольный выпас скота, вырубка деревьев и кустарников на дрова и другие факторы, которые приводят к негативным последствиям для окружающей среды. Всё это ухудшает условия жизни населения и в конечном итоге способствует обострению социально-экономических и экологических проблем, особенно в горных районах. Создание биосферной территории направлено на сохранение биологического разнообразия, восстановление природных ресурсов и обеспечение их устойчивого использования. Применение новых методов землепользования должно способствовать улучшению условий жизни местного населения.

Идея создания Нурата́нского биологического резервата была предложена в 1992 году во время экспедиции группы членов Союза охраны природы Германии и экологов, посетивших Нурата́нский горный хребет. В ходе экспедиции биологи и географы пришли к выводу о необходимости создания в этом регионе биосферного резервата, соответствующего международным стандартам. Согласно проекту, с 2000 года предусматривалась постоянная поддержка со стороны Программы развития ООН и Глобального экологического фонда. С 2001 года Глобальный экологический фонд, Программа развития ООН и Правительство Республики Узбекистан приступили к реализации проекта по созданию Нурата́-Кызылкумского биологического резервата в качестве модели сохранения биологического разнообразия в Узбекистане. Нурата́-Кызылкумский биологический резерват — это новое для нас понятие. Его создание направлено на обеспечение устойчивого развития всей территории резервата, сохранение природных комплексов, экосистем и культурного наследия. В структуре резервата предусмотрено три зоны: заповедная, буферная и зона устойчивого развития. На территории биосферного резервата выделяются три заповедные зоны (горная, пустынная и водная) и пять охраняемых зон (две горные, две пустынные и одна озёрная).

Площадь биосферного резервата составляет 1,08 млн гектаров, из них 57 100 гектаров приходится на заповедную зону и 166 524 гектара — на охранную зону. Водная поверхность занимает около 18 % общей территории. Это позволяет сохранять биологическое разнообразие, экосистемы, ландшафты, а также исторические и культурные памятники, имеющие всемирное значение. В первую очередь, это способствует снижению негативного антропогенного воздействия на природную среду, замедлению процессов опустынивания, восстановлению разрушенных, деградировавших экосистем.

Нурата́-Кызылкумская биосферная территория может служить ориентиром для местных и республиканских планировочных организаций в реализации более эффективных методов охраны и рационального использования природных ресурсов. В конечном итоге, на национальном и

региональном уровнях она демонстрирует современные пути сохранения биологического разнообразия и устойчивого развития.

– Полный запрет на использование охраняемой территории, ограничение её использования в научных и туристических целях, восстановление (воспроизводство) природных ресурсов, а также охрана объектов, имеющих просветительское и мемориальное (памятное) значение.

– Определение степени сложности охраняемых объектов;

– Обеспечение соблюдения установленных и ограниченных режимов охраны.

Вывод.

В последние годы всё больше обостряются отношения между обществом и природой, что приводит к заметным изменениям в структуре ландшафтов. Это, в свою очередь, влияет на изменение их первоначального облика и способствует формированию антропогенных ландшафтов. С целью сохранения ландшафтов в их первоначальном виде, а также для защиты растительного и животного мира от изменений, целесообразно выделять особо охраняемые природные территории. Для решения этих задач на государственном уровне были созданы национальные парки, заповедники, заказники и резерваты. Международное сообщество также уделило большое внимание данной проблеме: начиная с 1970-х годов, было организовано 1204 заповедника и более 20 тысяч особо охраняемых природных территорий. В нашей республике также созданы 2 национальных парка, более 10 заповедников и заказников, для которых определены функции и направления деятельности.

В 1975 году в социальной части нашей республики — в Нурата́нских горах и прилегающих районах — был основан Нурата́нский горно-ореховый заповедник. Целью заповедника является охрана видов растений и животных, занесённых в Международную и Узбекскую «Красные книги». В настоящее время он продолжает активно функционировать. На северных склонах Нурата́нского хребта, в районах Айдар, Тузкан и Арнасай, в результате притока вод из бассейна Сырдарьи через Чардаринское водохранилище и коллекторно-дренажных вод Мирзачуля в 1969 году образовалось озеро Арнасай длиной 160 км и шириной до 30 км. В этом регионе был создан Арнасайский государственный орнитологический заказник, основная задача которого — охрана и разведение местных и перелётных птиц, а также развитие рыбного хозяйства. В заключение можно сказать, что особо охраняемые природные территории, созданные на северных склонах Нурата́нских гор и в их окрестностях, направлены на сохранение ландшафтов, а также на защиту и увеличение численности редких видов растений и животных, обеспечивая их сохранность для будущих поколений в их естественном виде.

Основываясь на результатах и выводах наших научных исследований, мы считаем целесообразным в будущем использовать эти территории для развития экотуризма. Сохранение ландшафтов в их естественном виде

способствует не только обеспечению биологического разнообразия, но и поддержанию экологической устойчивости. Развитие экотуризма в данном регионе имеет не только экологическое, но и социально-экономическое значение: оно способствует занятости населения, развитию туризма, организации краткосрочного отдыха для местных жителей, что в целом положительно влияет на уровень жизни и социальную стабильность.

Развитие всей инфраструктуры экотуризма создаёт возможности для привлечения иностранных туристов, что, в свою очередь, вносит значительный вклад в развитие экономики страны, увеличивая приток иностранной валюты. Это станет экономической основой для дальнейшего развития данной отрасли. Одновременно с развитием экотуризма необходимо усилить внимание к охране окружающей среды, поскольку именно экологическая устойчивость является залогом успешного и долгосрочного развития экотуризма.

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ВЛИЯНИЕ ИНФОРМАЦИОННЫХ ТЕХНОЛОГИЙ НА ЭКОНОМИЧЕСКОЕ РАЗВИТИЕ: ПРАКТИЧЕСКИЕ ИССЛЕДОВАНИЯ, СТРАТЕГИЧЕСКИЕ ПОДХОДЫ И ТЕНДЕНЦИИ РАЗВИТИЯ

Аннотация. *В статье представлен глубокий анализ роли и значения современных информационно-коммуникационных технологий (ИКТ) в экономике. В частности, на основе тематических исследований и статистических данных показан вклад современных технологий, таких как цифровая трансформация, искусственный интеллект, большие данные и облачные вычисления, в экономический рост, эффективность бизнеса и цифровую инклюзивность общества. Особое внимание уделено успешному опыту Узбекистана в сфере информационных технологий и проанализировано положительное и отрицательное влияние этих технологий на международном уровне.*

Ключевые слова: *информационные технологии, цифровая экономика, цифровая трансформация, искусственный интеллект, большие данные, цифровая инклюзивность, экономический рост.*

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THE IMPACT OF INFORMATION TECHNOLOGY ON ECONOMIC DEVELOPMENT: PRACTICAL RESEARCH, STRATEGIC APPROACHES, AND DEVELOPMENT TRENDS

Abstract. *This article provides an in-depth analysis of the role and significance of modern information and communication technologies (ICT) in the economy. The paper specifically highlights the contributions of digital transformation, artificial intelligence, big data, and cloud computing technologies to economic growth, business efficiency, and digital inclusion in society, based on practical research and statistical data. Special attention is given to Uzbekistan's successful experiences in the field of information technologies, and the positive and negative impacts of these technologies on a global scale are analyzed.*

Keywords: *information technology, digital economy, digital transformation, artificial intelligence, Big Data, digital inclusion, economic growth.*

Введение.

Современные информационные технологии (ИТ) за последние десятилетия произвели революцию не только в технической инфраструктуре, но и в экономической и социальной сферах. Распространяя цифровые технологии в различных секторах экономики, особенно в промышленности, финансах, торговле, образовании и здравоохранении, страны и компании повышают эффективность и конкурентоспособность своих экономических систем. Цифровая трансформация — это термин, который относится не только к техническим инновациям, но и к экономическим, социальным и политическим изменениям. [1]

Основные темы, подробно рассмотренные в статье:

1. Важная роль информационных технологий для экономического роста и эффективности бизнеса.

2. Роль в цифровой инклюзии и сокращении экономического неравенства.

3. Оптимизация принятия решений с помощью искусственного интеллекта и больших данных.

4. Цифровая трансформация Узбекистана и ее экономическое влияние.

2. Влияние информационных технологий на экономику

2.1. Информационные технологии и экономический рост

Согласно изученным данным, внедрение ИТ-технологий оказывает значительное влияние на экономический рост стран. Например, исследование McKinsey Global Institute, проведенное в 2022 году, показало, что цифровая трансформация способствовала росту мировой экономики на 10%. Благодаря этому процессу эффективность производства выросла на 25–30% и были созданы новые рабочие места.[2]

Реальный пример:

Amazon расширила свой бизнес по всему миру благодаря искусственному интеллекту и аналитике больших данных, став лидером мирового рынка электронной коммерции с объёмом продаж в 200 миллиардов долларов к концу 2023 года. Ключ к этому успеху — упрощение процесса покупки с помощью цифровых систем и создание гибких возможностей обслуживания клиентов.

2.2. Большие данные и искусственный интеллект

Технологии больших данных и искусственного интеллекта (ИИ) фундаментально меняют бизнес и экономическую деятельность. Например, согласно исследованию IBM, компании, использующие ИИ, смогли сократить свои операционные расходы в среднем на 20%. Технологии ИИ также позволяют компаниям заранее понимать потребности клиентов и предлагать персонализированные услуги и продукты.[4]

Влияние искусственного интеллекта на бизнес:

• Tesla создала возможность управления своими автомобилями на основе искусственного интеллекта, что не только повысило качество продукции, но и позволило ускорить производство автомобилей.

• Такие компании, как Google и Facebook, широко используют технологии искусственного интеллекта для анализа поведения пользователей путем сбора больших данных.

3. Влияние цифровой трансформации на общество: чёткий практический подход

3.1. Цифровая инклюзия: социальное воздействие технологий

Цифровая инклюзия подразумевает не только внедрение технологий, но и процесс предоставления цифровых услуг всем слоям общества, особенно малообеспеченным. В Узбекистане в рамках реализации стратегии «Цифровой Узбекистан – 2030» государство разработало чёткие практические подходы, направленные на усиление цифровой инклюзии. Примерами этого являются следующие меры:[3]

• Расширение доступа к мобильной связи и интернету: в 2020 году уровень охвата цифровыми услугами в Узбекистане достиг 70%, что значительно расширило доступ узбекистанцев к цифровым услугам. В

результате к 2023 году более 80% населения будут активно пользоваться интернетом.

• Цифровизация услуг: в целях стимулирования различных слоёв населения к использованию цифровых услуг большое внимание уделялось цифровизации государственных услуг. Например, был запущен портал my.gov.uz, через который граждане смогли получить более 100 государственных услуг в режиме онлайн.

3.2. Развитие цифровой системы образования

Цифровая трансформация также нашла свое место в системе образования. Например, процессы цифровизации системы образования Узбекистана реализуются следующим образом:

• Цифровизация образовательных материалов и платформ: В Узбекистане созданы онлайн-образовательные платформы для студентов. Благодаря программе «Умное образование», реализуемой Министерством образования и инноваций Узбекистана, более 1,5 миллиона студентов и преподавателей используют онлайн-образовательные ресурсы.

• Цифровые классы и платформы: Существует возможность предоставлять студентам качественное цифровое образование через платформы, созданные в сфере EdTech. Например, образовательные ресурсы предоставляются совместно с узбекскими образовательными учреждениями на международных платформах, таких как Coursera и edX. Это, в свою очередь, способствует повышению качества образования.[5]

3.3. Практическое применение искусственного интеллекта и больших данных (Big Data) в экономике

Технологии искусственного интеллекта (ИИ) и больших данных (Big Data) внедряются в различные секторы экономики. Их практическое применение оказывает существенное влияние не только на оптимизацию операционных процессов, но и на экономическое и социальное развитие.

Практические примеры:

Мониторинг здоровья населения:

1.Телемедицина:

• В системе здравоохранения Узбекистана внедряются системы медицинского мониторинга с использованием технологий искусственного интеллекта и больших данных. В 2023 году будет запущена новая телемедицинская платформа, где состояние здоровья населения будет отслеживаться в режиме реального времени и анализироваться квалифицированными медицинскими специалистами.

• Анализ больших данных: Благодаря новой системе, созданной совместно с Министерством здравоохранения Узбекистана и IT-парком Узбекистана, анализируются большие объемы медицинских данных для профилактики заболеваний и улучшения здоровья населения.

2. Финансовые технологии:

• Цифровые банковские услуги: Один из ведущих банков Узбекистана, Anorbank, после полного перехода на цифровые системы создал

возможность для своих клиентов совершать быстрые и безопасные платежи. Благодаря искусственному интеллекту банковская система преуспела в выявлении ошибок и оптимизации принятия решений. К концу 2024 года операционные расходы банка сократились на 35%.

• Мобильные платежи: Мобильные платежные приложения, такие как Payme и Click, интегрирующие технологии больших данных и искусственного интеллекта, значительно упростили и ускорили денежные переводы и платежи. Этот процесс, в свою очередь, способствовал стимулированию экономической активности.

3. Цифровая трансформация в логистике и транспорте:

• Интеллектуальные транспортные системы (ИТС): Узбекистан внедряет системы на основе искусственного интеллекта для цифровизации своей транспортной инфраструктуры. Общественный транспорт и дорожная сеть Ташкента управляются в режиме реального времени с помощью искусственного интеллекта, что повысило эффективность перевозок и обеспечило безопасность дорожного движения.[4]

3.4. Роль цифрового развития в создании рабочих мест

Цифровая трансформация важна для создания новых рабочих мест. ИТ-сектор и цифровые технологии в Узбекистане продолжают расти:

• Количество стартапов, работающих в IT Park Uzbekistan, достигло 200 в 2024 году. Эти стартапы работают в различных секторах, таких как финтех, образовательные технологии, агротехнологии, и создали более 5000 рабочих мест.

• Более 10 000 молодых людей стали квалифицированными специалистами в области цифровых технологий благодаря образовательным курсам и тренингам, организованным в IT Park. Это, в свою очередь, создало резерв квалифицированных кадров для новых компаний.

Заключение

Цифровая трансформация затрагивает все сферы жизни общества, способствуя не только экономическому росту, но и социальной интеграции, а также развитию цифровой экономики. Искусственный интеллект, большие данные и цифровые системы преобразуют рабочие места, повышают экономическую эффективность и предоставляют обществу цифровые услуги.

Цифровая трансформация затрагивает все сферы жизни общества, способствуя не только экономическому росту, но и социальной интеграции, а также развитию цифровой экономики. Искусственный интеллект, большие данные и цифровые системы преобразуют рабочие места, повышают экономическую эффективность и предоставляют обществу цифровые услуги.

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ВЛИЯНИЕ ЦИФРОВИЗАЦИИ ТРАНСПОРТНОЙ ИНФРАСТРУКТУРЫ НА ИНФОРМАЦИОННУЮ БЕЗОПАСНОСТЬ МАЛЫХ И СРЕДНИХ ПРЕДПРИЯТИЙ

Аннотация. *Актуальность исследования продиктована фундаментальным противоречием — с одной стороны, цифровизация транспортной инфраструктуры открывает малым и средним предприятиям доступ к глобальным логистическим цепочкам, а с другой — делает их весьма уязвимым звеном в асимметричной среде киберугроз. Цель в статье — провести анализ этого влияния, систематизировать специфические угрозы, сформулировать практико-ориентированные рекомендации для их смягчения. На основе методов системного и сравнительного анализа, а также классификации, автор приходит к выводу, что традиционные корпоративные модели информационной безопасности нерелевантны для малого и среднего бизнеса. Вместо этого рационален переход к новой парадигме, которая базируется на потреблении защиты как сервиса и формировании поддерживающей отраслевой экосистемы.*

Ключевые слова: *информационная безопасность, кибербезопасность, малые и средние предприятия, транспортная инфраструктура, цифровизация, цепочка поставок*

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THE IMPACT OF TRANSPORT INFRASTRUCTURE DIGITALIZATION ON THE INFORMATION SECURITY OF SMALL AND MEDIUM-SIZED ENTERPRISES

Abstract. *The relevance of this study arises from a fundamental contradiction: on the one hand, the digitalization of transport infrastructure provides small and medium-sized enterprises (SMEs) with access to global*

logistics chains; on the other hand, it renders them a highly vulnerable link in an asymmetric cyberthreat environment. The aim of the article is to analyze this impact, systematize specific threats, and formulate practical recommendations for their mitigation. Using methods of systemic and comparative analysis as well as classification, the author concludes that traditional corporate information security models are largely irrelevant for SMEs. Instead, a shift toward a new paradigm is proposed—one based on the consumption of security as a service and the formation of a supportive sectoral ecosystem.

Keywords: *information security, cybersecurity, small and medium-sized enterprises, transport infrastructure, digitalization, supply chain*

Введение.

Современное экономическое развитие сопровождается процессами повсеместной цифровой трансформации, которые фундаментально изменяют операционные модели, а также конкурентную среду в ключевых отраслях. Транспортный комплекс, будучи системообразующей артерией национальной и мировой экономики, находится в авангарде этих преобразований. Внедрение технологий Интернета вещей (IoT), анализа больших данных (Big Data), искусственного интеллекта (ИИ), digital-платформ в управление транспортной инфраструктурой призвано весомо повысить её эффективность, скорость функционирования. Создание интеллектуальных транспортных систем, переход на электронный документооборот в сочетании с развитием автономных логистических цепочек открывают многообещающие перспективы для оптимизации грузовых и пассажирских перевозок. В описываемом контексте малые и средние предприятия (МСП), которые составляют значительную долю в секторе транспортно-логистических услуг, получают беспрецедентные возможности для роста и интеграции в глобальные цепочки поставок. Между тем, интенсификация цифровизации имплицитно порождает новую, многомерную реальность рисков, сопряжённых с обеспечением информационной безопасности.

Методы исследования.

В ходе подготовки статьи применены системный и сравнительный анализ, контент-оценка научных публикаций, классификация, обработка статистических сводок, обобщение.

Результаты и обсуждение.

По сведением Минэкономразвития, количество малых и средних предприятий (МСП) в России по итогам I квартала 2025 года превысило 6,7 миллиона. Показатель стал рекордным с начала ведения специального

реестра соответствующих субъектов в 2016 году[41]. По данным Минтранса, в 2023-2024 годах на цифровизацию транспорта в РФ выделено 45 млрд руб.[42].

Цифровые преобразования транспортной отрасли сказываются на формировании сложной многоуровневой экосистемы, в которой МСП становятся зависимым звеном. Она включает в себя государственные и коммерческие digital-платформы, системы управления дорожным движением, электронные торговые площадки для фрахта, высокоавтоматизированные транспортные средства, элементы «умной» инфраструктуры[43]. Малые и средние компании интегрируются в данную среду, применяя облачные сервисы в целях управления автопарком, площадки для поиска заказов, системы электронного документооборота, навигационные решения. Подобная интеграция, с одной стороны, сопряжена со снижением операционных издержек и барьеров для входа на рынок, а с другой — переносит риски, связанные с безопасностью централизованной инфраструктуры, на всех её участников[44] (таблица 1).

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Таблица 1
Классификация угроз информационной безопасности для МСП в цифровой транспортной экосистеме (составлено автором)

Тип угрозы	Описание и примеры	Потенциальные последствия для МСП
Инфраструктурные	DDoS-атаки на логистические платформы, взлом систем бронирования, компрометация облачных сервисов управления транспортом	Прямые финансовые убытки из-за простоя, срыв сроков доставки, репутационный ущерб, утрата контроля над операционной деятельностью
Целевые атаки на МСП	Фишинговые рассылки с вредоносными вложениями, действия программ-вымогателей (шифровальщиков), социальная инженерия	Блокировка или уничтожение критически важных данных (базы клиентов, финансовая отчетность), хищение денежных средств, шантаж
Атаки на цепочку поставок	Компрометация IT-поставщика, взлом систем партнера с целью получения доступа к целевой компании, задействование зараженной инфраструктуры МСП для последующих атакующих шагов	Утечка конфиденциальной коммерческой информации и персональных данных, разрыв деловых отношений
Вызовы «умного» транспорта	Вмешательство в работу бортовых систем автомобиля, перехват управления беспилотными средствами, манипуляции с данными датчиков IoT (например, температуры рефрижератора)	Физическое повреждение либо утрата груза, создание аварийных ситуаций, угон транспортных средств, прямая угроза жизни и здоровью

Уязвимость МСП в цифровой транспортной среде обусловлена как внешними угрозами, так и комплексом внутренних факторов, которые отличают их от крупных корпораций (таблица 2). Основной лимитирующей детерминантой служат ограниченные ресурсы[45]. Малый бизнес не может позволить себе содержание штата специалистов по информационной безопасности, внедрение дорогостоящих комплексных систем защиты (SIEM или SOC). Инвестиции в кибербезопасность зачастую воспринимаются в качестве второстепенных расходов, а не как необходимое условие устойчивости бизнеса[46].

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Таблица 2

Сравнительный анализ факторов уязвимости МСП и крупных предприятий в транспортной отрасли

Фактор	Проявление у МСП	Влияние для крупных предприятий
Финансовые ресурсы	Острый дефицит бюджета на закупку средств защиты информации (СЗИ) и оплату услуг экспертов	Наличие выделенных бюджетов, возможность инвестировать в передовые технологии, страхование киберрисков
Кадры	Отсутствие штатных специалистов по ИБ, функции защиты информации выполняются IT-специалистом широкого профиля или не реализуются вовсе	Наличие департаментов ИБ, центров мониторинга, специалистов по анализу угроз и реагированию на инциденты
Уровень компетенций	Низкая осведомленность персонала и руководства об актуальных киберугрозах и методах защиты, игнорирование кибергигиены	Регулярное обучение сотрудников, проведение тренировок по отражению атак, наличие формализованных политик безопасности
Отношения с поставщиками	Критическая зависимость от безопасности внешних цифровых платформ и облачных сервисов без возможности их аудита	Возможность предъявлять требования к безопасности поставщиков, проводить их аудит, разрабатывать собственные программные решения
Гибкость, скорость реакции	Потенциально более быстрая адаптация к новым политикам, но медленное восстановление после инцидента из-за отсутствия планов и резервных копий	Бюрократизированные процессы внедрения, но наличие планов непрерывности бизнеса и аварийного восстановления для смягчения последствий

В целях разрешения проблемы уязвимости МСП в цифровой транспортной среде требуется системный, многоуровневый подход, с учётом которого фокус смещается с попыток построить автономную защиту в каждой компании на формирование доступной экосистемы безопасности. На уровне самих хозяйствующих субъектов предлагается перейти к модели «безопасность как услуга», что позволит получать профессиональную защиту по подписке, дополнив это обязательным внедрением базовой кибергигиены (двухфакторная аутентификация, регулярное резервное копирование данных). На отраслевом и государственном уровнях эти меры рекомендуется подкреплять разработкой адаптированных для малого бизнеса стандартов безопасности, созданием программ субсидирования для снижения финансовых барьеров, законодательным закреплением ответственности операторов digital-платформ за защищенность их инфраструктуры, что в совокупности создаст эластичную и устойчивую к угрозам среду для всех участников рынка.

Заключение.

С помощью проведенного анализа показывается, что цифровизация транспортной инфраструктуры, являясь мощным «драйвером» экономического роста, одновременно формирует асимметричное поле угроз для малых и средних компаний. Интегрируясь в новую digital-реальность, МСП наследуют все её риски, не обладая при этом достаточными ресурсами и компетенциями для их действенного парирования. Их информационная безопасность становится производной от защищенности глобальных платформ, действий поставщиков и т. д., что делает их положение достаточно неустойчивым.

Основной вывод в рамках данного исследования заключается в том, что традиционные подходы к корпоративной кибербезопасности, которые рассчитаны на крупные организации, неприменимы для МСП в транспортной отрасли. Требуется принципиально иная модель, базирующаяся на аутсорсинге функций защиты и создании поддерживающей отраслевой и государственной экосистемы.

Дальнейшие изыскания в данной области предлагается направить на проведение эмпирических оценок экономического ущерба от киберинцидентов для МСП в транспортном секторе России, а также на разработку количественных моделей для оценки эффективности различных мер поддержки и их влияния на конкурентоспособность малого бизнеса.

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БИОТЕХНОЛОГИЧЕСКИЕ АСПЕКТЫ СБРАЖИВАНИЯ ГЛЮКОЗЫ ДРОЖЖАМИ *SACCHAROMYCES CEREVISIAE*

Аннотация: Ферментационные процессы занимают центральное место в современной биотехнологии, обеспечивая получение широкого спектра ценных продуктов, включая органические кислоты, аминокислоты, ферменты, антибиотики, витамины и биоэтанол. В условиях глобального роста потребности в продовольствии, возобновляемых источниках энергии и экологически безопасных технологиях именно микробная ферментация рассматривается как стратегически значимое направление устойчивого развития. Настоящая работа посвящена исследованию закономерностей роста дрожжей Saccharomyces cerevisiae *и динамики образования этанола при сбраживании глюкозы в модельных условиях.*

Полученные результаты подтверждают значимость ферментации как ключевого биотехнологического процесса и подчёркивают её перспективность для решения задач пищевой, фармацевтической и энергетической промышленности.

Ключевые слова: *ферментация, глюкоза, этанол,* Saccharomyces cerevisiae*, рост микроорганизмов, биотехнология, метаболизм, кинетика сбраживания, дрожжи, биоэтанол.*

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BIOTECHNOLOGICAL ASPECTS OF GLUCOSE FERMENTATION BY SACCHAROMYCES CEREVISIAE YEAST

Abstract: *Fermentation processes occupy a central place in modern biotechnology, providing a wide range of valuable products, including organic acids, amino acids, enzymes, antibiotics, vitamins and bioethanol. In the context of global growth in demand for food, renewable energy sources and environmentally friendly technologies, microbial fermentation is considered as a strategically important direction of sustainable development. This work is devoted to the study of the growth patterns of Saccharomyces cerevisiae yeast and the dynamics of ethanol formation during glucose fermentation under model conditions.*

The results obtained confirm the importance of fermentation as a key biotechnological process and emphasize its potential for solving problems of the food, pharmaceutical and energy industries.

Keywords: *fermentation, glucose, ethanol, Saccharomyces cerevisiae, microbial growth, biotechnology, metabolism, fermentation kinetics, yeast, bioethanol.*

Введение:

На протяжении тысячелетий ферментация служила основой для создания продуктов питания и напитков, а также для их долгосрочного хранения. Однако в последние десятилетия ее значение значительно расширилось, выйдя за рамки пищевой промышленности. Ферментационные технологии стали неотъемлемой частью современной биотехнологии, играя ключевую роль в решении глобальных вызовов. Развитие фармацевтики, растущий спрос на возобновляемые источники энергии и стремление к минимизации отходов требуют разработки новых, более эффективных и устойчивых биопроцессов.

Современная биотехнология рассматривает ферментацию как универсальный инструмент получения широкого спектра ценных продуктов – от органических кислот, аминокислот и ферментов до антибиотиков, витаминов, биополимеров и этанола. Использование микроорганизмов в качестве биокатализаторов позволяет достигать высокой специфичности реакций, снижать энергетические затраты и минимизировать экологическую нагрузку, что делает данный процесс более конкурентоспособным по сравнению с химическим синтезом. Особое значение приобретает разработка технологий глубокой переработки сельскохозяйственного сырья и промышленных отходов, что соответствует принципам «зелёной экономики» и циркулярного производства.

Актуальность исследования ферментационных процессов усиливается и в контексте глобальных вызовов, связанных с изменением климата, ростом численности населения и необходимостью обеспечения продовольственной безопасности. Согласно прогнозам Продовольственной и сельскохозяйственной организации ООН (FAO), к 2050 году мировое

производство продуктов питания должно увеличиться более чем на 60 %, что невозможно без широкого применения биотехнологических решений, в том числе оптимизации микробных процессов ферментации. Кроме того, растущее внимание к функциональным продуктам питания и пробиотикам усиливает интерес к штаммам молочнокислых бактерий и дрожжей как к перспективным объектам для создания инновационной продукции.

Таким образом, изучение динамики ферментационных процессов, разработка новых штаммов-продуцентов и внедрение современных методов контроля и автоматизации являются стратегически важными направлениями развития биотехнологии. Данное исследование направлено на анализ закономерностей роста микроорганизмов, особенностей накопления целевых метаболитов и перспектив промышленного применения ферментации в условиях современного технологического уклада.

Материалы и методы

Чтобы проверить теоретические основы и изучить, как сейчас развиваются процессы ферментации, мы провели эксперименты. В них мы использовали микроорганизмы, производящие молочную кислоту и этанол. Для получения молочной кислоты мы взяли штамм *Lactobacillus plantarum*, который часто используется в пищевой промышленности. Для производства этанола мы выбрали классические дрожжи *Saccharomyces cerevisiae*.

Ферментацию проводили в лабораторных условиях в колбах и мини-биореакторах объёмом 2 литра. Для молочнокислого процесса в качестве питательной среды использовался глюкозо-дрожжевой экстракт с концентрацией сахара 20 г/л, для этанольной ферментации – раствор глюкозы в концентрации 100 г/л. Температура культивирования поддерживалась в пределах 30 °C, pH регулировался в диапазоне 6,0–6,2. Время ферментации составляло до 72 часов для молочнокислых бактерий и до 96 часов для дрожжевых культур.

Контроль роста микроорганизмов осуществлялся методом спектрофотометрии при длине волны 600 нм, что позволяло отслеживать увеличение биомассы. Количество остаточных сахаров определялось с использованием высокоэффективной жидкостной хроматографии, концентрация органических кислот – титриметрически, а содержание этанола – методом газовой хроматографии. Все измерения проводились в трёх повторностях для повышения достоверности результатов.

Особое внимание уделялось сравнению кинетики роста и выхода метаболитов в разных системах ферментации. Для этого часть экспериментов выполнялась в условиях периодического культивирования, а другая часть – в режиме непрерывной ферментации с постоянным поступлением питательной среды. Это позволило сопоставить эффективность традиционных и более современных технологических подходов.

Результаты и обсуждение

Проведённые исследования подтвердили, что динамика роста микроорганизмов и образование метаболитов имеют характерные закономерности, хорошо описываемые логистическими моделями. В случае молочнокислой ферментации *Lactobacillus plantarum* в течение первых 10–12 часов наблюдалась лаг-фаза, связанная с адаптацией культуры к условиям среды. Далее наступала экспоненциальная фаза активного размножения, в ходе которой оптическая плотность клеточной суспензии возрастала более чем в десять раз. Параллельно с этим происходило интенсивное накопление молочной кислоты: её концентрация достигала максимума к 48–60 часам, превышая 10 г/л, после чего процесс замедлялся из-за снижения доступности субстрата и подкисления среды.

В этанольной ферментации дрожжей *Saccharomyces cerevisiae* кинетика была несколько иной. Рост клеточной биомассы сопровождался активным потреблением сахара и накоплением этанола. Уже к 48 часу ферментации концентрация этанола достигала 45–50 г/л, а к 96 часу – около 70 г/л при практически полном расходовании сахара. При этом наблюдалось закономерное торможение роста дрожжей на поздних стадиях из-за токсического действия этанола, что является одним из основных ограничений в промышленном производстве.

Интересные результаты были получены при сравнении периодической и непрерывной систем ферментации. В условиях периодического культивирования выход целевого продукта зависел от начальной концентрации субстрата и значительно снижался по мере его исчерпания. В то же время непрерывная система позволяла поддерживать стабильное поступление сахаров и удаление продуктов метаболизма, что обеспечивало более высокий общий выход. Для молочнокислой ферментации это выразилось в увеличении продукции кислоты на 15–20%, а для этанольной ферментации – в повышении концентрации этанола на 10–12% по сравнению с классическим периодическим процессом.

Полученные данные подтверждают, что переход к современным управляемым технологиям ферментации даёт возможность существенно повысить эффективность производства. Особенно перспективным представляется использование автоматизированных биореакторов, оснащённых датчиками для контроля pH, температуры, концентрации кислорода и других параметров в реальном времени. Такие системы позволяют не только стабилизировать процесс, но и адаптировать его под конкретные цели, например, синтез вторичных метаболитов с высокой фармацевтической ценностью.

В более широком контексте результаты исследования отражают общие тенденции развития биотехнологии. На примере молочнокислых и этанольных процессов можно увидеть, что ферментация перестаёт быть лишь методом получения традиционных продуктов. Она становится платформой для производства биотоплива, экологически чистых химических

соединений, функциональных продуктов питания и медицинских препаратов. Современные научные публикации подчёркивают значимость интеграции методов генной инженерии, позволяющей создавать штаммы-продуценты с повышенной продуктивностью и устойчивостью к стрессовым факторам. Одновременно с этим активно внедряются цифровые технологии, включая математическое моделирование и элементы искусственного интеллекта, что обеспечивает переход к концепции «умных» биореакторов и промышленной биотехнологии нового поколения.

Таким образом, даже на примере лабораторных модельных экспериментов можно проследить закономерности, которые имеют прямое отношение к промышленным процессам. Ферментация остаётся одним из наиболее универсальных и гибких инструментов биотехнологии, а совершенствование её методов позволяет решать как локальные задачи отдельных отраслей, так и глобальные вызовы современности, включая продовольственную безопасность, энергетику и охрану окружающей среды.

ЗАКЛЮЧЕНИЕ

Ферментация на протяжении всей истории человечества оставалась ключевым биотехнологическим процессом, однако в XXI веке её значение выходит за рамки традиционного производства продуктов питания и напитков. Сегодня она рассматривается как универсальная платформа для решения целого комплекса глобальных задач. Получение органических кислот, аминокислот, ферментов, антибиотиков, этанола и других метаболитов через микробные процессы становится не только экономически выгодным, но и экологически обоснованным подходом. Это обусловлено использованием возобновляемого сырья, снижением энергетических затрат и уменьшением негативного воздействия на окружающую среду.

Результаты модельных исследований подтвердили классические закономерности роста микроорганизмов и показали преимущества современных технологических подходов. Сравнение периодической и непрерывной ферментации выявило значительные различия в эффективности процессов: при переходе к непрерывным системам удаётся повысить общий выход целевых метаболитов, стабилизировать производство и снизить влияние побочных факторов. Эти данные демонстрируют необходимость дальнейшего внедрения автоматизированных биореакторов и систем контроля, которые позволяют управлять процессами в режиме реального времени.

Таким образом, проведённый анализ показывает, что ферментация сохраняет за собой статус фундаментального процесса современной биотехнологии. Её универсальность и высокая степень адаптивности к различным видам сырья и целям производства обеспечивают устойчивый рост интереса как со стороны научного сообщества, так и со стороны промышленности.

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ЗНАЧЕНИЕ ГИС ТЕХНОЛОГИЙ ПРИ ОЦЕНКЕ ПРИРОДНО-МЕЛИОРАТИВНОГО СОСТОЯНИЯ ОРОШАЕМЫХ ЗЕМЕЛЬ

Аннотация: *Целью исследований является оценка природно-мелиоративного состояния орошаемых земель, которая отражает вид и интенсивность снижения плодородия почв, связанного с нарушением их гидрохимического режима при ирригационном освоении. Совершенствование оценки осуществлялось на основе балансово-аналитического и статистического методов, прошедших апробацию на Республике Каракалпакстан. При этом учитывались полученные авторами закономерности пространственного варьирования засоления почв, глубины и минерализации грунтовых вод. Обоснован новый научный подход к оценки мелиоративного состояния орошаемых земель по глубине залегания и минерализации грунтовых вод, являющимся индикаторами проявления процессов засоления и переувлажнения почв.*

Ключевые слова: *мониторинг, орошаемые земли, уровень грунтовых вод, минерализация, засоление, переувлажнение, варьирование, плодородие.*

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THE IMPORTANCE OF GIS TECHNOLOGIES IN ASSESSING THE NATURAL-RECLAMATION STATE OF IRRIGATED LANDS

Abstract: *The purpose of the research is to assess the natural and reclamation state of irrigated lands, which reflects the type and intensity of soil fertility decline associated with the violation of their hydrochemical regime during irrigation development. Improvement of the assessment was carried out on the basis of balance-analytical and statistical methods that have been tested in the Republic of Karakalpakstan. At the same time, the patterns of spatial variation of soil salinity, depth, and mineralization of groundwater obtained by the authors were taken into account. A new scientific approach to assessing the ameliorative state of irrigated lands is substantiated by the depth of occurrence and mineralization of groundwater, which are indicators of the manifestation of salinization and waterlogging of soils.*

Key words: *monitoring, irrigated lands, groundwater level, mineralization, salinization, waterlogging, variation, fertility.*

Введение.

Совершенствование форм и методов управления экономикой, и в частности земельными ресурсами, невозможно без развития информационного обеспечения. Обязательными элементами системы управления земельными ресурсами являются кадастр и мониторинг земель, оперирующие большими объемами разноплановой информации. Самостоятельной подсистемой мониторинга земель является мониторинг состояния орошаемых земель. Его информация необходима для своевременного выявления и качественной оценки процессов, связанных с нарушением гидрохимического режима в зонах ирригационного освоения. В первую очередь это процессы вторичного засоления и переувлажнения, подтопления и осланцевания. Наличие этих процессов должно найти отражение в разработке мероприятий по их предупреждению, а также в корректировке параметров продуктивности земель для технико-экономического обоснования проектов и экономической оценки орошаемых земель путем введения понижающих коэффициентов.

Основополагающим этапом создания системы мониторинга, как и любой информационной системы, является обоснование требований к содержанию и качеству информации. Именно они определяют в конечном итоге необходимые затраты на ведение мониторинга и его эффективность.

Чтобы понять ценность ирригации для народов Узбекистана, необходимо еще раз рассмотреть историю освоения воды и земель. Археологические исследования свидетельствуют о том, что древнее кочевое орошение вдоль русла реки и лиманное в дельтах Амударьи и Сырдарьи зародило современную ирригационную практику на ее первых этапах. На протяжении веков местное население улучшало навыки орошения, отвода воды из рек и применения воды на посевных полях. В Узбекистане народная пословица гласит: «Там, где есть вода, там есть жизнь». Действительно, в тех местах, где есть вода, оазисы процветают, города растут, сельское хозяйство и промышленность развиваются, но там, где нет воды, есть только

бесплодные пустыни. В средние века в оазисах Центральной Азии возникла инженерная практика управления водными ресурсами, которая включала отвод воды из крупных рек со строительством различных водозаборных сооружений, очистку оросительных каналов, распределение воды между водопользователями и т. д. Весь этот процесс регулировался водными профессионалами («мирабами») и в то же время опытными крестьянами («дехканами») – землепользователями, которые занимались земледелием.

В Стратегии по развитию Республики Узбекистан на 2022-2026 годы определены задачи «...улучшение мелиоративного состояния орошаемых земель, принятие системных мер по развитию мелиоративных и ирригационных сетей». В связи с этим, важно разработать систематические карты, отражающие прирордно-мелиоративное состояние орошаемых земель на основе современных методов. Перечисленных выше, является созданием карт природно - мелиоративной оценки состояние орошаемых терри -торий Республики Каракалпакистан, что определяет актуальность темы.

Основная часть.

Понятие «мелиоративное состояние земель» было введено с целью оценки степени пригодности орошаемых и осушенных земель для сельскохозяйственного использования [1, 2]. Под мелиоративным состоянием орошаемых земель (МСОЗ) понимается состояние системы «почва – породы зоны аэрации – подземные воды», сформировавшееся под влиянием природных условий и хозяйственных факторов. Основанием для выделения диагностического показателя МСОЗ служит возможность измерения его изменения под влиянием орошения и мелиоративных мероприятий при наличии достоверной связи его с урожайностью сельскохозяйственных культур [1, 3].

Характеристика МСОЗ отнесена к составу информации государственной статистической отчетности [3], в которой оно оценивается тремя категориями состояния: хорошее, удовлетворительное, неудовлетворительное. При удовлетворительном и неудовлетворительном состоянии выделяются подкатегории, характеризующие причины мелиоративного неблагополучия: глубина залегания грунтовых вод, засоление почв, солонцеватость (комплексность) почвенного покрова. Предлагалась и четвертая категория [3] – хорошее или удовлетворительное с угрозой ухудшения, не получившая законодательного оформления. «Временным методическим пособием …» [2,3] вводятся инженерно-геологические показатели МСОЗ (просадка, суффозия, карстовые явления, оползни, водная эрозия) и показатели техногенного загрязнения почв и водоисточников (содержание тяжелых металлов, пестицидов, радионуклидов).

Категория земель с хорошим мелиоративным состоянием выделяется при отсутствии признаков снижения плодородия почв, связанных с нарушением водно-воздушного и солевого режимов, осолонцевания корнеобитаемого слоя почв. В категорию удовлетворительного состояния

попадают земли со слабой степенью засоления и осолонцевания, при наличии в почвенном покрове от 10 до 25 % солонцов, при залегании уровня грунтовых вод (УГВ) в интервале допустимых глубин. Методической базой определения интервала допустимых глубин служило выявление на основе режимных наблюдений и математического моделирования связи солевого режима почв с глубиной и минерализацией грунтовых вод [3].

В «Методических рекомендациях по контролю состояния орошаемых черноземов» [5] в рамках МСОЗ предлагается выделение отдельной подсистемы в виде почвенного мониторинга орошаемых земель, объектами которого становятся участки стационарных наблюдений (УСН). В перечень контролируемых на УСН входят 35 показателей, отражающих строение почвенного профиля, физические и водно-физические свойства, химический состав и физико-химические свойства, биопродуктивность и биоактивность.

В оценке состояния орошаемых земель особую значимость также имеют глубины залегания и минерализации грунтовых вод, так как они являются основными индикационными показателями проявления вторичного засоления и переувлажнения. На основе этих индикационных показателей при плотности режимной сети порядка одной скважины на 100 га, как показали исследования, можно получить такую же по точности оценку проявления вторичного засоления, какую дают солевые съемки масштаба 1:10000. Кроме того, только по режиму залегания грунтовых вод можно судить об интенсивности переувлажнения орошаемых земель [4-5]. Однако результаты представления мониторинговых наблюдений на орошаемых землях в виде принятых категорий оценки мелиоративного состояния не могут быть использованы в системе агроэколого-экономической оценки сельскохозяйственных угодий. Необходимо изменить как содержание, так и форму представления этой информации.

Целью исследований являлась разработка шкалы оценки мелиоративного состояния орошаемых земель, которая отражает вид и интенсивность снижения плодородия почв, связанного с нарушением их гидрохимического режима при ирригационном освоении.

«Мелиоративный мониторинг с использованием аэрокосмических и беспилотных летательных аппаратов», исследуя современное эколого-мелиоративное состояние орошаемых земель сельскохозяйственного назначения, был произведен мониторинг изменений орошаемых земель Республики Каракалпакстан в разные периоды и мониторинг оросительных систем (табл.1).

Таблица 1.
Степень засоленности орошаемых земель Республики Каракалпакстан (1988-2019 гг.)

Год	Площадь контроля, тыс. га	Степень засоленности почв на орошаемых землях							
		незасоленные		низкая		средняя		высокая	
		га	%	га	%	га	%	га	%
1988	406,6	40,02	9,8	193,2	47,5	150,11	35,9	23,31	5,7
2002	502,8	60,2	16,9	177,7	36,5	162,6	36,8	32,3	7,9
2019	508,5	124,0	24,0	152,0	29,9	187,1	37,0	45,40	9,0

На основе дистанционных съемок проводился аэрокосмический мониторинг орошаемых земель и оросительных сетей в Республике Каракалпакстан в 2005, 2010, 2015 и 2017 годах. В результате мониторинга было установлено, что площади орошаемых земель росли на протяжении многих лет, а рабочее состояние оросительных сетей ухудшалось (рис. 1). На основании данных мониторинга, полученных в Республике Каракалпакстан в 2017 году, площади орошаемых земель 420958,1 тыс. га (91,4%), были засолены в разной степени. Из них 31,0% являются слабозасоленными, 30,3% - умеренно засоленными, 15,0% - сильнозасоленными и 15,1% - очень сильнозасоленными [4].

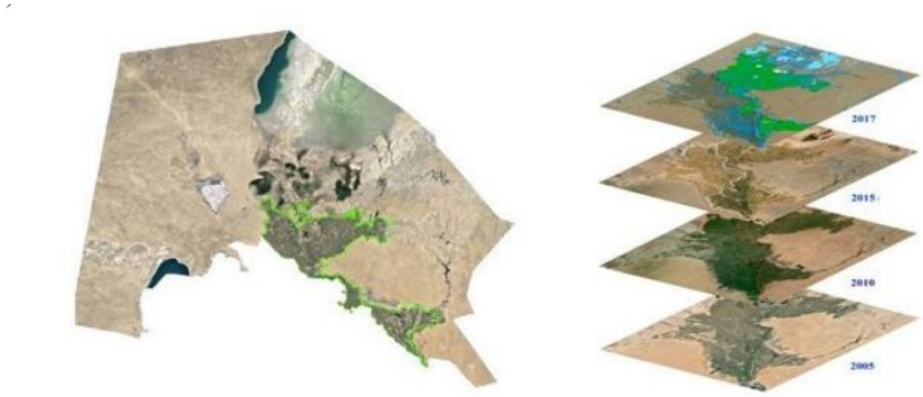


Рис. 1. Аэрокосмический мониторинг орошаемых земель и оросительных сетей.

Материалы и методы.

Совершенствование оценки природно- мелиоративного состояния орошаемых земель осуществлялось на основе балансово-аналитического и статистического методов, прошедших апробацию на Республики Каракалпакстан. При этом учитывались полученные учёными закономерности пространственного варьирования засоления почв, глубины и минерализации грунтовых вод [3].

В более четком определении, по нашему мнению, нуждается само понятие «мелиоративное состояние орошаемых земель (МСОЗ)», которое конкретизирует содержание и способ получения данного информационного

ресурса. Нами предлагается следующая формулировка понятия: «МСОЗ – это характеристика состояния плодородия почвы на орошаемых землях и почвенных процессов, обусловленных изменением гидрохимического режима почв (переувлажнением, засолением, осолонцеванием) при ирригационном освоении, выявление которых обеспечивается мониторингом глубины залегания и минерализации грунтовых вод, качества оросительной воды и состояния почвы». Именно режимные наблюдения, как основной вид производственной деятельности гидрогеолого-мелиоративных партий, и позволяют выявить динамично проявляющиеся процессы в отличие от площадных почвенных обследований с полным набором показателей плодородия почв и нормативной периодичностью 15 лет. Учет же всего комплекса показателей плодородия почв возложен на станции и центры агрохимической службы Минсельхоза Узбекистана, как на исполнителей, ответственных за ведение мониторинга качественного состояния земель сельскохозяйственного назначения . Однако содержание результатов оценки мелиоративного состояния необходимо скорректировать путем изменения диагностической шкалы таким образом, чтобы ее классификационные единицы (категории, классы) соответствовали строго определенным видам и интервалам интенсивности Порядок государственного учета показателей состояния плодородия земель сельскохозяйственного назначения (в табл. 2):

Таблица 2.

Показатели мелиоративного состояния орошаемых земель.

Категория земель	Характер и интенсивность проявления неблагоприятного процесса		Класс земель (индекс)	Понижающий коэффициент на неблагоприятные свойства почв Кп
Хорошая	Отсутствует		0	1,000
Хорошая с угрозой ухудшения	Подъем УГВ		$0^{п}$	1,000
	Полив водой 3–4-го класса		$0^{о}$	1,000
	Опасность проявления инженерно-геологических процессов		$0^{и}$	1,000
Деградирующие почвы	Степень			
	засоления	переувлажнения		
	Нет	Слабая	$П_1$	0,900
		Средняя	$П_2$	0,700
		Сильная	$П_3$	0,300
	Слабая	Нет	$З_1$	0,800
		Слабая	$З_1П_1$	0,720
		Средняя	$З_1П_2$	0,560
		Сильная	$З_1П_3$	0,240
	Средняя	Нет	$З_2$	0,600
		Слабая	$З_2П_1$	0,540
		Средняя	$З_2П_2$	0,420
		Сильная	$З_2П_3$	0,180
	Сильная	Нет	$З_3$	0,400
		Слабая	$З_3П_1$	0,360
		Средняя	$З_3П_2$	0,280
		Сильная	$З_3П_3$	0,120
Примечание – П – переувлажнение, З – засоление.				

Для включения информации о МСОЗ в систему агроэкологоэкономической оценки сельскохозяйственных угодий кроме совершенствования диагностической шкалы необходимо изменить и форму представления информации. Наряду с экспликацией площадей с различными категориями мелиоративного состояния земель в хозяйстве, должна быть и площадная привязка вида и интенсивности деградационного процесса к первичным объектам оценки сельскохозяйственных угодий – почвенным контурам.

Переход на новую систему оценки мелиоративного состояния осложняется и ввиду того, что характеристика МСОЗ отнесена к составу информации государственной статистической отчетности. Переход к новой форме ее представления потребует разработки диагностических шкал на принципах унификации для всех регионов, где ведется мониторинг МСОЗ.

Выводы.

Предлагается следующая формулировка понятия «мелиоративное состояние орошаемых земель», которая конкретизирует содержание и способ получения данного информационного ресурса: «Мелиоративное состояние орошаемых земель Республики Каракалпакстан – это характеристика состояния плодородия почвы на орошаемых землях и почвенных процессов, обусловлен - в реализации Стратегии развития по пяти приоритетным направлениям развития Республики Узбекистан в 2022-2026 годах изменением гидрохимического режима почв (переувлажнением, засолением, осолонцеванием) при ирригационном освоении, выявление которых обеспечивается мониторингом глубины залегания и минерализации грунтовых вод, качества оросительной воды и состояния почвы». На основе унификации подходов к критериям оценки уровня плодородия почв разработана усовершенствованная оценка диагностики мелиоративного состояния орошаемых земель в разрезе основных почвенно-геоморфологических районов Республики Каракалпакстан. Ее классификационные единицы (категории и классы) соответствуют строго определенному виду и интенсивности проявления деградационного процесса и величине понижающего коэффициента к уровню плодородия почв, который может изменяться от 1,0 до 0,12. Для включения информации о мелиоративном состоянии орошаемых земель в систему экономической оценки сельскохозяйственных угодий кроме совершенствования диагностической шкалы необходимо изменить и форму представления информации. Наряду с экспликацией площадей с различными категориями мелиоративного состояния земель в хозяйстве, должна быть и площадная привязка вида и интенсивности деградационного процесса к первичным объектам оценки сельскохозяйственных угодий – почвенным контурам.

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ФАКТОР НАЦИОНАЛЬНОЙ ИДЕОЛОГИИ В ОБЕСПЕЧЕНИИ УСТОЙЧИВОГО РАЗВИТИЯ ОБНОВЛЯЮЩЕГОСЯ УЗБЕКИСТАНА

Аннотация: *В данной статье теоретически и практически анализируется взаимная гармония национальной идеологии и гражданского общества. В ней классифицируются критерии и принципы устойчивого развития идейно-идеологических процессов, раскрывается их роль в формировании и укреплении гражданского общества. Также освещается интегративное воздействие национальной идеологии на сознание и мышление человека, её значение в консолидации общества и укреплении демократических ценностей.*

Ключевые слова: *идея, идеология, мышление, общество, гражданское общество, идеологический плюрализм, национальная идея, национальная идеология, межнациональное согласие, религиозная толерантность.*

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THE ROLE OF NATIONAL IDEOLOGY IN ENSURING SUSTAINABLE DEVELOPMENT IN A RENEWING UZBEKISTAN

Annotation: *This article analyzes the mutual harmony of national ideology and civil society from both theoretical and practical perspectives. It classifies the criteria and principles for the sustainable development of ideological processes and reveals their role in the formation and strengthening of civil society. The integrative impact of national ideology on human consciousness and thinking, its importance in consolidating society and strengthening democratic values are also highlighted.*

Key words: *idea, ideology, thinking, society, civil society, ideological pluralism, national idea, national ideology, ideological and ideological processes, interethnic harmony, religious tolerance.*

В условиях реализации широкомасштабных реформ во всех сферах общественной жизни в нашей стране, избравшей путь демократического развития, особую актуальность приобретает теоретико-методологическое осмысление национальных и общечеловеческих принципов демократии. Чёткое понимание гражданами данных принципов выступает важным фактором социально-политического развития и устойчивой модернизации общества. В этом контексте гражданское общество выполняет ключевую функцию в формировании демократического мировоззрения, воспитании уважения к национально-духовному наследию, развитии в сознании граждан национальной гордости, чувства собственного достоинства и патриотизма.

Стремление Президента Республики Узбекистан Шавката Мирзиёева к внедрению современных инноваций в процесс реализации задач в сфере идеологии является свидетельством особого внимания, уделяемого данной области. Об этом можно судить по следующим словам Президента Ш.Мирзиёева: «Сегодня мы переходим на путь инновационного развития, направленного на коренное обновление всех сфер жизни государства и общества. Это, разумеется, не случайно. Ибо в нынешнюю эпоху стремительного развития кто одерживает победу? Побеждает то государство, которое опирается на новые идеи, новые мысли и инновации» [1, с. 80].

В условиях современных интенсивных идейных и идеологических трансформаций гражданское общество должно служить не только интересам одной или нескольких узких социально-политических групп, включая отдельные нации, но и способствовать развитию и процветанию всех народов. Исходя из вышеизложенных положений, при построении гражданского общества важное значение приобретают исторический опыт народов мира, богатое наследие нашего народа, а также самобытность восточного образа жизни, которые играют ключевую роль в воспитании всесторонне развитых и гармонично сформированных личностей в нашем обществе.

В процессе демократизации общества плюрализм формируется и развивается как система существования различных идей и мнений, отражающих многообразие интересов социальных групп [2]. Идеологический плюрализм, в свою очередь, представляет собой разнообразие идей и идеологий в жизни личности и общества, их функционирование, а также систему удовлетворения социальных и духовных потребностей человека.

В обществе, так же как мнения отличаются своим многообразием, идеи также являются разноплановыми и различаются по своей сущности, целям и социальной направленности, то есть по тому, интересам каких социальных групп они служат. Естественным процессом следует считать и различие между идеей и национальной идеей, а также их несходство. В зависимости от того, чьи цели они выражают, чьим интересам служат и каким направлениям соответствуют, идеи могут приобретать разнообразные формы. Однако многообразие и различие идей и идеологий,

рассматриваемое как естественный процесс, одновременно предполагает наличие у них как схожих и общих сторон, так и совершенно несовпадающих характеристик.

Так же как общество состоит из различных слоёв, направлений и уровней, идеология должна отражать их интересы. Ведь у каждого государства, народа и нации, у всего общества существуют собственные идеи и идеология, выражающие их цели и интересы. Чем разнообразнее прогрессивные идеи и взгляды в стране, то есть чем шире распространён идеологический плюрализм, тем больше возможностей для выбора наиболее эффективного пути развития. Свобода мнений и их многообразие способствуют содержательному обогащению идеологий и их взаимному дополнению.

В ходе реформ в Республике были созданы основы новой демократической политической системы. Эта система строится на основе многообразия политических организаций, идеологий и мнений, что обеспечивает широкое участие граждан в управлении государством и обществом [3]. В процессе построения гражданского общества возрастает уровень политической культуры и активность населения, развивается многообразие взглядов и идей, утверждается идеологический плюрализм.

По инициативе нашего Первого Президента народ поставил перед собой цель перехода от «сильного государства к сильному обществу». Для реализации этой цели возникла необходимость построения в стране гражданского общества, основанного на демократических принципах. Для этого требовалось воспитать всесторонне развитых, гармоничных личностей, способных противостоять агрессии чуждых и навязанных идей. На этом пути не допустить идейно-идеологического вакуума и сформировать идеологию национальной независимости стало требованием времени для обеспечения устойчивого развития страны.

Одной из ключевых задач, стоявших перед обществом, являлось сохранение и преемственная передача будущим поколениям великих национально-духовных ценностей, унаследованных от предков, обладавших собственными идейными и идеологическими воззрениями. Данный процесс был признан неотъемлемым элементом гражданского общества, отражающим его органическую сущность.

Следует подчеркнуть, что формирование национальной идеи и национальной идеологии в нашем обществе, на наш взгляд, опирается на следующие факторы:

Во-первых, на существующие представления и теории о национальной идее, а также на традиции государственности нашей страны, на историко-духовное наследие народа, его богатые ценности, идеи великих мыслителей и ученых прошлого.

Во-вторых, на важные концептуальные идеи и воззрения, сформировавшиеся в годы независимости относительно национальной духовности, отражающие своеобразие идеологического развития

Узбекистана и его специфические характеристики.

В-третьих, ещё одним значимым аспектом формирования национальной идеи в нашем обществе является положение Узбекистана в мировом сообществе и его взаимовыгодные партнерские отношения с другими странами, которые также играют важную роль в данном процессе.

Построение демократического государства и формирование гражданского общества являются объективной необходимостью и высшей целью, представляя собой длительный социально-политический процесс. Как отмечает философ Ш. Тураев: «Наши усилия, направленные на освобождение от наследия тоталитарного режима, лишь начинают приносить плоды, и сегодня, когда использование результатов демократических реформ получает всё более широкий размах, особенно актуальным становится вопрос о дальнейшем совершенствовании деятельности политической системы демократического общества и осуществлении данного процесса не поспешно, а последовательно, поэтапно» [5].

Формирование национальной идеи в нашем обществе не ограничивается какой-либо одной сферой социальной жизни. Особенно важно подчеркнуть, что в данном процессе ключевое место занимает построение гражданского общества, в котором отражаются коренные изменения в социальной и политической жизни, а также особенности нашей национальной духовности, истории, культуры, религии и менталитета.

Важное значение национальной идеи в строительстве гражданского общества заключается в следующем: донести до граждан, особенно до молодёжи, национально-духовные основы нашего народа, то есть исторические формы национальной идеи и идеологии, её своеобразие, содержание и сущность, основные принципы; осмысление роста потребности в национальной идее в условиях современных идеологических атак; осознание необходимости противостояния созидательным и разрушительным идеям, а также усвоение масштабных мер, предпринимаемых нашим государством в данном направлении.

Роль и значение национальной идеи в жизни человека в процессе формирования гражданского общества представляют собой чрезвычайно важную научно-теоретическую и философскую проблему. Человек сам создаёт идеи, получает от них силу и энергию. Созданные им идеи овладевают его сознанием и мировоззрением, мышлением и верой, становясь их носителем. Поэтому национальная идея для нас необходима так же, как воздух и вода.

Вместе с тем важное место в формировании национальной идеи и идеологии занимают семья, махалля, система образования и другие социальные институты. В условиях современных идеологических вызовов особое значение приобретают вопросы идеологических угроз и путей противодействия им, преодоление идеологического вакуума, формирование идеологического иммунитета, а также воспитание у граждан национальной

гордости, самоуважения и чувства патриотизма. В условиях построения гражданского общества это находит отражение и в формировании у граждан уважительного отношения к нашему историческому наследию, духовным ценностям и священной религии.

Узбекистан является многонациональным государством, в котором важное место занимает межнациональное согласие и религиозная толерантность. Несомненно, народы, проживающие в нашей стране, обладают собственным мировоззрением, национальным менталитетом, идейными и религиозными взглядами. Поэтому формируемая нами национальная идея в своём содержании отражает также интересы, стремления, цели и устремления других народов.

В этой связи национальная идея, опирающаяся на ряд принципов, в своей основе выражает идеалы межнационального согласия и межрелигиозной толерантности, что свидетельствует о её характере как народной идеологии гражданского общества, основанной на общечеловеческих ценностях [4].

Таким образом, формируемая нами идея и идеология гражданского общества служит идейному объединению и воспитанию всех граждан нашей страны, независимо от их языка, религии, национальности, расы или социального происхождения.

На наш взгляд, его наиболее важные признаки заключаются в следующем: национальная идеология, прежде всего, должна способствовать осознанию нашей самобытности и священных традиций, охватывать благородные устремления народа, сформировавшиеся на протяжении веков, а также высшие цели и задачи, поставленные перед обществом. В условиях идеологического плюрализма, то есть многообразия взглядов, национальная идеология должна объединять под единым знаменем устремления и надежды различных наций, социальных слоев и групп, независимо от их вероисповедания и мировоззрения, оберегать неприкосновенность нашего народа и государства, направлять страну к самым высоким целям. Национальная идеология должна быть абсолютно свободна от любых агрессивных установок и взглядов, служить прочным фундаментом для завоевания заслуженного уважения в мировом сообществе и на международной арене. Национальная идея, прежде всего, является основой для воспитания подрастающего поколения в духе патриотизма и преданности Родине, формирования в их сердцах качеств, присущих нашим национально-духовным ценностям.

Значение национальной идеи в укреплении независимости неразрывно связано как с перспективами и результативностью нашей внутренней, так и внешней политики. Поэтому нет сомнений в том, что роль национальной идеи чрезвычайно велика в построении свободной и процветающей жизни нашего общества, подобной жизни в развитых демократических странах. Следовательно, важнейшей приоритетной целью, лежащей в основе формирования национальной идеи, остается создание свободного

гражданского общества.

Известно, что в современном мире каждая страна, стремящаяся занять достойное место в международном сообществе, ставит перед собой задачу создания надлежащих условий для жизни своих граждан, а также соблюдения определённых демократических принципов, основанных на общечеловеческих и национальных ценностях.

В заключение следует подчеркнуть, что национальная идея должна рассматриваться как приоритетный духовный фактор для представителей каждой нации, социальной группы, религии, партии или слоя населения, проживающих в нашей стране. Ведь именно она является общей идеей многонационального народа Узбекистана, общества, которое уверенно движется по пути укрепления независимости. Её своеобразие, содержание и сущность, основные принципы, возрастающая потребность в национальной идее в условиях современных идеологических вызовов, необходимость противостояния созидательным и разрушительным идеям, а также масштабные меры, реализуемые нашим государством в данном направлении, становятся всё более очевидными.

Одной из важнейших задач, стоящих перед нашим независимым государством и обществом, является сохранение и передача будущим поколениям великих национально-духовных ценностей, доставшихся нам в наследство от предков, обладавших собственными идеологическими и мировоззренческими взглядами. Несомненно, данная задача признаётся неотъемлемой частью процесса построения гражданского общества.

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СЕМЬЯ И СЕМЕЙНЫЕ ОТНОШЕНИЯ В ПРОИЗВЕДЕНИЯХ СУХБАТА АФЛАТУНИ

Аннотация: *в данной статье рассмотрим, как в разных произведениях Афлатуни (псевдоним Евгения Викторовича Абдуллаева) проявляется тема семьи, каким образом семейные ценности представлены автором, и как они взаимодействуют с культурным, историческим и философским контекстом.*

Ключевые слова: *семья, семейные ценности, поддержка, верность, уважение.*

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FAMILY AND FAMILY RELATIONS IN THE WORKS OF SUHBAT AFLATUNI

Annotation: *In this article, we will consider how the theme of family manifests itself in various works by Aflatuni (pseudonym of Evgeny Viktorovich Abdullaev), how family values are presented by the author, and how they interact with the cultural, historical and philosophical context.*

Key words: *family, family values, support, loyalty, respect.*

Творчество Сухбата Афлатуни представляет собой богатый пласт русскоязычной литературы Узбекистана-Средней Азии, где переплетаются философские, культурные, мифологические и семейно-исторические пласты.

В центре многих его произведений – не просто личность героя, но его связь с родом, местом, временем, историей. Семья, семейные ценности и преемственность поколений выступают как важная сцена и как символическая структура.

В романе «Ташкентский роман» Афлатуни изображает город Ташкент как пространство памяти, перемешивания поколений, культур и стихий. Героиня живёт «в одиночестве, воспитывая сына, мужа нет» — и одновременно её отец хранит память о любви к немке во время войны.

Таким образом семья функционирует не просто как приватная ячейка, но как переплетение поколений, исторического и личного: место, где личная история родится, развивается и передаётся. Семейный дом, родовой корень,

город-дом становятся символами преемственности и устойчивости: через семью герой оказывается связан с «корнями», с историей, с временем. В этом ключе семейные ценности (верность корням, уважение к предкам, принятие ответственности за потомство) читаются как элемент «исторической памяти».

В произведении «Муравьиный царь» Афлатуни предлагает необычный сюжет: женщина — Лена, у которой «идеальное лето, проведённое с семьёй на базе отдыха», которое она пытается реконструировать, чтобы «вернуться к себе настоящей». Здесь семья выступает не только как физиологическая или бытовая единица, но как утраченный идеал и как пространство, в котором герой пытается обрести себя. Прошлое семейного счастья становится мотивом возвращения, реконструкции, смысла. Семейные ценности — поддержка, совместность, память — подвергаются трансформации: героиня должна разобраться, что из этого осталось, что изменилось, и как дальше строить жизнь. Следовательно, семейный институт в творчестве Афлатуни не идеализируется автоматически: он проходит через кризис, перестройку, адаптацию к времени. Это отражает ситуацию перехода: семейные устои не просто хранятся, но перерабатываются в условиях исторических и личностных изменений.

В романе «Поклонение волхвов» семейная линия охватывает большой период – от середины XIX века до наших дней, семейство Триярских. Семья здесь становится родом, историей рода, социально-историческим пластом. Персонажи вынуждены не только решать интимные семейные вопросы, но носить на себе печать исторического времени, ответственности перед потомками. Ценность семьи проявляется как связь поколений, как сила, через которую герой или герои ощущают свою принадлежность, но также — как место, где сталкиваются личная свобода и долг перед родом.

Таким образом семейные ценности уже выходят за пределы узкого бытового: они включают культурную преемственность, родственную память, историческое сознание. Исходя из анализа, можно выделить следующие ключевые семейные ценности, актуальные для творчества Афлатуни: связь между родителями, детьми, внуками; семейный корень как залог идентичности, сохранение памяти о прошлом, уважение к предкам, семейная история, семья как обязательство, не только как личный выбор, но как часть культурного и исторического проекта.

Сам Афлатуни — философ по образованию. Поэтому семейное в его текстах никогда не просто бытовое; оно становится формой экзистенциального вопроса: кто мы, откуда, к чему принадлежим. Семья не только внутрисемейные отношения, но перекликание эпох, культур, городов: Восток и Запад, Средняя Азия и Россия. Это усложняет и расширяет семейную тему.

Семья часто представлена через символы: дом, город, корни, память. Например, в «Ташкентском романе» город становится «археологией» героя. Не всё гладко в семейных отношениях у автора: есть утраты, кризисы,

переосмысления. Семья — не идеал, но пространство, где можно и нужно искать смысл. Семья и семейные ценности в произведениях Сухбата Афлатуни — не просто фон, а ключевой структурный и смысловой компонент. Через призму семейной истории, семейного дома и родового корня автор исследует вопросы идентичности, времени, памяти, ответственности. Его семейные сцены — это не только интимные переживания, но и культурные, исторические, философские пространства.

В этом смысле семейные ценности у Афлатуни — это не застывший архетип, а живой процесс: поддержка и любовь, память и корни, преемственность и адаптация времени.

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ОРГАНИЗАЦИЯ ЛАБОРАТОРНЫХ ПРАКТИКУМОВ ПО ФИЗИКЕ С ИСПОЛЬЗОВАНИЕМ ЦИФРОВЫХ ТЕХНОЛОГИЙ

Аннотация: *В статье рассматривается роль цифровых технологий в подготовке будущих учителей физики в высших учебных заведениях и значение виртуальных лабораторий при проведении лабораторных работ.*

Ключевые слова: *Физика, реальная виртуальная лаборатория, виртуальная лаборатория, студент, цифровые технологии.*

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ORGANIZING LABORATORY WORKSHOPS IN PHYSICS USING DIGITAL TECHNOLOGIES

Abstract: *The article examines the role of digital technologies in the training of future physics teachers in higher education institutions and the importance of virtual laboratories in conducting laboratory work.*

Keywords: *Physics, real virtual laboratory, virtual laboratory, student, digital technology.*

Введение.

Сегодня проводится ряд работ по внедрению цифровых технологий в систему образования и их эффективному использованию в процессе обучения и воспитания. В частности, в Постановлении Президента Республики Узбекистан от 19 марта 2021 года №ПП-5032 «О мерах по повышению качества образования и развитию научных исследований в области физики» отдельным пунктом выделен вопрос «широкого внедрения в учебный процесс современных методов обучения, в том числе информационно-коммуникационных технологий».

Для организации лабораторных занятий на уроках физики в высших учебных заведениях в соответствии с современными требованиями учебные аудитории оснащаются современным оборудованием, и эта работа в настоящее время проводится в широких масштабах. Одной из важных задач

в организации эффективного использования оборудования является создание исследователями и преподавателями современных и совершенствование существующих образовательных средств и разработок в области визуализации.

При изучении физики такие понятия, как теоретические знания, навыки решения задач и лабораторные работы, тесно связаны друг с другом, и одно дополняет другое, а другое – первое. Таким образом, помимо формирования таких понятий, как объяснение физики, применение теории на практике в примере каждой темы, использование виртуальных лабораторий для выполнения практических занятий, анализ, наблюдение, вывод и творчество, также формируется интерес к изобретениям в области науки и техники.

Формирование у современного студента навыков самостоятельной работы является важной задачей. Современное высшее образование, благодаря активному внедрению в учебный процесс различных форм и средств ИКТ – информационно-вычислительной техники, – вывело самостоятельную внеаудиторную деятельность студента как принципиально новую форму обучения. В настоящее время реализуется новая форма освоения студентами большого количества тем без потери объёма и значимости самостоятельной работы, выполняемой дома, за счёт повышения роли и места средств цифровой техники.

В настоящее время предпринимаются усилия по повышению эффективности образования путем использования развития технологий XXI века для проведения лабораторных работ по физике современными методами. Одним из важных направлений, которые цифровые технологии могут сегодня оказывать на науку и образование, являются виртуальные лаборатории.

При проведении урока с использованием виртуальных средств соблюдается главный принцип дидактики – форма, обеспечивающая оптимальное усвоение материала учащимися, обостряющая чувственное восприятие и развивающая все виды мышления. Использование цифровых технологий в процессе обучения физике позволяет наглядно демонстрировать физические явления и процессы, которые технически очень сложно или невозможно в полной мере продемонстрировать в лабораторных условиях, расширяет возможности качественного проведения лабораторных занятий, моделирует различные процессы и явления.

Анализ и результаты.

Интерактивную работу по физике следует проводить в форме практических занятий при объяснении новых знаний или завершении изучения конкретной темы. Другой вариант – выполнение работы на самостоятельных, факультативных, индивидуальных занятиях. Виртуальная физика – это новое, уникальное направление в системе образования. Не секрет, что 90% информации поступает в наш мозг через глаза и нервную систему, и пока человек не увидит глазами, он не сможет ясно понять суть

некоторых явлений. Поэтому процесс обучения должен быть обеспечен наглядными материалами, чтобы можно было увидеть не только статическую картинку, изображающую явление, но и это явление в действии.

Ознакомьтесь с разделом «Определение плотности твёрдого тела» в среде программирования PhET.

Виртуальные элементы: стеклянная ёмкость, вода, вещества, плотность которых необходимо определить.

Теоретическая часть.

Известно, что различные вещества – металлы, минералы, жидкости и газы – имеют одинаковый объём, но разную массу. Напротив, различные вещества с одинаковой массой имеют разные объёмы. Например, железный шар массой 1 т имеет объём 0,13 м³, а лёд массой 1 т – 1,1 м³, то есть объём льда в 9 раз больше. Это объясняется тем, что вещества различаются друг от друга величиной, называемой «плотностью».

Плотность вещества — это величина, измеряемая его массой на единицу объёма. Если обозначить плотность через , массу тела через m и его объём через V, формулу плотности можно записать следующим образом:

$$\rho = \frac{m}{V}$$

В Международной системе единиц (СИ) единицей плотности является кг/м3 — плотность однородного тела массой 1 кг на м3 объема.

Если дано тело определенной формы (шар, куб, параллелепипед и т. д.), то для нахождения его плотности сначала взвешивают массу тела на весах, а затем в зависимости от формы тела определяют его объём. Например, объём шарообразного тела равен V = 4/3·pr³, если это цилиндр или параллелепипед, он вычисляется по формуле V = S·. Затем по формуле (1) определяют плотность тела.

Порядок действий:

3. В окне Phet выберите раздел «Heat&Thermo».

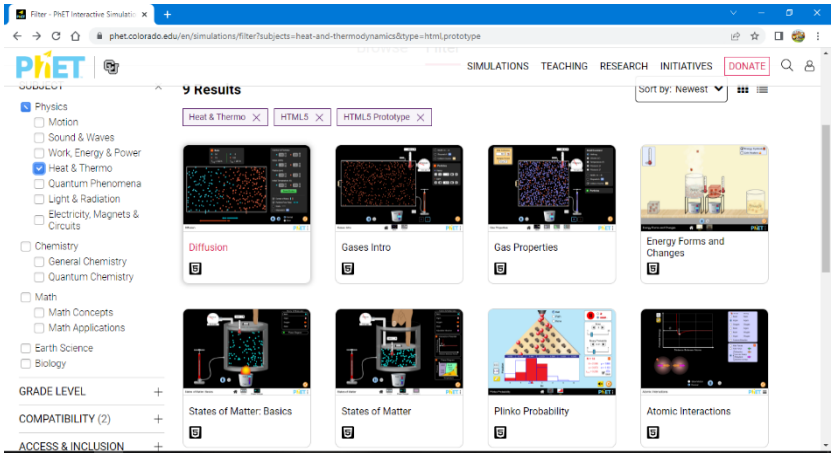


Рисунок 2. Окно выбора раздела «Heat&Thermo» в окне Phet

2. Запустите моделирование «Density» из открытых моделей.

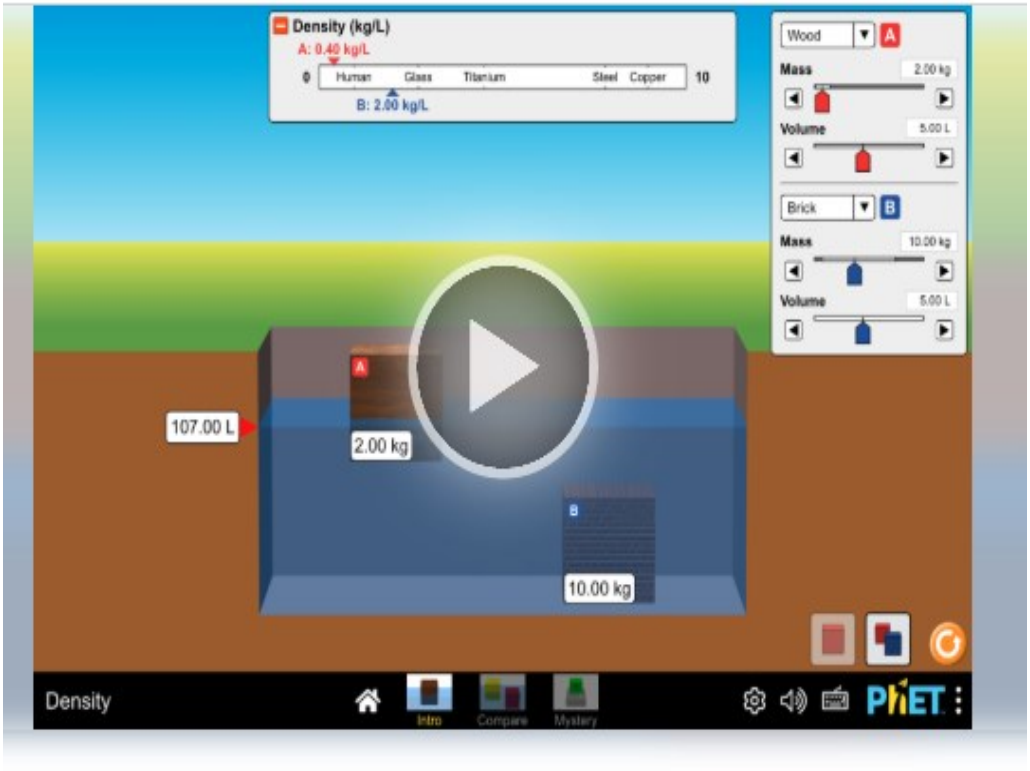


Рисунок 3. Окно запуска моделирования «Плотность»

В правом верхнем углу окна измените тип тела (рисунок 4), сравните тела (рисунок 5) и пронаблюдайте за процессом изменения плотности тела

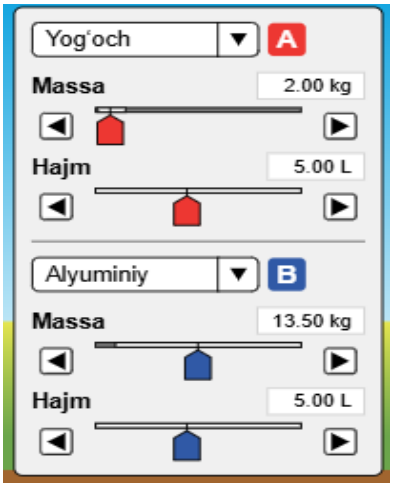


Рисунок 4. Окно изменения типа твердого тела

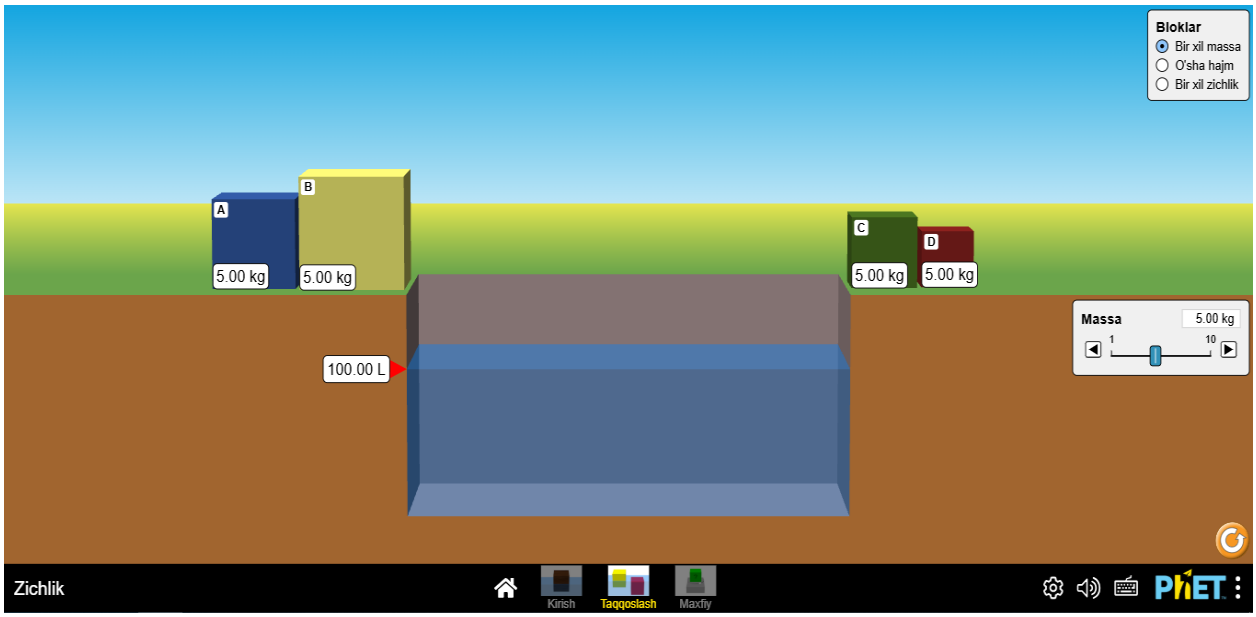


Рисунок 5. Окно сравнения твердых тел.

Выводы и предложения.

Организация учебного процесса с использованием цифровых технологий и виртуальных лабораторий при обучении физике имеет ряд преимуществ: - у студентов появляется и повышается интерес и мотивация к физике; - у студентов закрепляются и развиваются теоретические знания.

В данной работе проведён анализ научно-педагогической литературы, посвящённой использованию виртуальных средств в современной системе образования. На основании этого раскрывается особая значимость использования виртуальной лаборатории в образовательном процессе. В статье рассматриваются вопросы использования цифровых технологий в образовательном процессе, вопросы виртуализации образования, возможности и преимущества виртуальных лабораторных работ при изучении процессов и явлений, трудно поддающихся изучению в реальных условиях. Проведённые эксперименты показывают, что организация урока таким способом привела к повышению его качества и эффективности.

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БУЛЛЁЗНЫЕ ЗАБОЛЕВАНИЯ СЛИЗИСТОЙ ОБОЛОЧКИ ПОЛОСТИ РТА: КЛИНИКО-ДИАГНОСТИЧЕСКИЕ АСПЕКТЫ

Аннотация: *В статье представлены современные данные о клинических проявлениях и методах диагностики буллёзных заболеваний слизистой оболочки полости рта (СОПР), включая истинную пузырчатку, буллёзный пемфигоид и красный плоский лишай (буллёзная форма). Подчёркнута значимость ранней диагностики данных заболеваний, так как своевременное начало терапии кортикостероидами улучшает прогноз и снижает риск осложнений. Рассмотрены клинико-морфологические особенности поражений, дифференциально-диагностические критерии, роль цитологических, гистологических и иммунологических методов, включая прямую и непрямую реакции иммунофлюоресценции, иммуноблоттинг и иммуноферментный анализ. Особое внимание уделено иммуногистохимическим исследованиям и их значению в уточнении патогенеза и дифференциальной диагностики буллёзных дерматозов СОПР.*

Ключевые слова: *буллёзные заболевания, слизистая оболочка полости рта, истинная пузырчатка, буллёзный пемфигоид, красный плоский лишай, цитология, гистология, иммунофлюоресценция, диагностика.*

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BULLOUS DISEASES OF THE ORAL MUCOSA: CLINICAL AND DIAGNOSTIC ASPECTS

Abstract: *This article presents current data on the clinical manifestations and diagnostic methods of bullous diseases of the oral mucosa (OM), including true pemphigus, bullous pemphigoid, and lichen planus (bullous form). The importance of early diagnosis of these diseases is emphasized, as timely initiation of corticosteroid therapy improves the prognosis and reduces the risk of complications. The article examines the clinical and morphological features of the lesions, differential diagnostic criteria, and the role of cytological, histological, and immunological methods, including direct and indirect immunofluorescence reactions, Western blotting, and enzyme-linked immunosorbent assay. Particular attention is paid to immunohistochemical studies and their importance in clarifying the pathogenesis and differential diagnosis of bullous dermatoses of the oral mucosa.*

Keywords: *bullous diseases, oral mucosa, true pemphigus, bullous pemphigoid, lichen planus, cytology, histology, immunofluorescence, diagnostics.*

Дифференциальная диагностика буллезных поражений СОПР представляют определенные трудности, так как часть общепринятых методов (цитологическое исследование, прямая реакция иммунофлюоресценции и др.) трудоемки, длительны, требуют высококвалифицированного персонала и сложного оборудования. Ранняя диагностика рассматриваемых заболеваний СОПР чрезвычайно важна, так как своевременное активное лечение кортикостероидными препаратами улучшает прогноз ранее смертельных заболеваний. Поэтому совершенствование методов диагностики буллезных заболеваний СОПР является актуальной задачей не только в дерматологии, но и в стоматологии [1,2].

Постановка диагноза при истинной пузырчатке особенно затруднена при первых проявлениях заболевания, а при изолированном поражении СОПР процент диагностических ошибок чрезвычайно высок. Наиболее часто ставятся диагнозы стоматита, многоформной экссудативной эритемы. Поэтому в клинической картине заболевания следует обращать особое внимание на характер пузырных элементов: фон, на котором они появляются (отсутствие или наличие эритемы, отека, зуда); долговременность существования покрышки пузыря; особенности эрозий (цвет, влажность, болезненность, тенденция к периферическому росту); локализация пузырных элементов и наличие или отсутствие симптома Никольского. Важный клинический признак истинной пузырчатки — наличие на видимо неизмененной слизистой оболочке «вялых» пузырей с серозным содержимым, которые быстро вскрываются с образованием болезненных эрозий. Основная патогенетическая роль в формировании пузырей при истинной пузырчатке отводится аутоантителам к компонентам десмосом, вызывающим их разрушение вследствие выделения протеолитических ферментов и формирование акантолиза [3,6,9,14,16].

Первоначально важным дифференциально-диагностическим признаком истинной пузырчатки считали положительный симптом Никольского, описанный в 1896 г. и названный keratolysis universalis. Однако впоследствии многими дерматологами, в частности С.Т. Павловым, было показано, что феномен Никольского может быть положительным при разных формах пузырчатки, а также при других заболеваниях, например при буллезном и рубцующем пемфигоиде, буллезном эпидермолизе, герпетиформном дерматите Дюринга и др. Поэтому на сегодняшний день симптом Никольского нельзя считать патогномоничным для истинной пузырчатки [6,8,21,23].

Общепринятым методом диагностики акантолиза при истинной пузырчатке является обнаружение акантолитических клеток в мазках-отпечатках со дна эрозий (A. Tzanck, 1947). Цитологический метод прост в реализации, для его применения не требуется много времени. Следует отметить, что акантолитические клетки можно обнаружить только при исследовании мазков-отпечатков, полученных с поверхности свежих эрозий, тогда как в эпителизирующихся эрозиях происходит регенерация эпидермиса, и дно их покрывается несколькими слоями эпителиальных клеток, что затрудняет выявление акантолитических клеток. По мнению различных авторов, цитологическое исследование недостаточно информативно, так как акантолитические клетки могут быть обнаружены при буллезном пемфигоиде, приобретенном буллезном эпидермолизе, герпетической инфекции, экземе. Таким образом, наряду с симптомом Никольского цитологический метод исследования может служить лишь ориентировочным тестом в диагностике буллезных заболеваний СОПР. В связи с появлением более совершенных методов диагностики цитологический анализ во многих странах не применяется.

По данным ряда авторов, один из наиболее достоверных методов диагностики (80—90% случаев) — гистологическое исследование биоптатов. Патоморфологический метод диагностики используется для определения акантолиза и локализации пузырей в подэпителиальном слое слизистой оболочки больных. Необходимо подчеркнуть, что для гистологического исследования слизистой оболочки необходимо взять биоптат из очага поражения со свежими пузырями с захватом «здорового» участка исследуемого материала. Ранними признаками истинной пузырчатки являются внутриэпителиальный отек эпителия, исчезновение межклеточных мостиков в шиповидном слое эпителия (акантолиз) и внутриэпителиальные щели. Однако в некоторых случаях патоморфологический метод не информативен из-за сходства морфологических изменений при истинной пузырчатке и некоторых других дерматозах (многоформная экссудативная эритема, болезнь Дарье, пиодермия) [33].

Несмотря на достаточно высокую информативность гистологического метода исследования, обнаруживающиеся при его применении морфологические изменения, сходные с таковыми при других дерматозах, делают необходимым использование более надежных и совершенных методов.

Более полувека назад иммунофлюоресценция (ИФ), «ворвавшись» в медицину, совершила технологическую революцию в изучении патогенеза и разработке новых методов диагностики ряда заболеваний аутоиммунного происхождения. Несмотря на свой «возраст», методы ИФ (прямой и непрямой) во всем мире считаются одним из «золотых стандартов» и единственным иммунопатологическим инструментом в диагностике буллезных дерматозов. С их помощью удается выявить фиксированные иммунные комплексы (иммуноглобулины и компоненты комплемента) в тканях пациента и циркулирующие аутоантитела к антигенам тканей слизистой оболочки в сыворотке крови больных с истинной пузырчаткой.

Титры антител статистически значимо коррелируют со степенью тяжести истинной пузырчатки, что важно для контроля терапии.

Для выявления аутоантител класса G к десмоглеинам 1-го и 3-го типов методом ИФ применяют иммуноСОПРбенты с иммобилизованными на них рекомбинантными десмоглеинами 1-го и 3-го типов. Содержание аутоантител к десмоглеинам может использоваться для прогноза, а также для мониторинга активности заболевания.

В настоящее время применяется диагностический метод — метод иммуноблоттинга, который используется при проведении научно-исследовательских работ. Этим методом определяют присутствие в сыворотке крови антител к специфическим белкам, предварительно иммобилизованным на нитроцеллюлозной мембране. Локализацию иммунных комплексов выявляют с помощью конъюгатов антивидовых антител с ферментом и хромогенного субстрата. При истинной пузырчатке

обнаруживают циркулирующие IgG к белкам с молекулярной массой 130 и 160 кД.

Анализ данных литературы показал, что наиболее чувствительным и специфичным методом диагностики истинной пузырчатки, позволяющим определять антитела к конкретным белкам межклеточной адгезии, является твердофазный иммуноферментный анализ.

Истинную пузырчатку дифференцируют с буллезным пемфигоидом, многоформной экссудативной эритемой, кандидозом, красной волчанкой, эрозивным папулезным сифилидом, медикаментозными поражениями СОПР, КПЛ (буллезная форма), пузырно-сосудистым синдромом.

При буллезном пемфигоиде пузыри располагаются субэпителиально, поэтому они имеют более толстую, чем при истинной пузырчатке, покрышку и существуют более продолжительное время. Эрозии, образовавшиеся на месте пузырей при буллезном пемфигоиде, покрыты фибринозным налетом и обычно располагаются на слегка гиперемированном фоне.

Пузыри при многоформной экссудативной эритеме (буллезная форма) характеризуются выраженным воспалением и часто окружены «венчиком» гиперемии. Симптом Никольского отрицательный. При цитологии акантолитические клетки не обнаруживаются. Гистологически отмечается образование субэпителиальных пузырей.

Ряд медикаментозных средств (йод, бром, мышьяк, антибиотики и т. п.) могут вызывать появление на СОПР пузырей, которые располагаются подэпителиально. Акантолиза нет, симптом Никольского отрицательный. Отличительной чертой этих пузырей является то, что обычно они возникают вскоре после приема лекарства. Постановка аллергологических проб уточняет диагностику.

При КПЛ (буллезная форма) пузыри возникают под эпителием, акантолиза нет. По периферии пузыря и на других участках слизистой оболочки можно наблюдать типичные папулы.

У больных с буллезным пемфигоидом симптом Никольского отрицательный. В мазках-отпечатках акантолитические клетки не обнаруживаются, однако содержится большое количество эозинофильных гранулоцитов. Количество эозинофилов в содержимом пузырей может достигать 80%, а в циркулирующей крови — 26%.

Гистологическое исследование пораженной ткани у больных буллезным пемфигоидом осуществляли с захватом здоровой слизистой оболочки, что позволяло выявить субэпителиальные полости с многочисленными эозинофилами, воспалительную инфильтрацию, расщепление базальной мембраны.

В настоящее время доступны коммерческие тест-системы ИФ, содержащие широкий набор рекомбинантных антигенов высокой степени очистки. Это обусловливает высокую чувствительность (до 100%) и специфичность (до 100%) данного теста. Метод И.Ф., кроме того, быстро реализуется.

Наиболее доказательным исследованием, подтверждающим наличие буллезного пемфигоида, является реакция иммунофлюоресценции (РИФ), которая позволяет обнаружить наличие аутоантител и уровень фиксации различных иммуноглобулинов СОПР. Для буллезного пемфигоида характерно фиксирование IgG в области базальной мембраны и С3-компонента комплемента.

Концентрация аутоантител к антигену BP180 при буллезном пемфигоиде коррелирует со степенью тяжести заболевания и может использоваться как прогностический фактор, а также для мониторинга ответа на терапию.

Дифференциальная диагностика проводится с вульгарной пузырчаткой, герпетиформным дерматитом Дюринга, многоформной экссудативной эритемой, красной волчанкой, буллезной формой КПЛ.

Клинически буллезный пемфигоид от истинной пузырчатки в начальной стадии отличить не всегда представляется возможным. При истинной пузырчатке пузыри появляются чаще на видимо неизмененной слизистой оболочке. Эрозии эпителизируются медленно и склонны к периферическому росту, чаще вовлекаются слизистые оболочки, и процесс протекает тяжелее. В мазках-отпечатках обнаруживаются акантолитические клетки, симптом Никольского резко положительный [21]. При гистологическом исследовании при истинной пузырчатке обнаруживается внутриэпителиальный пузырь, при РИФ в биоптате видимо здоровой слизистой выявляются отложения IgG в области межклеточных промежутков эпителия [20].

При герпетиформном дерматите Дюринга высыпания носят полиморфный характер, симметричны, расположены герпетиформно, чаще — на разгибательных поверхностях конечностей, ягодицах, быстро регрессируют под действием сульфоновых препаратов. Иммунофлюоресцентным методом выявляются отложения IgA в зернистой, реже — в линейной форме, на вершине сосочков дермы.

Буллезный вариант многоформной экссудативной эритемы протекает остро, с общим недомоганием и выраженной лихорадкой, продолжительность заболевания — до нескольких недель; гистологические изменения сходны с таковыми при буллезном пемфигоиде.

При буллезной форме красной волчанки отличия гистологической картины от таковой при буллезном пемфигоиде минимальны. Затрудняет дифференциальную диагностику возможность образования у больных красной волчанкой наряду с другими антителами аутоантител IgG к Co17. Для верификации диагноза буллезной формы красной волчанки в крови больных определяют антитела к двухцепочечной ДНК и антинуклеарные антитела.

У пациентов с КПЛ диагноз обычно ставят на основании клинической картины. При буллезной форме КПЛ возникают пузыри с плотной покрышкой, по периферии окруженные сгруппированными папулами

белесоватого цвета, располагающиеся на гиперемированной слизистой оболочке. Пузыри вскрываются и образуют обширные эрозивные поверхности. Характерное бело-желтое свечение в лучах лампы Вудда отмечается лишь по периферии эрозий. Эрозии имеют темно-коричневый цвет и не флюоресцируют.

Для ранней диагностики и подтверждения диагноза изучают состояние местного иммунитета ПР, проводят цитологическое исследование, берут биоптат с последующим гистологическим и иммуногистохимическим его исследованием [13].

Известно, что в основе нарушений иммунного статуса при КПЛ лежат дефекты в системе цитокинов — основных регуляторов процессов пролиферации и дифференцировки иммунокомпетентных клеток. Доказано, что клинические проявления связаны с продукцией провоспалительных и противовоспалительных цитокинов. Изучение уровней цитокинов позволяет получить информацию о функциональной активности иммунокомпетентных клеток и тяжести воспалительного процесса. Вместе с тем данных об определении цитокинов ротовой жидкости и изучении их состояния при буллезной форме КПЛ СОПР в доступной литературе мы не встретили.

При цитологическом исследовании у больных с буллезной формой КПЛ отмечается повышенная десквамация ороговевших эпителиальных клеток (до 75%) с безъядерными и ядросодержащими клетками, много лейкоцитов и нейтрофилов. Количество эпителиальных клеток промежуточной зрелости относительно низкое.

У больных КПЛ фрагмент СОПР для проведения биопсии иссекают из очагов поражения вблизи границы здоровой ткани. Процедуру осуществляют под местной анестезией. Патогистологическая картина сходна с явлениями неспецифического воспалительного процесса. Буллезные поражения КПЛ развиваются под эпителием в результате обширного отека в эпителии и соединительной ткани. Наблюдается гидропическая дегенерация шиповидного слоя. Пузыри содержат светлую серозную, иногда — геморрагическую жидкость. Появление полосовидного лимфоидно-клеточного инфильтрата в верхней зоне соединительнотканного слоя обычно предшествует вскрытию пузыря. После вскрытия пузыря явления воспаления уменьшаются, и лимфоидно-клеточная инфильтрация распространяется в более глубокий слой соединительной ткани [29].

При иммуногистохимическом (ИГХ) исследовании определяются повышенные концентрации антиген-презентативных клеток Лангерганса, тучных клеток, IgG, а также C3d-элементов комплемента внутри грануляционной ткани и сосудов в очаге поражения. Формирование плотного лимфогистиоцитарного инфильтрата и изменение базальной мембраны эпителия, происходящие при КПЛ, могут являться результатом антиген-специфического взаимодействия между кератиноцитами и Т-клетками.

По данным ряда авторов [24], ИГХ — исследование пролиферативной активности эпителиоцитов СОПР выявило у больных КПЛ достоверное повышение содержания Ki-67 положительно окрашенных ядер. Установлены различия в интенсивности мечения ядер эпителиоцитов Ki-67 в зависимости от клинической формы КПЛ СОПР: более высокий уровень экспрессии Ki-67 в эпителии очагов поражения СОПР выявлен при буллезной форме заболевания.

При ИГХ-исследовании определяют также маркеры апоптоза (bcl-2 и bax), белки теплового шока 60 и 70 (HPS60 и 70), которые принимают участие в патогенезе КПЛ СОПР [10].

D. Murrell и соавт. (2008) при проведении ИГХ-исследования у больных с буллезной формой КПЛ СОПР обнаружили положительную экспрессию белка p16 (в 79% случаев), который выполняет функцию отрицательной регуляции клеточного цикла посредством ингибирования CDK4-киназ и CDK6-киназ и последующего блокирования циклинзависимого фосфорилирования ретинобластомы, что свидетельствует о наличии воспаления в тканях у данной группы пациентов.

При дифференциальной диагностике КПЛ необходимо принимать во внимание большое количество сходных симптомов. Десквамация эпителия на деснах (десквамативный гингивит) может наблюдаться при разных патологических состояниях организма. Пузыри необходимо отличать от таковых при истинной пузырчатке. Буллезную форму КПЛ следует дифференцировать с буллезным пемфигоидом, красной волчанкой, лейкоплакией, папулезным сифилидом, многоформной экссудативной эритемой.

Характерная особенность дифференциальной диагностики КПЛ с истинной пузырчаткой — то, что по периферии эрозий при истинной пузырчатке нет папул, свойственных КПЛ. При истинной пузырчатке в мазках-отпечатках, взятых с эрозий, обнаруживаются акантолитические клетки, которых нет при буллезной форме КПЛ; диагностическое значение имеет также прямая и непрямая реакция РИФ [28].

В случаях буллезного пемфигоида СОПР вокруг пузырей и эрозий никогда не возникают папулезные высыпания, характерные для КПЛ.

Буллезную форму КПЛ СОПР необходимо дифференцировать с эрозивной формой лейкоплакии и эрозивно-язвенной формой красной волчанки. При эрозивной форме лейкоплакии эрозия окружена сплошными бляшками серовато-белого цвета, слегка возвышающимися над уровнем СОПР, отсутствует рисунчатый характер, свойственный КПЛ. При эрозивно-язвенной форме красной волчанки эрозия расположена в очаге инфильтрата и окружена венчиком гиперкератоза с выступами в виде языков пламени по периферии в отличие от КПЛ, при котором всегда наблюдается папулезный рисунок в виде «сетки Уикхема» или «листьев папоротника». Дополнительные методы диагностики — люминесцентный и гистологический.

КПЛ СОПР с папулезным сифилидом дифференцируют, исходя из данных клинической картины: патологические элементы при папулезном сифилиде обычно крупнее, чем при КПЛ, имеют округлую или овальную форму, поверхность папул не уплощена, покрыта серовато-белым налетом, легко снимающимся при поскабливании в отличие от папул при КПЛ. В отделяемом эрозий при серодиагностике и бактериологическом исследовании обнаруживается бледная трепонема.

При многоформной экссудативной эритеме имеются значительный отек, гиперемия, везикулобуллезные элементы, которые вскрываются с образованием обширных эрозивных поверхностей. Эрозии имеют неправильную форму и покрыты фибринозным налетом, при дотрагивании резко болезненны. Часто поражается красная кайма губ. Папулезные высыпания отсутствуют.

Таким образом, поиск новых методов диагностики и своевременное применение уже существующих позволяет врачам правильно поставить диагноз и назначить соответствующее лечение.

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ГРАФИКА В ИНТЕРЬЕРЕ: ЭСТЕТИКА, ФУНКЦИИ И СОВРЕМЕННЫЕ ТЕНДЕНЦИИ

Аннотация: *В статье рассматривается роль графики в современном интерьере с точки зрения её эстетической и функциональной значимости. Особое внимание уделяется анализу способов применения графических элементов в пространственной организации, их влиянию на восприятие среды и психоэмоциональное состояние человека. Рассмотрены актуальные тенденции использования графики, включая цифровые технологии, биофильные мотивы, урбанистическую эстетику и типографику. Делается вывод о возрастании роли графики как универсального средства художественного выражения и функционального инструмента в интерьере XXI века.*

Ключевые слова*: графика, интерьер, эстетика, функции, типографика, биофильный дизайн, современные тенденции.*

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GRAPHICS IN THE INTERIOR: AESTHETICS, FUNCTIONS AND MODERN TRENDS.

Abstract: *The article examines the role of graphics in a modern interior in terms of its aesthetic and functional significance. Special attention is paid to the analysis of ways of using graphic elements in spatial organization, their influence on the perception of the environment and the psycho-emotional state of a person. Current trends in the use of graphics, including digital technologies, biophilic motifs, urban aesthetics and typography, are considered. The conclusion is made about the increasing role of graphics as a universal means of artistic expression and a functional tool in the interior of the 21st century.*

Keywords: *graphics, interior, aesthetics, functions, typography, biophilic design, modern trends.*

Введение

Современное искусство и дизайн всё более активно взаимодействуют, создавая новые синтетические формы художественного выражения. В этом

контексте графика в интерьере занимает особое место, поскольку сочетает декоративность, лаконичность и универсальность. В отличие от живописи и скульптуры, графика легче адаптируется к пространству, обладает вариативностью и способна решать как эстетические, так и практические задачи.

В условиях глобализации и развития технологий графика становится носителем культурных кодов, способом самовыражения и средством визуальной коммуникации. Важность её изучения обусловлена не только художественными аспектами, но и влиянием на психологическое восприятие интерьера и повседневный комфорт человека.

Эстетическая роль графики в интерьере

Эстетическая функция графики заключается в создании визуальной гармонии и эмоционального настроя пространства. В интерьере графика может выполнять следующие задачи:

1. ***Формирование художественного образа*** — использование иллюстраций, панно, постеров придаёт пространству индивидуальность. Например, графика в стиле минимализма создаёт атмосферу спокойствия и строгости, а яркая авторская графика формирует динамичный акцент.
2. ***Композиционная завершённость*** — графика выступает как связующий элемент между архитектурой и мебельным наполнением, устраняя «визуальные пустоты».
3. ***Создание настроения*** — абстрактные линии и ритмы могут передавать энергию, а мягкие контурные рисунки — уют и гармонию.
4. ***Акцентирование стиля*** — геометрические узоры поддерживают хай-тек или модерн, природные мотивы органично вписываются в экостиль и скандинавский минимализм, а монохромная графика подчёркивает индустриальную эстетику лофта.

Таким образом, графика становится универсальным языком визуальной эстетики, способным адаптироваться к различным стилям и пространствам.

Функции графики в интерьере

Помимо эстетики, графика играет важную функциональную роль:

1. ***Зонирование***

Графические элементы (например, настенные росписи или крупные плакаты) позволяют разделять пространство на функциональные зоны без использования перегородок.

2. ***Коррекция восприятия***

Оптические эффекты графики изменяют восприятие размеров помещения: вертикали «поднимают» потолок, диагонали создают динамику, горизонтали расширяют пространство.

3. ***Информационно-коммуникативная функция***

Типографика (надписи, лозунги, цитаты) не только украшает интерьер, но и транслирует определённые ценности или идеи.

4. ***Психологическое воздействие***

Научные исследования в области психологии восприятия показывают, что определённые формы и линии могут снижать уровень тревожности или, наоборот, стимулировать активность. Например, плавные линии ассоциируются с безопасностью, а острые — с энергичностью и напряжением.

5. ***Социально-культурная функция***

В общественных интерьерах (кафе, офисах, коворкингах) графика становится частью брендинга, формируя идентичность пространства и укрепляя имидж.

Современные тенденции

Развитие технологий и изменение художественных вкусов привели к появлению ряда новых тенденций в использовании графики в интерьере:

1. ***Минималистичная графика***

Чёрно-белые постеры, простые силуэты и абстрактные линии актуальны для современных интерьеров, подчеркивая чистоту и строгость формы.

2. ***Биофильные мотивы***

Графические изображения растений, животных, природных ландшафтов отражают стремление человека к гармонии с природой. Это направление особенно востребовано в биофильном и экологичном дизайне.

3. ***Цифровая графика и медиа-арт***

LED-панели, проекционные инсталляции, интерактивные графические поверхности позволяют менять визуальный облик интерьера в зависимости от ситуации.

4. ***Типографика в интерьере***

Слова и фразы в виде настенной графики становятся важным элементом дизайна, выполняя как эстетическую, так и коммуникативную функцию.

5. ***Урбанистическая эстетика***

Граффити, стрит-арт и постерная культура всё чаще проникают в интерьер, особенно в стиле лофт и индустриальном дизайне.

6. ***Авторская графика и индивидуализация***

Возрастает интерес к уникальным произведениям художников и дизайнеров, которые превращают интерьер в персональное художественное пространство.

Заключение

Графика в интерьере представляет собой многогранное явление, объединяющее эстетику, функциональность и актуальные культурные тенденции. Она не только украшает пространство, но и влияет на восприятие, эмоции и психологическое состояние человека.

В современном интерьере графика выполняет роль универсального инструмента дизайна, способного решать задачи зонирования, коммуникации, коррекции пространства и создания настроения.

Развитие цифровых технологий и интерес к экологическим мотивам способствуют расширению возможностей графики: от традиционных постеров до интерактивных медиа-инсталляций. Это делает её одним из ключевых направлений современного интерьерного искусства, формирующего новый визуальный язык архитектуры и дизайна XXI века.

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ГРАФИКА В ИНТЕРЬЕРЕ: ЭСТЕТИКА, ФУНКЦИИ И СОВРЕМЕННЫЕ ТЕНДЕНЦИИ

Аннотация: *В статье рассматривается роль графики в современном интерьере с точки зрения её эстетической и функциональной значимости. Особое внимание уделяется анализу способов применения графических элементов в пространственной организации, их влиянию на восприятие среды и психоэмоциональное состояние человека. Рассмотрены актуальные тенденции использования графики, включая цифровые технологии, биофильные мотивы, урбанистическую эстетику и типографику. Делается вывод о возрастании роли графики как универсального средства художественного выражения и функционального инструмента в интерьере XXI века.*

Ключевые слова*: графика, интерьер, эстетика, функции, типографика, биофильный дизайн, современные тенденции.*

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GRAPHICS IN THE INTERIOR: AESTHETICS, FUNCTIONS AND MODERN TRENDS.

Abstract: *The article examines the role of graphics in a modern interior in terms of its aesthetic and functional significance. Special attention is paid to the analysis of ways of using graphic elements in spatial organization, their influence on the perception of the environment and the psycho-emotional state of a person. Current trends in the use of graphics, including digital technologies, biophilic motifs, urban aesthetics and typography, are considered. The conclusion is made about the increasing role of graphics as a universal means of artistic expression and a functional tool in the interior of the 21st century.*

Keywords: *graphics, interior, aesthetics, functions, typography, biophilic design, modern trends.*

Введение

Современное искусство и дизайн всё более активно взаимодействуют, создавая новые синтетические формы художественного выражения. В этом

контексте графика в интерьере занимает особое место, поскольку сочетает декоративность, лаконичность и универсальность. В отличие от живописи и скульптуры, графика легче адаптируется к пространству, обладает вариативностью и способна решать как эстетические, так и практические задачи.

В условиях глобализации и развития технологий графика становится носителем культурных кодов, способом самовыражения и средством визуальной коммуникации. Важность её изучения обусловлена не только художественными аспектами, но и влиянием на психологическое восприятие интерьера и повседневный комфорт человека.

Эстетическая роль графики в интерьере

Эстетическая функция графики заключается в создании визуальной гармонии и эмоционального настроя пространства. В интерьере графика может выполнять следующие задачи:

5. ***Формирование художественного образа*** — использование иллюстраций, панно, постеров придаёт пространству индивидуальность. Например, графика в стиле минимализма создаёт атмосферу спокойствия и строгости, а яркая авторская графика формирует динамичный акцент.
6. ***Композиционная завершённость*** — графика выступает как связующий элемент между архитектурой и мебельным наполнением, устраняя «визуальные пустоты».
7. ***Создание настроения*** — абстрактные линии и ритмы могут передавать энергию, а мягкие контурные рисунки — уют и гармонию.
8. ***Акцентирование стиля*** — геометрические узоры поддерживают хай-тек или модерн, природные мотивы органично вписываются в экостиль и скандинавский минимализм, а монохромная графика подчёркивает индустриальную эстетику лофта.

Таким образом, графика становится универсальным языком визуальной эстетики, способным адаптироваться к различным стилям и пространствам.

Функции графики в интерьере

Помимо эстетики, графика играет важную функциональную роль:

6. ***Зонирование***

Графические элементы (например, настенные росписи или крупные плакаты) позволяют разделять пространство на функциональные зоны без использования перегородок.

7. ***Коррекция восприятия***

Оптические эффекты графики изменяют восприятие размеров помещения: вертикали «поднимают» потолок, диагонали создают динамику, горизонтали расширяют пространство.

8. ***Информационно-коммуникативная функция***

Типографика (надписи, лозунги, цитаты) не только украшает интерьер, но и транслирует определённые ценности или идеи.

9. ***Психологическое воздействие***

Научные исследования в области психологии восприятия показывают, что определённые формы и линии могут снижать уровень тревожности или, наоборот, стимулировать активность. Например, плавные линии ассоциируются с безопасностью, а острые — с энергичностью и напряжением.

10. ***Социально-культурная функция***

В общественных интерьерах (кафе, офисах, коворкингах) графика становится частью брендинга, формируя идентичность пространства и укрепляя имидж.

Современные тенденции

Развитие технологий и изменение художественных вкусов привели к появлению ряда новых тенденций в использовании графики в интерьере:

7. ***Минималистичная графика***

Чёрно-белые постеры, простые силуэты и абстрактные линии актуальны для современных интерьеров, подчеркивая чистоту и строгость формы.

8. ***Биофильные мотивы***

Графические изображения растений, животных, природных ландшафтов отражают стремление человека к гармонии с природой. Это направление особенно востребовано в биофильном и экологичном дизайне.

9. ***Цифровая графика и медиа-арт***

LED-панели, проекционные инсталляции, интерактивные графические поверхности позволяют менять визуальный облик интерьера в зависимости от ситуации.

10. ***Типографика в интерьере***

Слова и фразы в виде настенной графики становятся важным элементом дизайна, выполняя как эстетическую, так и коммуникативную функцию.

11. ***Урбанистическая эстетика***

Граффити, стрит-арт и постерная культура всё чаще проникают в интерьер, особенно в стиле лофт и индустриальном дизайне.

12. ***Авторская графика и индивидуализация***

Возрастает интерес к уникальным произведениям художников и дизайнеров, которые превращают интерьер в персональное художественное пространство.

Заключение

Графика в интерьере представляет собой многогранное явление, объединяющее эстетику, функциональность и актуальные культурные тенденции. Она не только украшает пространство, но и влияет на восприятие, эмоции и психологическое состояние человека.

В современном интерьере графика выполняет роль универсального инструмента дизайна, способного решать задачи зонирования, коммуникации, коррекции пространства и создания настроения.

Развитие цифровых технологий и интерес к экологическим мотивам способствуют расширению возможностей графики: от традиционных постеров до интерактивных медиа-инсталляций. Это делает её одним из ключевых направлений современного интерьерного искусства, формирующего новый визуальный язык архитектуры и дизайна XXI века.

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ОСОБЕННОСТИ УЧЕТА И ВНУТРЕННЕГО АУДИТА МАТЕРИАЛЬНО-ПРОИЗВОДСТВЕННЫХ ЗАПАСОВ ОРГАНИЗАЦИЙ

Аннотация: *Статья посвящена исследованию особенностей учета и внутреннего аудита материально-производственных запасов (МПЗ) в современных организациях. Рассматриваются ключевые аспекты организации учета МПЗ в соответствии с требованиями ФСБУ 5/2019 «Запасы», включая классификацию активов, документооборот и методы оценки. Подчеркивается важность внедрения автоматизированных систем учета и регулярной инвентаризации для повышения эффективности управления запасами и обеспечения достоверности финансовой отчетности.*

Ключевые слова: *материально-производственные запасы, бухгалтерский учет, внутренний аудит, внутренний контроль, инвентаризация, автоматизация учета, ABC-XYZ анализ.*

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FEATURES OF ACCOUNTING AND INTERNAL AUDIT OF INVENTORIES IN ORGANIZATIONS

Abstract: *This article examines the features of accounting and internal audit of inventories in modern organizations. The study analyzes key aspects of inventory accounting organization in accordance with Federal Accounting Standard 5/2019 "Inventories", including asset classification, document flow and valuation methods. The article emphasizes the importance of implementing automated accounting systems and regular inventory counts to improve inventory management efficiency and ensure reliability of financial reporting.*

Keywords: *inventories, accounting, internal audit, internal control, inventory count, accounting automation, ABC-XYZ analysis.*

В современных условиях хозяйствования материально-производственные запасы (МПЗ) являются важнейшим элементом оборотных активов организаций, особенно в производственной сфере. МПЗ обеспечивают непрерывность производственных процессов, сокращают

риски простоев и существенно влияют на формирование себестоимости продукции. Учет и внутренний аудит МПЗ требуют высокой степени организованности, учитывая сложность документооборота, разнообразие номенклатуры и необходимость соблюдения нормативных требований.

Учет МПЗ направлен на обеспечение точного отражения их движения, оценки и хранения в бухгалтерской отчетности. Согласно нормативным требованиям, запасы включают широкий спектр активов, от сырья до готовой продукции. Согласно РСБУ 5/2019, для целей бухгалтерского учета запасами считаются активы, потребляемые или продаваемые в рамках обычного операционного цикла организации, либо используемые в течение периода не более 12 месяцев...». Данное определение подчеркивает необходимость классификации активов и регулярной инвентаризации для подтверждения их фактического наличия.

Учет МПЗ должен обеспечивать контроль за сохранностью ценностей, правильное оформление документации, расчет фактической себестоимости и выявление излишков или неиспользуемых материалов.

Целью бухгалтерского учета МПЗ является обеспечение достоверной информации о наличии, движении и стоимости запасов для принятия управленческих решений. В современных условиях учет все чаще проводится с помощью автоматизированных систем, таких как WMS (Warehouse Management System).

К.Е. Жильцова отмечает, что «для обеспечения использования достоверных данных в части поступления на склад МПЗ, на основе которых будет использоваться ABC-XYZ анализ, и в конечном счете контроль за остатками запасов, необходимо внедрения системы управления складом (WMS), которая представляет собой информационную систему, обеспечивающую автоматизацию управления процессами складской работы» [1]. Внедрение автоматизированных систем позволяет сократить ошибки в первичной документации и обеспечить оперативный доступ к данным об остатках.

Внутренний контроль МПЗ является неотъемлемой частью системы управления, обеспечивая сохранность активов и их рациональное использование. К.Е. Жильцова отмечает, что «материально-производственные запасы должны контролироваться ежедневно и систематически. Данная необходимость объясняется сущностью производственного процесса: производство продукции осуществляется непрерывно, а значит сырье и материалы, потребляемые для изготовления продукции, должны поступать бесперебойно, предотвращая возникновения простоев» [1].

Для этого применяются аналитические методы, такие как ABC-XYZ анализ, который классифицирует запасы по степени важности и динамике спроса. Использование данных методов помогает выявить неликвидные или избыточные запасы, оптимизируя затраты на хранение.

Внутренний контроль также направлен на обеспечение надежности финансовой отчетности и соблюдение нормативных требований. По мнению авторов М.В. Реутова, И.Г. Пивень, «для обеспечения необходимого запаса МПЗ, в том числе их количества и ассортимента, требующихся для текущей работы, а также постоянного поддержания минимального остатка в запасе на случай возможных перебоев в поставках, требуется достаточно четкая организация внутреннего контроля МПЗ» [3].

Внутренний аудит МПЗ представляет собой проверку, целью которой является подтверждение достоверности учетных данных. По мнению авторов О.В. Плотниковой, К.А. Фирсановой, «цель аудита МПЗ – выражение мнения о достоверности и полноте отражения в финансовой отчетности информации об МПЗ, а также реального состояния учета, хранения и эффективности использования материальных запасов» [2]. Аудит включает проверку наличия запасов, правильности их документального оформления и соответствия методикам оценки.

«Как объект аудита, МПЗ рассматривают с учетом особенностей в таких направлениях, как:

- отнесение объектов учета к МПЗ;
- проверка состава объектов МПЗ;
- проверка соблюдения принятой на предприятии (в организации) методики оценки МПЗ» [3].

Аудит МПЗ осложняется большим объемом документооборота и разнообразием номенклатуры. По мнению авторов О.В. Плотниковой, К.А. Фирсановой, «проведение аудита материально-производственных запасов является трудоемким в силу многочисленной номенклатуры и значительного документооборота по движению этой группы активов» [2].

Типичные ошибки, выявляемые в ходе аудита, связаны с недостатками в документации и организации хранения. Часто встречаются случаи отсутствия договоров материальной ответственности, неправильного заполнения первичных документов или несвоевременной инвентаризации. Например, аудит может выявить отсутствие резерва под обесценение запасов или неправильный учет НДС. Для устранения таких проблем рекомендуется внедрение автоматизированных систем учета и регулярное проведение инвентаризаций.

Современные тенденции в учете и аудите МПЗ связаны с цифровизацией аналитических инструментов. Организациям рекомендуется разрабатывать комплексные программы внутреннего аудита, включающие ежемесячные проверки и ежегодную инвентаризацию, что существенно сокращает риски, связанные с утратой запасов или их нерациональным использованием.

В заключение, учет и внутренний аудит МПЗ остаются ключевыми элементами эффективного управления организацией. На основе анализа современных подходов можно сделать вывод, что эффективность процесса

зависит от четкой учетной политики, применения автоматизированных систем и систематического контроля.

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REGIONS OF KAZAKHSTAN DONEZTAU MOSQUE OF ARCHITECTURE-TARIHI MEMORIAL

Abstract: *Restoration of architectural monuments refers to the work that must be carried out to preserve existing historical values. Monument restoration is a process based on the exchange of design ideas within the existing system. Knowledge of the basics of scientific methodology of restoration of architectural monuments is mandatory for everyone who comes into contact with creative activity today. Without this knowledge, a complex of issues of creating historical values, continuity of cultural development, and conditions for aesthetic and creative education is successfully solved.*

Keywords: *Architectural monuments, restoration, decoration, region, archaeological sites, historical scene, Iron Age monuments*

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ҚОЗОҒИСТОН МИНТАҚАСИНИНГ ДОНЕЗТАУ ТУМАНИ МАСЖИДИ МЕЪМОРИЙ-ТАРИХИЙ ЕДГОРЛИГИ

Аннотация: *Меъморий ёдгорликларини тиклаш мавжуд тарихий қадриятларни сақлаб қолиш учун қилинадиган ишлар бўлиб саналади. Ёдгорликларни тиклаш мавжуд тизим бўлиб дизайн ғояларини курсатишга асосланган жараёнидир. Меъморий ёдгорликларини тиклашнинг илмий методологияси асосларини билиш бугунги кунда ижодий фаолият билан алоқада бўлган ҳар бир киши учун мажбурийдир. Ушбу билимларсиз тарихий қадриятларни, маданият ривожланишининг узлуксизлиги, эстетик ва ижодий тарбия учун шароит яратиш масалалари мажмуини муваффақиятли ҳал қилинади.*

Калит сўзлар: *Меъморий ёдгорликлар, рестоврация, декорация, минтақа, археологик жойлар, тарихий саҳна, темир даври ёдгорликлари.*

КИРИШ

Қозоғистон Республикасининг Шимолий-ғарбий қисмида жойлашган ғарбий Қозоғистон минтақасининг энг йирик маъмурий бўлинмаларидан

бири бўлган Ақтўбе минтакаси Кераек водийсидан Ғарб билан кесишган Шарқда тахминан 800 километр ва шимолдан жанубга 700 километр, умумий майдони 300 минг км^2. Тарихан Ақтўбе минтақаси Европа ва Осиё ўртасидаги маданиятларнинг чегара зонаси доирасида мултикултурализм, маданий боғлиқлик ва динлараро алоқалар каби ўзига хос хусусиятлар асосида шаклланган ва ривожланган. Минтақа ўзига хос жиҳатлари бири эканлигини муҳим миграция йўналишлари кураши (савдо, карвон йўл, фатҳ йўллари, қайта турар-жой йўллари, ва бошқалар.) ўз ҳудуди орқали қабилаларга асосланган маданиятлараро ва миллатлараро алоқаларни белгилаб берган, бузилган, ер эгалиги ва тарихий ҳаракат жараёнида аралашган. Бугунги кунда Ақтўбе минтақаси Ғарбда Атырау ва Ғарбий Қозоғистон вилоятлари, шимолда Россия Федерациясининг Оренбург вилояти, шимоли-Шарқда Қўстанай вилояти, Шарқ ва жануби-Шарқда Қарағанда ва Қизилўрда вилоятлари, жанубда Қорақалпоғистон автоном вилояти (Ўзбекистон Республикаси) билан чегарадош. [1; 92-94 б].

Минтақа ҳудудида давом этаётган жараёнларнинг хилма-хиллигини акс эттирувчи ёдгорликлар мавжуд. Масалан, улар Муғалжар тоғларининг эрта палеолит даври ёдгорликларида, Тенгирберген, Бад Қарғали ва Шарқий Қурайлининг бронза даври қабристонларида ёрқин ва ҳайратланарли тарзда акс эттирилган. Бронза даври археологик жойларида зардуштийлик дини тамойилларига асосланган антик давр аҳолисига хос бўлган ноёб диний маросимларни кўриш мумкин. Бронза давридан кейинги инсоният тараққиётидаги давр эрта темир даври деб аталади. Ақтўбе минтақасининг бой ва қулай жойлашуви унинг Қозоғистон тарихида қадим замонлардан бери муҳим рол ўйнаганидан далолат беради. Милоддан аввалги 1-минг йилликда буюк даштнинг этномаданий жараёнларида кўчманчи халқларнинг Скиф ёки Сак қабилалари ҳукмронлик қилган. Маълумки, Элек дарёси ҳавзаси минтақамиз ерларида эрта темир даври ёдгорликлари жойлашган жойда қулай зонадир. Ёдгорликлар орасида Сйнтас, Бесоба, Нагорнен, Сапибулак ва бошқаларнинг айниқса таъкидлаш керак [2; 28-29б].

Ўрта Осиё дашт зонасида туркий сўзлашувчилар милодий ўтган асрнинг ўрталаридан бошлаб бирлашмалар томонидан ҳукмронлик қилиб келинган. Турк хоқонлиги ташкил топганидан бери, турклар доимий равишда ғарбга қараб ривожланиб келмоқдалар. VIII-IX асрлар давомида Ақтўбе минтақаси ҳудуди Ўғуз ва Қипчоқ уюшмаларининг ўзаро кураши майдонига айланди.

Қипчоқлар тарихий саҳнада ва Евроосиё даштларида мустаҳкам ўрнашган ўрнатилган ерларни бошқариш Штатлари, мулоқотга олиб келган муносабатлар. XIII-асрнинг биринчи ярмида мўғуллар босқини таъсири остида миллийлаштириш жараёни тўхтади, таркибий вазият тўхтади. Иккинчи минг йилликнинг ўрталари ва бизнинг давримизнинг иккинчи ярми ўртасида, бу қозоқ халқининг шаклланиш нуқтасига айланди ва ўз навбатида Буюк даштнинг Олтин ва Оқ Ўрда давлатчилиги таркибида бўлган.

Шундай қилиб, Дешт-Қипчоқ ўлкасининг Марказий қисми бўлган Ақтўбе ерлари тарихга эга саҳнадаги ўрни сақланиб қолган давлатлар ва қабилаларнинг эксплуатациялари ҳақида гапириш афсоналарга бой. XIX асрнинг 90-йилларида Ғарбий Қозоғистон Жайик ва Жем ўртасида Мангистау қабилалари ерларга - келажакдаги Ноғайлар жойлашдилар. Манғит икки аср давомида ҳукмдорлар дарёлар бўйида ёки Жемда ўтиришган. Бу замонавий Ақтўбе минтақаси ҳудудида жойлашган, қозоқ хонларининг юрти эди. [3, 190 б].

Асосий қисм

XIX-аср охири-XX-аср бошларида Ақтўбе минтақадаги мачитларни ўрганиш бўйича Ақтўбеда Байганин туманидаги Донезтау худудида ўзига хос диний ва турар-жой мажмуаларидаги масжидлар ҳақидаги дастлабки тадқиқотларни С. Е. Ажигали (Ажигалиев, 1994; Ажигали, 2001, 164, 181-183 бетлар; Ажигали, 2002, 98-128 бетлар; Ажигали, 2015) бошлаган. Унда XIX –аср ўрталари ва XX-аср бошларига оид масжидларнинг режалари ва тавсифлари мавжуд. Улар орасида Бесбай масжиди тасвирланган (Ажигали, 2002, 106-114 бетлар). Бундан ташқари, Л. R. Турғунбоеванинг тадқиқотларига Жаҳон тоғидаги айрим диний турар-жой мажмуаларидаги мачит ва мадрасаларга оид дала материаллари киритилган (Турғунбоева, 2011; Турғунбоева, 2012). Сўнгги йилларда этнографлар Бекназаров Р. А. ва Рахбаев К. К. Ақтўбе минтақасидаги мачитлар тарихи, меъморий хусусиятлари, дала экспедицияси ва диний арбоблар архиви материаллари бўйича тадқиқотлар олиб бормоқдалар (Бекназаров, 2007; Бекназаров, 2018; Рахбаев, 2020). Тадқиқот натижалари. Экспедициянинг биринчи дала тадқиқотлари Шакен Ишан масжидида бошланди. Мачит Қоракоб дарёсида, Алга туманининг ҳозирги Маржон-булоқ қишлоғидан 15 км жанубда (собиқ Саритогай қишлоғи), Самара-Чимкент шоссеси бўйлаб жойлашган. Шакен Ишаннинг тўлиқ исми Шаймерден Абжануғли - бир вақтлар у ишан эди, одамларни дини таълимга чақирди, талабаларни ўқитди ва XX-асрнинг бошларида Саритогай вилояти аҳолиси учун мачит қурди (ҳозирги Ишан масжиди). Совет даврида турли динга қаршилар кўплаб мачитлар вайрон қилинган. Улар орасида бир қатор мачитлар бутунлай вайрон қилинган, ва бир қанчаси сақланиб қолган. Улардан бири Шаймерден Абжануғли мачити, илмий ва ўқув адабиётларида Ишан мачити сифатида тан олинган, бугунги кунда энг яхши сақланиб қолган тарихий мачитлардан бири ҳисобланади. Шунга қарамай, С. Е. Ажигалининг "кўчманчилар архитектураси…" асарда ушбу мачитнинг ҳозирги ҳолатида ҳам, у жойлашган жойда ҳам яхши сақланган расмини кўриш мумкин (Ажигали, 2012, 179-бет) [4, 425 б].

Мачит текисликда жойлашган бўлиб, йўлда аниқ кўринади. Ташқи панжаранинг ташқи томонида симли тўр ва оқ лавҳа (гофрокартон) ишлатилган. Деворнинг айрим қисмларининг оқ тинселлари емирилиб тушмоқда (мачитнинг Шимолий, шимоли-Ғарбий ва шимоли-Шарқий томонлари) Татар услубида қурилган. Унинг ташқи кўриниши бир қаватли, режаси квадрат эди (8.3х24 м), Шимолий, Шимолий (Сурат.1). Шимолий,

чап-Шарқий томонларда (полдан тахминан 11 м баландликда) баланд минора ўрнатилди. Бугунги кунда сақланиб қолган деворларнинг баландлиги 4,5 м. мачитнинг томи сақланмаган. Қурилишда асосан тош (блок сифатида) ишлатилган. Тошларнинг ўлчамлари (40x25x17; 32x32x15; 49x23x8 см) бўлган. Бироқ, мачитнинг баъзи қисмлари ғишт билан қопланган (миноранинг силиндрсимон бўлган юқори қисми ғишт билан ўралган). Мачит Татарча услубда моделлаштирилганлиги сабабли, унинг ички қисми ҳам ўхшашлиги табийдир. Масалан, Татар услубида қурилган мачитлари икки қисмдан иборат: намозхона ва коммунал хона (лобби) (Халитов, 2012, 100-бет). Шундай қилиб Ишан мачитининг ички қисми икки қисмга бўлинган. Биринчиси-ибодат хонаси, иккинчиси-коммунал хона [5, 32 б].

Кобда тумани Абдибулак қишлоғининг жануби-ғарбида, тахминан 200 м масофада, Абдибулак қишлоғининг қабристонида мачит бор. Хусусан, мачит Абдибулоқ қишлоғидаги қабристоннинг ғарбий томонида жойлашган эди. Мачитнинг ўрни бугунги кунда тепалик бўлиб қолмоқда, макетига кўра кўпроқ квадрат (11x16. 5 м) шаклда, деворининг баландлиги 60 см гача бўлган, баъзи қисмлари сақланиб қолган. Ушбу қишлоқда яшовчи Абдигали Мангибаевнинг (1963 йилда туғилган) сўзларига кўра," илгари бу ерда мачит бўлган, кейинчалик бу мачитда рууи Қутлуғ оға Айбас исмли одам дафн этилган. [9; 55-62 б, 10; 130-146 б, 11; 28-32 б, 12; 142 б, 13; 260-282 б, 14; 152-158 б, 15; 222 б] "Мачитнинг жануби-ғарбий томонига қабир тоши ўрнатилган. Албатта, бу белги "оқ кете Қутлуғ оға Айбас хожи, хазрат, Ишан Манасўғли". "Мачит ҳудудида жойлашган қабристон ғарбдан шарққа чўзилган. Қабристон икки қисмдан иборат. Биринчидан, қадимий қабристонлар бор, уларнинг аксарияти қабристоннинг бош режасини ҳисобга олган ҳолда марказда тўпланган. Унда сақланган қабр тошларидан фарқли ўлароқ, у XIX аср охири – XX аср бошларига тегишли. Баъзи қабр тошлари, шу жумладан қолдиқлар ва ерга тушиш, ўнинчи рақам, шу кунгача сақланиб қолган. Яхши релефли безакли баланд қабр тошлари ҳам бор, битта қабр тошининг тескари томонида ўйилган тасвирлари (милтиқ ва пичоқ ёки ханжар) жойлашган. Иккинчиси-оқ силикатдан қурилган замонавий қабристонлар. Ушбу қисм умумий қабристоннинг аксарият қисмини ташкил қилади. Улар ўтган асрнинг 60-йилларига тўғри келади. 2012 йилдан бери у гача бўлган интервалга вақтни киритди. Улар тўрт оёқли эди. Улар орасида гумбаз билан қопланган мақбаралар бор. Қабр тошларида марҳумнинг кенг тарқалган тасвири бор эди. Айниқса, сўнгги 10-15 йил ичида баъзи қабр тошларда сиз марҳумнинг тасвирини катталаштириш билан тез-тез кўришингиз мумкин. Ҳали ҳам қабр тошларига кўзгу қўйиш анъанаси мавжуд. Мисол учун, бу ерда сиз қабр тошлари, гумбазли мақбаралардан Кўзгуларни кўришингиз мумкин. Улар квадрат шаклга эга, баъзилари кўп қиррали[6, 49–64 б].

Тазкабак мажмуасидаги Жумағали-ишан мачити.

Байганин тумани (Донезтау тумани) Чаган дарёсининг қуйи оқимида, ҳозирги Тассай постидан 51 км шимоли-ғарбда жойлашган. 90-йиллар

дастлаб мажмуани ўрганган С. Е. Азҳигали уни диний ва турар-жой мажмуаси деб ҳисоблаган ва вайрон қилинган мачит, яшаш жойлари ва қабристонни қисқача тасвирлаб берган (Ажигалиев, 1994, 61-бет). Шуни таъкидлаш керакки, диний ва турар-жой мажмуалари асосан пастгача кенг тарқалган. Мажмуа "мачитлар, мадрасалар, турар-жой бинолари, қўшимча бинолар, аждодлар қабрлари, булоқлар ёки қудуқлардан иборат ёдгорликлар гуруҳидир."Диний-турар-жой мажмуаси" (култ-турар-жой мажмуаси) атамаси С.Е. Ажигали томонидан илмий фойдаланишга киритилган. У Донезтау туманида 20 га яқин диний турар-жой мажмуаларини кашф этди ва улардан бирида тадқиқот олиб борди (Ажигалиев, 1994; Ажигали, 2002, 98-128 бетлар; Ажигали, 2015, 6-17 бетлар.). Бундай мажмуалар XIX-асрнинг ўрталарида қурила бошланди. Мажмуаларни қуришда қозоқ даштлари кўчманчиларининг қисман жойлашиш муҳим рол ўйнади. Донезтау диний ва турар-жой мажмуаларида ишон, мулла, талабалар истиқомат қилишган. Бу ерда қўй эчкиларни купайтириш, майин жунини қирқиш, қассобхона, қишлаш-отхоналарни таъмирлаш, уй-рўзғор буюмлари ишлаб чиқариш ва ўтин йиғиш каби ишлар амалга оширилди. Бундан ташқари, Ишанмолда (Эшон мулла) кўчманчиларнинг болаларини ўқитди ва ўлганлар бу ерда дафн қилинди, ўз навбатида, кўчманчилар мачит мажмуаларини қишда иситиш учун ёқилғи билан таъминладилар. Шундай қилиб, диний ва турар-жой мажмуалари XIX-аср ва XX-аср бошларида кўчманчи аҳоли пунктлари тизимида, маданият ва иқтисодиётда муҳим рол ўйнаган (Ажигали, 2002, вол. 5, п. 171).

Мачит вайрон қилинган. Сақланган деворлардан фарқли ўлароқ, режа квадрат (8, 2х9. 2 м), икки хонадан иборат (Сурат.2). Тузилиши қисмлардан қурилган. У сақланиб қолган қисмларга қараганда кўпроқ квадрат шаклда лекин ҳар хил ўлчамларга эга эди. Ўлчаш мумкин бўлган қисмларнинг ўлчамлари 42х20х14 см эди; 40х23х8 см. Мачит деворлари бутунлай қулаб тушиши хавфида. Мачитнинг жануби-ғарбий, ғарбий, Шарқий ва шимоли-Шарқий деворларининг фақат баъзи қисмлари бироз сақланиб қолган. Масалан, мачитнинг яхши сақланиб қолгани айтилган Шарқий, шимоли-Шарқий деворининг узунлиги 3,80 м, баландлиги 2 м ва қалинлиги атиги 0,75 м. Мачитнинг ички қисмини икки хонага ажратувчи ўртадаги девор бутунлай қулаб тушган арканинг тузилишини кузатиш мумкин. Унинг қисмлари ён томонларга ётқизилган сақланган қисмларнинг ўлчами 40х23х8 смга эга. Бинонинг Шимолий деворида дераза мавжуд. Унинг режаси квадрат, юқори қисми эса оддий шаклда эди. Арка эгилган (сегментланган) турга хосдир, жабҳанинг қисмлари қовурғалардан қилинган. Бундан ташқари, мачитнинг Шарқий, шимоли-Шарқий ва Жанубий, жануби-ғарбий деворларида кемерли кесмалар топилган. Мачитнинг ғарбий деворида қабр жойи бор.

Қабр оддий квадрат шаклидаги тошлардан қурилган. Ён томони темир панжара билан ўралган. Қабр тошида Арабча (ибодат) ёзилган, сўнгра

"Жумагали ишан" 80-йиллар Жумагали Ишан қабрининг ғарбий томонида ерда иккита кўмилган қабр бор [7, 150–183 б].

Изенагаш диний-турар-жой мажмуасидаги мачит.

Мажмуа 7 км шимоли-ғарбда жойлашган Донезтауга қурилган қабиристони жойлашган (60 км жануби-ғарбда Тассай станцияси, ҳозир Байғанин тумани). Мажмуа мачит харобалари, номаълум бино қолдиқлари, эски қабиристон ва қудуқлардан иборат. У жануби-шарқдан шимоли-ғарбгача чўзилган тахминан 400 м майдонни эгаллайди. Мажмуа ёдгорликларининг аксарияти текис майдонда жойлашган. Аммо мачит жойидан ҳисоблаганда, шимол ва шимоли-ғарбий томондан 50-60 м дан кейин чуқур ва кенг жарлик бор. Ушбу жарликнинг этакларида мажмуанинг қудуқлари ётади. Мачитнинг жануби-шарқида, 120 м ораликда, XIX – аср охири- XX-аср бошларига оид қабиристон мажмуаси мавжуд. Қабристон шимоли-ғарбдан жануби-Шарқгача чўзилган 115 м майдонни эгаллайди. Мачит мажмуанинг текис қисмида жойлашган. Мачитнинг қават режаси квадрат (14,6 х 11,5 м) бўлиб, сақланган деворлардан фарқли ўлароқ тўрт хонага бўлинган (анжир.3). Хусусан, у 237 та ибодат хонаси, ибодат уйи ва яна иккита хонадан иборат. Девор оддий тошлардан қурилган.

Барча деворлар яхши сақланиб қолган. Энг баланд сақланиб қолган девор 3 м (масжиднинг Жанубий ва жануби-Шарқий деворлари). Ва қалинлиги 1 м гача этади, аммо бугунги кунда мачитнинг томи сақланиб қолмаган. Намозхонанинг Жанубий деворида Конч шаклида меҳроб (кенглиги 96 см, баландлиги 142 см) бор. Унинг пойдевори ярим доира шаклида (50 см чуқурликда) қурилган. Меҳробнинг ён томонларида иккита дераза ва Шарқий деворда яна иккита дераза мавжуд. Деразаларнинг режаси оддий ва квадрат эди, лекин юқори қисмлари вайрон қилинган. Хонанинг шимоли-Шарқий бурчагида пойдевор қолдиқлари (қалинлиги 60 см) сақланиб қолган, унинг режаси квадрат (4, 1х2. 1 м), шимолдан жанубга чўзилган. Бу шуни англатадики, ибодат хонаси сақланиб қолган пойдеворга қараганда бошқа хонага эга эди (эҳтимол аёллар учун кичик хона? ёки маъруза зали?). Ибодат хонасининг ғарбида шимолдан жанубга (14,6 х 3,8 м) чўзилган яна бир хона бор. Қизиғи шундаки, бу хона кейинроқ қўшилганлиги сезилди. Унинг Жанубий ва Шимолий деворларида деразалар қурилган.

Ғарбий деворнинг марказида чиқиш эшиги бор. Бундан ташқари, мачитнинг намозхонаси Шимолий томонида жойлашган бўлса, қўшни Шарқий деворда яна бир кичик хона қурилган. Хона ичидаги гипс бироз сақланиб қолган. Шарқий деворда чиқиш эшиги бор. Мачитдан шимолга 35-40 м масофада тўрт ёки беш хонадан иборат номаълум иншоот излари бор. Афсуски, бу тузилма қандай вазифани бажарганини аниқ айтиш қийин. Аммо мачит ёнида мадрасалар, ҳужралар, турар жойлар ва бошқа биноларнинг жойлашиши ушбу минтақадаги бошқа мажмуаларга хосдир (Ажигали, 2002, 98-128 бетлар; Турғунбаева, 2011; Турғунбаева, 2012). Шундай қилиб, Тазкабак мажмуасидан фарқли ўлароқ, Изенагаш

мажмуасида турар-жой бинолари деярли йўқ. Мачитнинг шимолида фақат 35-40 м масофада тўрт ёки беш хонадан иборат номаълум иншоот излари борлигини аллақачон таъкидлаган эдик. Бироқ, мажмуада одамлар кўп эмасдек туюлади ва эҳтимол фақат Имом ва унинг шогирдлари яшаган деб тахмин қилиш мумкин. Бироқ, бу ерда жойлашган эски аждодлар қабиристони бироз каттароқ бўлганига қараганда, озиқ-овқат тарқатиш ва мурдани дафн қилиш каби маросимлар ушбу мажмуада ўтказилиши керак эди [8, 143–190].



Расмлар.1-Шәкен ишан мачити, 2-Жумагали ишан мачити, 3-Изенагаш дини турар-жой комплексидаги мачит, 4-Беспай дини турар-жой комплексидаги мачит.

Хулоса қилиб айтганда мачитлар, айниқса Донезтау тумани муқаддас қадамжоларини ўрганишни давом эттириш нафақат этноархеологик, нуқтаи

назаридан, балки этномаданий нуқтаи назардан балки меъморий тарихий ёдгорликлиги билан ҳам муҳимдир. Зеро, "мачитлар жойлашган диний ва турар-жой мажмуалари" XIX-асрда мамлакат ҳаётидаги катта ўзгаришларни, масалан, қозоқ даштида Исломнинг мафкура сифатида мустаҳкамланиши, ярим кўшничилик турмуш тарзига ўтишнинг бошланиши, уй-жой курилиши тарқалишини кўрсатади. Бу даврда Ғарбий Қозоғистонда маънавий ва диний тарбиячиларнинг фаоллиги ошди ва маҳаллий жойларда кўплаб масжидлар курилди. Донезтау тумани марказлардан бирига айланди. Машҳур Досжан Ишан Кашакулининг диний арбоб сифатидаги фаолияти ушбу минтақа билан бевосита боғлиқ. Бу ерда унинг кўплаб издошлари ҳам бор эди (юқорида айтиб ўтилган Жумагали Ишан дейиш мумкин). Шу сабабли, Ақтўбе минтақасининг Донезтау тумани миллий табиий, тарихий ва маданий боғни яратишга талаб қилинадиган ягона минтақадир.

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АНАЛИЗ МЕТОДОЛОГИИ ПРОГНОЗИРОВАНИЯ И ОЦЕНКИ ОПОЛЗНЕВЫХ ПРОЦЕССОВ

Аннотация: *В данной статье проведен компаративный анализ существующих методов прогнозирования и оценки оползневых процессов. Рассмотрено региональное и локальное прогнозирование оползневой опасности, описаны качественные и количественные методы прогнозирования оползневых опасностей с целью формализовать методы оценок оползневых процессов на математический язык. Отмечено, что качественный сравнительный анализ существующих методов оценки и прогнозирования опасных оползневых процессов для выбора оптимального метода недостаточен. Необходима разработка сравнительного анализа численных критериев эффективности различных методов оценки опасных оползневых процессов.*

Ключевые слова: *региональное и локальное прогнозирование, изоморфизм, геодинамический потенциал, регрессионный анализ, анализ ритмичности, статистический анализ оползневых факторов, многомерная статистика, количественный локальный прогноз, математическое моделирование.*

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ANALYSIS METHODOLOGY OF FORECASTING AND ASSESSMENT OF LANDSLIDE PROCESSES

Abstract: *This article provides a comparative analysis of existing methods for predicting and evaluating landslide processes. Regional and local forecasting of landslide hazards is considered, qualitative and quantitative methods for predicting landslide hazards are described in order to formalize methods for assessing landslide processes into mathematical language. It is noted that a qualitative comparative analysis of existing methods for assessing and predicting dangerous landslide processes is insufficient to select the optimal method. It is necessary to develop a comparative analysis of numerical criteria for the effectiveness of various methods for assessing dangerous landslide processes.*

Keywords: *Keywords: regional and local forecasting, isomorphism, geodynamic potential, regression analysis, rhythm analysis, statistical analysis of landslide factors, multidimensional statistics, quantitative local forecast, mathematical modeling.*

Введение.

На территории Узбекистана мониторинг и прогнозирование оползневых процессов осуществляется в соответствии с постановлением Президента Республики Узбекистан от 30 апреля 2021 года № УП-6218 «О мерах по защите населения и территорий от чрезвычайных ситуаций, связанных с опасными гидрометеорологическими явлениями и геологическими процессами», в котором определены задачи вовлеченных

министерств и ведомств по организации мониторинга раннего выявления потенциально опасных гидрометеорологических явлений, геологических процессов и ликвидации их последствий [1].

Актуальность темы исследования.

Прогнозирование данных процессов бывает региональным и локальным.

Региональное прогнозирование оползневых процессов заключается в оценке возможности их проявления и интенсивности развития, и взаимодействия с сооружениями в пределах значительного района. При региональном прогнозировании невозможно определить конкретные типы и места проявления оползневых процессов. Выделение районов осуществляется по принципу относительной однородности условий и факторов развития оцениваемого опасного процесса [2].

Локальное прогнозирование относится к конкретным типам склоновых процессов (в отличие от регионального). Локальное прогнозирование имеет большое практическое значение за свою конкретность, так как полнее оценивает природу и механизм оползневого процесса.

Цель и задачи.

Рассмотрим качественные и количественные методы прогнозирования оползневых опасностей с целью формализовать методы оценок оползневых процессов на математический язык [3].

Качественный региональный прогноз оползневой опасности

К этому классу методов относятся:

- методы прогнозирования оползней, которые основаны на экспертных оценках;

- методы оценки устойчивости территории в баллах [4].

Методы прогнозирования оползней, основанные на экспертных оценках, содержат в себе три составляющие:

1) интуитивно-логический анализ задачи;

2) решение и предоставление полуколичественных или качественных оценок;

3) обработка результатов решения [2].

Экспертные оценки делятся на:

– индивидуальные;

– коллективные.

Коллективное мнение обладает большей точностью по сравнению с индивидуальным мнением отдельного специалиста.

Метод оценки устойчивости территории в баллах основан на качественном анализе условий проявления оползневого процесса, носит субъективный характер и позволяет получать только приблизительные оценки [5], [6].

Геодезических работ при качественном прогнозировании оползневых опасностей нет. В дальнейших исследованиях эти методы не учитываются.

Количественный региональный прогноз оползневой опасности

Количественное прогнозирование оползневой опасности состоит из двух подклассов методов:

1) детерминированные;

2) вероятностные [2].

К подклассу детерминированных методов относятся следующие группы:

– методы оценки проявления оползневых процессов;

– методы аналогий [2].

Методы оценки проявления оползневых процессов состоят из двух подгрупп:

– распространенность;

– временная изменчивость [5], [6].

Распространенность характеризуется следующими коэффициентами:

– коэффициент линейной пораженности, который рассчитывают по формуле (1):

$$K_{л} = \frac{l}{L}, \quad (1)$$

где l – длина оползневого тела;

L – общая длина склона;

– коэффициент площадной пораженности, который рассчитывают по формуле (2):

$$K_{п} = \frac{f}{F}, \quad (2)$$

где f – площадь оползня;

F – общая площадь участка;

– коэффициент частотной пораженности. Вычисляют по формуле (3):

$$K_{ч} = \frac{n}{F}, \quad (3)$$

где n – количество проявлений процессов на конкретном участке;

F – площадь конкретного участка [2].

Временная изменчивость характеризуется показателем активизации оползневого процесса (аналог ускорения) [2]. Рассчитывается такой показатель по следующей формуле (4):

$$a = \frac{V_2 - V_1}{t}, \quad (4)$$

где V_1 – скорость движения оползня за прошлый год;

V_2 – *скорость* движения оползня в текущем году;

t – промежуток времени между замерами скорости оползневого процесса;

a – активизация оползневого процесса.

По мнению специалистов, значения этих показателей, полученные на основе геодезических измерений, дают представление о

предрасположенности склона к оползневым процессам и используются для составления прогнозов. Однако, учитывая, что коэффициенты отражают характеристики отдельных оползней, наиболее целесообразно применять их для локального прогнозирования.

Результаты и их обсуждение.

Методы аналогий, основаны на изучении *геоморфологии* развития оползней и склонов, выявлении характерных показателей, систематизации данных и сопоставлении их для разных склонов, подлежащих оценке и прогнозированию. Оценка оползневой опасности склона может быть приближенно количественной [2].

При прогнозировании методами аналогий используется такая категория как изоморфизм инженерно-геологических условий [7]. Изоморфизмом определенных объемов литосферы называют равенство структур этих объемов и сходство свойств инженерно-геологических условий. Включает следующие типы методов:

– сравнительно-геологический,

– сравнительно-количественный,

– геологического подобия.

а) Сравнительно-геологический метод предполагает, что состояние прогнозируемого объекта и состояние объекта-аналога идентичны. Подразумевается, что результаты их движения за одинаковый промежуток времени должны быть близкими [2].

Геодезические работы не предусмотрены.

б) Сравнительно-количественный анализ оценивает устойчивость исследуемого склона по соотношению показателей его характеристик с показателями характеристик тех склонов, у которых устойчивость известна. Для использования метода надо изучить большое количество разновозрастных склонов и их устойчивость, установить связи между характеристиками [2]. По Е. П. Емельяновой количественные показатели, которые характеризуют основные параметры оползней, следующие:

1. Коэффициент удлиненности $I_{удл}$ (5):

$$I_{удл} = \frac{L}{b_{max}}, \quad (5)$$

где L – длина оползневого тела;

b_{max} – максимальная ширина оползневого тела.

2. Коэффициент глубины захвата $I_{гл}$ (6):

$$I_{гл} = \frac{h_{max}}{L}, \quad (6)$$

где h_{max} – максимальная мощность оползневого тела;

L – длина оползня.

3. Коэффициент уплощенности $I_{упл}$ (7):

$$I_{упл} = \frac{h_i}{b_i}, \quad (7)$$

где h_i – глубина оползания в одном из поперечных сечений;

b_i – ширина оползневого тела в этом же самом поперечном сечении;

4. Коэффициент кривизны склона $I_{кр}$ (8):

$$I_{кр} = \frac{H}{R}, \qquad (8)$$

где H – значение высоты склона;

R – значение радиуса кривизны подошвы склона в **плане** [8]**.**

Эти коэффициенты, также, вычисляют по данным геодезических определений. Они могут быть полезными, но не более того.

в) Метод геологического подобия позволяет корректно подходить к обоснованию подобия оползневых склонов с точки зрения инженерной геологии. В [10] предлагается огромная совокупность количественных условий геологического подобия и возможные решения для всех способов оценки вероятных отклонений в поведении объектов прогнозирования в зависимости от степени их соответствия аналогам.

Заметим, что методы прямых инженерно-геологических аналогий имеют следующие ограничения:

– недостаточный банк данных аналогов;

– невозможность осуществления прогнозирования на больший срок, чем срок существования аналога.

Несмотря на это, многие эксперты полагают, что методы, основанные на прямых инженерно-геологических аналогиях, обладают наибольшим потенциалом. Расширение базы данных по этим аналогиям, по мнению специалистов, откроет широкие возможности для их практического применения в будущем.

Подкласс вероятностных методов. До недавнего времени для оценки оползневой опасности преимущественно применялись детерминистические подходы. Тем не менее, в последнее время все большую популярность приобретают методики, использующие статистические методы анализа.

К методам прогнозирования оползневой опасности, основанные на статистическом подходе, относятся методы:

– геодинамического потенциала;

– регрессионного анализа;

– анализа ритмичности;

– статистический анализ факторов оползнеобразования;

– многомерная статистика [2].

Метод геодинамического потенциала предполагает расчет вероятности появления (активизации) оползневого процесса в пределах рассматриваемой площади.

Основная идея заключается в том, что определение вероятности проявления оползней зависит от величин вероятностей влияния факторов оползнеобразования $(P_1, P_2, ..., P_n)$**.** ***При этом*** величина влияния каждого фактора оползнеобразования принимается независимой от воздействия

остальных факторов. Для регионального прогнозирования рекомендуется отметить такие факторы оползнеобразования:

– породы, которые слагают склоны;
– гидрогеологическая обстановка;
– нарушения тектоники;
– суммы среднемноголетних осадков;
– крутизна склонов (единственный геодезический параметр);
– влияние абразии или эрозии;
– антропогенное влияние.

Метод регрессионного анализа [8] включает в себя определение статистических зависимостей какого-то показателя от возможных количественных параметров влияния факторов оползнеобразования и, в конечном счете, получение регрессионного уравнений первой и второй степени.

Метод применяется для прогнозирования степени развития оползней при возможных изменениях факторов образования оползней.

Метод анализа ритмичности оползневого процесса заключается в корреляции периодичности активизаций оползневых смещений и ритмами солнечной активности, осадками и т.д.

Чтобы использовать этот метод, необходимы представительные и продолжительные циклы наблюдений за оползневыми процессами (не геодезических) с последующим достаточно сложным математическим анализом для выявления корреляционных функций по определенным специальным программам.

Полученные корреляционные функции дают возможность для изучаемого региона приближенно выполнять прогноз по количеству оползней на ближайшие годы с их площадью и одновременно прогнозировать время ожидаемой оползневой активизации [2], [5].

Методы статистического анализа оползневых факторов предполагают, что между зависимой переменной (нанесенная на карту распространение оползней) и независимыми переменными (несколько способствующих факторов) есть существенная статистическая корреляция, то независимые переменные могут использоваться для прогноза возможного расположения оползней в будущем [6]. Геодезические работы не предусмотрены.

Метод многомерной статистики, основан на том, что инвентаризация всех оползней непосредственно связана с землетрясениями [2]. Это дает возможность исключить долговременные и продолжительные наблюдения.

Достоинством метода считается то, что он учитывает периодичность сейсмического воздействия для активизации прогнозируемых типов оползней [4], [5], [7]. Проведенные проверки этой методики на ряде сейсмогенноопасных оползнях государства Тайвань [7] показали, что методика вполне может быть применена с довольно высокой точностью. Геодезические работы не предусмотрены.

Метод может использоваться и в том случае, если необходимые для построения детерминистических моделей данные не доступны. Если же такие данные доступны, то метод может быть использован вместе с детерминистическими методиками. Это даст возможность повысить качество прогнозирования [2].

Из выше изложенного, можно заключить, что опасность оценивается коэффициентом линейной или площадной пораженности территории оползневым процессом, полученных по геодезическим данным [9]. Склоновые территории, на которых уже были проявления оползневых процессов, оцениваются как территории потенциально опасные, поскольку есть угроза продолжения развития оползневого процесса.

Количественный локальный прогноз оползневой опасности.

Локальные прогнозы имеют наибольшее практическое значение, осуществляются комплексом методов и глубже оценивают природу и механизм оползневого процесса [5].

При локальном прогнозировании оползневых опасностей решают два вида задач:

1) расчет устойчивости склона;

2) оценка скорости смещения оползневых масс [2].

При изучении устойчивости склона используют следующие методы:

1) аналогий;

2) физического моделирования;

3) математического моделирования.

При локальном прогнозировании оползневой опасности *методы аналогий* аналогичны региональному прогнозированию. Но этот метод практически не применяется при инженерно-геологических исследованиях, поскольку нет в достаточном количестве геологических параметров оползневых процессов.

При *методе физического моделирования* предусматривается воссоздание в физических моделях аналогичных физических полей, которые есть у объекта натуры, только измененные по размерам в соответствии с масштабом моделирования. Однако для сложных инженерно-геологических условий модели не созданы, поскольку методы физического моделирования не позволяют оценивать устойчивость склонов с необходимой точностью и нуждаются в проверке и подтверждении полученных результатов. Их использование весьма затруднительно. Геодезические работы не предусмотрены [2].

Методы математического моделирования предусматривают построение математических моделей исследуемых оползневых процессов. При прогнозировании оползневой опасности решают две главные проблемы:

1) оценка устойчивости склонов, основанная на теории предельного равновесия;

2) динамика развития оползневого процесса.

В основу расчетов по устойчивости склонов положено известное условие прочности грунтов Кулона-Мора (9):

$$\tau = \sigma \operatorname{tg} \varphi + c, \qquad (9)$$

где τ – удельное сопротивление сдвигу;

σ – нормальное напряжение;

φ – угол внутреннего трения грунтов;

c – удельное сцепление грунтов [3].

Заключение.

В последнее время в связи с внедрением в практику расчетов устойчивости склонов специальных программных продуктов, в основе которых положены численные методы анализа, методы математического моделирования оползневых процессов становятся, все более востребованы. Программные продукты, основанные на механике сплошной среды, получили наибольшее развитие. При этом используются программы, которые основаны на методе конечных элементов PLAXIS и PHASE [11]. Этот метод является основным численным методом решения задач механики сплошной среды [2]. Из зарубежных подходов к оценке оползневых процессов следует упомянуть работы [3], [4], [6], [10].

В программах помимо геологических данных о свойствах грунтов используются данные, полученные из геодезических определений: площадь оползня, крутизна, высота, рельеф. Математическое моделирование в этом случае часто называют геомеханическим моделированием.

В заключение заметим, что качественный сравнительный анализ существующих методов оценки и прогнозирования опасных оползневых процессов для выбора оптимального метода недостаточен. Необходима разработка сравнительного анализа численных критериев эффективности различных методов оценки опасных оползневых процессов.

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АРХИТЕКТУРЫ ОБЩЕСТВЕННЫХ ЗДАНИЙ И ПРИНЦИПЫ КОНЦЕПЦИЙ В ИНТЕРЬЕРЕ

Аннотация: *В статье определены основы формирования этностиля как стилистического направления, которое характеризуется использованием этнических элементов при формировании художественного образа архитектуры интерьера. Поданы его составные элементы, основные средства формирования и специфика его использования в архитектурной среде предприятий общественного питания. Менталитет является одной из главных составляющих этнического своеобразия. Он отображает мировоззрение людей, предопределяет формирование определенного образа жизни, архитектуры и предметно-бытовой среды. В статье освещены особенности этнохудожественных традиций, менталитета и архитектуры народного жилья разных этносов Украины, как концептуальные парадигмы в проектировании современной архитектуры интерьера предприятий общественного питания.*

Ключевые слова: *народное жилье, быт, менталитет.*

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ARCHITECTURE OF PUBLIC BUILDINGS AND PRINCIPLES OF CONCEPTS IN THE INTERIOR

Abstract: *The article defines the foundations of the formation of ethnostille as a stylistic trend, which is characterized by the use of ethnic elements in the formation of the artistic image of interior architecture. Its constituent elements, the main means of formation and the specifics of its use in the architectural environment of public catering enterprises are presented. Mentality is one of the main components of ethnic identity. It reflects the worldview of people, determines the formation of a certain way of life, architecture, and everyday environment. The article highlights the features of ethnic and artistic traditions, mentality and architecture of public housing of different ethnic groups of Ukraine, as conceptual paradigms in the design of modern interior architecture of catering enterprises.*

Keywords: *national housing, way of life, mentality.*

Актуальность темы

Формирование архитектурной и предметно-пространственной среды издавна зависело от многих факторов, прежде всего этнографических. Народные архитектурные и художественные традиции являются отражением мировоззрения людей, носителями культурного наследия определенного этноса. Особенности менталитета, характера разных этнических групп, находят свое отражение в специфике строительства их жилья, в формообразовании мебели, отделке и декорировании интерьеров и архитектурных деталей. Данная взаимосвязь нуждается в основательном исследовании и освещении в теории архитектуры. Сегодня все чаще наблюдается желание индивидов находиться в самобытной традиционной среде, которая создает положительные художественно - эстетические эмоции, абстрагирует от единообразия современной урбанистической среды. Ведутся поиски собственной идентичности разных наций на фоне богатства их культурно- художественного и архитектурного наследия.

Цель данной статьи: выявить концептуальные подходы к архитектуре интерьера в контексте этнохудожественных традиций, особенностей менталитета и быта разных этносов. Осветить теоретические основы этностиля, специфику использования его в современной архитектурной среде на примере предприятий общественного питания.

Изложение основного материала

Невзирая на возрастающие тенденции использования в архитектуре интерьера, в частности предприятий общественного питания, этнических мотивов, национальных традиций, следует отметить, что в настоящее время отсутствует теоретическое определение и наименование данного явления, которое базируется на синтезе аутентичного искусства и архитектуры с современной культурой. В научной литературе наблюдались такие определения данного явления, как национальный стиль, исторический стиль, стилизация исторического стиля. По нашему мнению, такие определения не являются оправданными и не отвечают художественно - эстетической парадигме данного феномена. Этностиль не отображается в архитектуре интерьеров как формальная совокупность архитектурно-художественных признаков определенного периода, он не имеет эпохального значения, также он не является точным воссозданием определенного исторического стиля, а является скорее стилистическим приемом, художественным направлением, характеризующимся использованием этнических элементов при формировании художественного образа. В качестве исходного положения мы опираемся на определение этностиля: "Этностиль - стилистическое направление в архитектуре и дизайне, которое характеризуется использованием элементов народной архитектуры, традиционных материалов, изделий народно-прикладного искусства, образцов этнической материальной культуры при формировании художественно-архитектурного образа с помощью методов этнической стилизации". Важным при использовании этностиля является понимание

семантического значения этнических элементов, которые используются в интерьере, ведь бездумное использование давних архетипов и прообразов приведет к нарушению коммуникативной функции сакрального искусства. Традиция является социальным механизмом передачи ценностей народной культуры, менталитета народа, она создается обычаями и опирается на инновации. Народные архитектурно-строительные традиции, художественные промыслы и ремесла базируются на использовании природных материалов и экологических технологий. Этническая культура является касательной, и частично совпадает с народной, которая, в свою очередь, берет свое начало из крестьянского художественного творчества и традиций. Экологичность этностиля заложена в его основе, таким образом, парадигмой его формирования первоочередной является этнокультура. Самое яркое переосмысление и использование национальной традиции Украины происходит именно в предметной среде предприятий общественного питания, начиная с 70-х годов. XX века. Самобытное украинское искусство, народные архитектурные формы, этническое многообразие украинской культуры, становятся новой тематической основой проектирования интерьеров того времени. В современной архитектурно-дизайнерской практике при формировании художественного образа интерьера предприятий общественного питания все чаще используются национальные и региональные этнические мотивы. Этнокультурное своеобразие этих интерьеров отображает традиции, менталитет, уклад жизни, обычаи и обряды определенного народа. Узбекистан является суверенное, демократическое, социально-правовым государством, на ее территории проживают представители свыше 130 этносов. Этнические группы представляют 22,2 % населения страны. Самыми многочисленными этносами, которые проживают на территории Узбеки, кроме узбеков являются русские, таджики, казахи, белорусы, каракалпаки, крымские татары, поляки, евреи, армяне, греки, азербайджанцы, грузины. Каждый из данных регионов имеет свои особенности традиционно-бытовой и духовной культуры, историю формирования. Этно-художественные традиции богатого украинского народа позволяют создавать самобытную современную среду с широким использованием произведений декоративного искусства и архитектуры, с переосмыслением народных обычаев, фольклора и быта. В этностиле воссоздаются менталитет, культурные традиции, особенности быта, художественное творчество, обычаи и обряды определенного этноса. Характерные черты этностиля: традиционность, синкретичность, экологичность. Одной из главных составляющих этнического своеобразия является менталитет. Он предопределяет формирование образа жизни, традиций, отображает мировоззрение определенной группы людей, психологически-эмоциональные, а, следовательно, и эстетические особенности восприятия и трактовки окружающего мира. Узбекам присущи такие черты менталитета, как религиозность, индивидуализм, слитность с природой, гуманность, толерантность и миролюбие, искренность,

демократизм, глубокая эмоциональность, хозяйственность, а также терпеливость, стремление избежать личной ответственности, лишняя застенчивость. Поскольку Узбекистан состоит из многих субэтносов, целесообразно рассмотреть особенности менталитета разных ее этнических групп и выявить, как влияет менталитет данных этносов на формирование их архитектуры и предметно-бытовой среды. Так, Узбеки любят свой край и семью, доверчивые. Данные черты Узбеков отображались в формировании их жизненной среды. Для них главной ценностью была большая семья, каждая семья поселялась далеко одна от другой, поэтому жилье было защищено изгородью, что повлекло формирование гражды - своеобразного типа усадьбы, замкнутого двора. Дома они строили из глины, который называли «Пахса» ,что означает дом из глины, благодаря глины дома были летом прохладными ,а зимние время держали тепло в доме , выглядели среди горного ландшафта. Архитектурные формы гуцульских хат были несколько резкими, имели четкий графический силуэт, который напоминает о целеустремленном характере гуцулов. Здания перекрывали четырехскатными крышами, которые повторяли мягкие очертания гор. Любовь к прекрасному, оптимизм и трудолюбие узбеков, воссоздавались в богатстве декоративной отделки интерьера их хат, предметов повседневного пользования. Печи в домах находились по среди комнаты и назывались «Сандал», это своеобразный стол на который накрывали большое одеяло ,а под столом на земле делали отверстие для вставления тазика с золой который обогревал всю комнату, а одеяло «курпа» было вышетое узорами которые отмечались богатством декоративных мотивов: растительных, сюжетно-тематических с изображениями казаков, животных, птиц. Резьбой декорировали и сундуки, верхнюю часть дверных косяков. Кроме деревянных образов, которые отличались особенным разнообразием сюжетов и орнаментов, поражали разноцветностью. Архитектурные формы узбекских домов отличались легки и мягки, здания пропорциональны, с четкими силуэтами, крыши высокие и крутые. Среди мотивов росписей распространены растительные орнаменты в виде не сложных узоров или отдельных веток, растений, птиц, животных.

Это жилье содержит под одной крышей 3-4 комнат, кухни, кладовую. Крыши домов преимущественно из балок, глины и соломенные, двускатные. Внутри стены обмазывали и белили глиной, входные двери очень низкие Особенное внимание уделяли внешнему виду жилища, на уличной и внутренней стороне сажали цветы , базелик .Жители долин и равнин Узбекистана религиозны, работящи и законопослушны, имеют особенный эстетический вкус и любовь к красоте. Интерьер домов отмечался богатством декорации, каждый красив посвоему. Распространенное использование цветных тканей с вышивкой, на кроватях размещены много тканных подушек. Эстетическая функция мебели была для узбеков не менее важной, чем утилитарная. Они использовали столы-сундуки с контурной резьбой [6, с.74]. По всему Узбекистану значительно распространенными

были керамические изделия кувшины горшки, тарелки, пиялы . На стены вешали рисованные фаянсовые тарелки. Любовь к земле и земледелие, как главное занятие узбеков , нашло отображение в размещении вышитых картинах и коврах , которые были окружены двором, садом или огородом.Юг Узбекистана издавна характеризовался полиэтничностью, где рядом с коренным население селились таджики , киргизы, казахи, Это нашло отражение в архитектуре Юга. Для данного региона характерна богатая как внешняя, так и внутренняя художественно-декоративная отделка. Стены декорировались росписями, украшались коврами, декоративными панно; архитектурные детали выделялись цветом, извне резьбой; декоративное рисование украшало деревянные ряды, печи, фасад вокруг окон, под крышей. Среди росписей преобладали растительные мотивы: вазы, букеты, виноградная лоза, венки; часто использовались геометрические мотивы [6, с.37]. Этническим символом узбекской культуры стал классический тип народного жилья. Белая аккуратная комната, с четырехскатной крышей с высоким накладным , с небольшими окнами является образцом узбекской народной архитектуры [8]. Жителям Средней Азии присущи такие черты характера, как трудолюбие, опрятность, приветливость, веселый нрав. Искренность, правдивость просматриваются в архитектуре и в интерьерах данного региона. Здесь издавна распространены настенные росписи, которые поражают разнообразием сюжетов, резьбы по дереву и ганчу, которая используется для отделки окон, дверей, фронтонов, крылец [8]. В интерьере также присутствует художественная роспись, ею декорировались предметы быта; использовались вышивки, ткатство ковров, керамика, декоративные ткани. Среди сюжетов росписей преобладали изображения птиц и цветов, солнца, композиции из геометрических элементов: кругов и ромбов, ленточные орнаменты. По всему Узбекистану люди работящие и гостеприимные, добродушные, жилища их живописные и опрятные. Большинство домов извне и внутри побелены, крыши имеют мягкие очертания, четырехскатные. Извне архитектурные детали декорировали резьбой и окраской, разноцветными глинами покрывали фасад, завалинку. В некоторых селах художественной росписью декорировали внутренние стены и потолок изображениями птиц, венков, цветов, звезд. На Слобожанщине жилище сводили из разных материалов: дерева, известняка, глиносоломенного кирпича. Крыши имели напуск для защиты стен и завалинок от осадков [6, с.46]. Печи по-разному разукрашивались в зависимости от местности, были мазаными, расписанными или декорированы изразцами. В интерьерах хат использовали много полотенец. Разноцветность и многогранность этнических культур на территории Узбеки с их традициями и народным колоритом находят свое отражение в архитектуре интерьеров заведений предприятий общественного питания с национальной кухней, которые становятся все популярнее на территории нашей страны. Это специализированные заведения общественного питания, которые выпускают в основном однородную продукцию, где среди главных

блюд преобладают блюда национальной кухни разных народов мира. К ним принадлежат рестораны, кафе, бары и закусочные. Соответственно, главной задачей в формировании интерьеров таких заведений с национально-ориентированной кухней является организация их внутреннего пространства, которое отвечало бы национальной тематике заведения, обеспечило бы комфортные условия пребывания разного контингента посетителей, а также создало необходимый психологически-эмоциональный климат и эстетическое удовлетворение потребителей. Анализ предприятий общественного питания Узбекистана показывает, что кроме заведений национальных кухонь этносов, которые проживают на территории нашего государства, распространенными также являются заведения других народов. Например, рестораны кухонь Восточной Азии - национальных кухонь пользуются значительной популярностью, от чего их количество постоянно растет. Соответственно художественное оформление обеденных залов интерьеров данных предприятий формируется с использованием этнической стилистики и традиционных этнических элементов определенного этноса. Формирование предметно-пространственной среды предприятий общественного питания, его художественного образа, с использованием концептуальных принципов создания национальной идентичности, касается в первую очередь помещения для посетителей. В частности, идет речь об обеденных залах, а также холле, вестибюле, банкетных залах, и тому подобное. Художественный образ интерьера обеденного зала предприятия общественного питания, который формируется на основе национальной тематики, достигается такими средствами, как мебель и оборудование, отделка, декоративные элементы и аксессуары, фактура и структура облицовочных материалов, цветовое решение, орнаментика, освещение, одежда персонала, элементы сервирования, название заведения. В формировании архитектуры интерьера и оборудовании обеденных залов предприятий общественного питания с использованием национальных мотивов, важное место отводится синтезу архитектуры, декоративно-прикладного, народного и монументально- декоративного искусства. Предметы и элементы декоративно - прикладного и народного искусства в дизайне интерьера являются одним из главных признаков этнической принадлежности, важным средством создания художественного образа с национальным колоритом, при формировании этностиля. Это могут быть предметы домашнего потребления: керамические, деревянные, металлические изделия; изделия из ткани; мебель; монументально-декоративная живопись; орудия труда. В этом проявляется синкретичность этностилю, она предусматривает связь разных видов практической и художественной деятельности. Этническое наследство отображается в интерьерах предприятий общественного питания с помощью этнической стилизации, использованием традиционных материалов, цитирования предметов и элементов материальной культуры разных этносов. Визуально-образная символика и орнаментика являются важными средствами

формирования этностиля. Самобытным элементом народного и декоративно-прикладного искусства является орнамент. Он определяет основные черты этнической культуры, тесно связан с историей определенного народа. Искусство каждого этноса имеет свою характерную орнаментику. Символика орнамента, его знаковость, отображают мировосприятие, эстетическое восприятие прекрасного, отношение людей к окружающему миру. Сам он является наиболее информативным элементом традиционной культуры. Первые орнаменты имели сакрально-символическое содержание. Большинство мотивов народной орнаментики в Узбекистане возникли еще в первобытном искусстве, известные из XVIII-XX тыс. до н.э., это: спиральные, ромбически-меандровые узоры. Орнаменты отображают давние мифологические представления наших предков о природе и вселенной. Их многообразие видим в композициях вышивок, крашенок, резьбе, на керамике [2, с.27].

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ВЛИЯНИЕ ИММИГРАЦИИ НА ФРАНЦУЗСКУЮ ЭКОНОМИКУ: ВЫХОД ИЗ «ПОРОЧНОГО КРУГА» И ПРИОРИТИЗАЦИЯ ЗАНЯТОСТИ

Аннотация: *Эта статья подчеркивает, что иммиграция является политическим и социальным вопросом во Франции. Она находится в центре электоральных дебатов и медийных обсуждений волнующих граждан вопросов. Понимание ее экономического влияния имеет решающее значение для того, чтобы превзойти простые идеологические позиции и освещать общественные дебаты данными и анализами. Цель состоит в том, чтобы четко определить тему с экономической точки зрения, признавая при этом, что это лишь часть более широкой картины. Это помогает лучше понять, почему дебаты остаются столь оживленными, даже когда экономические данные кажутся относительно ясными.*

Ключевые слова: *влияние иммиграции на Францию, приоритизация занятости и экономики Франции.*

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THE IMPACT OF IMMIGRATION ON THE FRENCH ECONOMY: ESCAPE FROM THE "VICIOUS CIRCLE" AND PRIORITIZING EMPLOYMENT

Abstract: *This article highlights that immigration is a political and social issue in France. It is at the heart of electoral debates and media discussions of citizens' concerns. Understanding its economic impact is crucial to move beyond simple ideological stances and illuminate public debate with data and analysis. The goal is to clearly define the subject in terms of the economic aspect while acknowledging that this is only part of a larger picture. This helps to better understand why the debate remains so heated, even when economic data seems relatively clear.*

Key words: *the impact of immigration on France, the prioritization of employment and the French Economy.*

Введение

Иммиграция в своих текущих реалиях усугубляет структурные проблемы занятости во Франции. В среднем, и несмотря на очевидные карьерные достижения, иммигранты: менее трудоспособны, чем местные жители; уровень занятости иммигрантов во Франции является вторым по низости в ОЭСР после Бельгии; имеют тенденцию снижать производительность из-за меньшей квалификации; меньше работают в промышленности, чем местные жители. Иммиграция ухудшает состояние государственных финансов. Согласно ОЭСР, бюджетные поступления от иммигрантов покрывают только 86% государственных расходов, на которые они приходятся - с явными различиями в зависимости от типов иммиграции. Только Эстония и Литва имеют худшие бюджетные коэффициенты, чем Франция. Иммиграция в основном идет на пользу защищенным от международной конкуренции экономическим секторам (в частности, строительству и безопасности) и косвенно вредна для открытых секторов, таких как промышленность, из-за увеличения налоговых сборов, которые она вызывает — в результате негативного влияния на государственные финансы. В своем нынешнем виде иммиграция имеет противоречивые последствия для нашей экономики. С одной стороны, она помогает решить некоторые проблемы нехватки рабочей силы в отдельных секторах; с другой стороны, она в целом ухудшает уровень занятости в стране на макроуровне и таким образом усугубляет дисбаланс наших государственных финансов, а также дефицит производства товаров и услуг, подлежащих экспорту. . Она не создает проблем, но подчеркивает основные недостатки французской экономики: нехватка рабочих мест, недостаточная производительность, дефицит государственных финансов. Чтобы выйти из этого «порочного круга», необходимо совместно реформировать французскую образовательную систему, нашу социальную модель и иммиграционную политику, чтобы вернуть французской экономике уровень занятости, по

крайней мере, сопоставимый с уровнем ее конкурентов. Низкий уровень занятости среди иммигрантов и потомков иммигрантов препятствует нашему росту. Уровень занятости — это доля людей, занимающих рабочие места, среди тех, кто в трудоспособном возрасте. Этот показатель является ключевым вопросом, потому что работа — это двигатель экономического роста и процветания страны. Однако уровень занятости во Франции (69 % занятых в возрасте 15-64 лет во 2 квартале 2024 года) ниже на 5-13 пунктов по сравнению с другими соседними странами: Великобританией (74,5 %), Германией (77,4 %), Швейцарией (80,4 %), Нидерландами (82,5 %). [15 октября 2024 года].

Недоступная занятость имеет серьезные экономические последствия по трем основным причинам: меньше работников – это меньше производства для страны, а значит, меньше доходов на душу населения, меньше производства – это меньше налоговых и социальных поступлений для государства и, следовательно, более высокие налоги для тех, кто производит. Они больше облагаются налогами, чтобы компенсировать эту потерю доходов и финансировать функционирование государства. Меньше работников – это также больше безработных и неактивных, которым нужно помочь, чтобы они могли жить, с вновь перераспределением, финансируемым налогами тех, кто производит.

Иммиграционная политика играет ключевую роль в социально-экономических результатах принимающих стран. Она влияет на состав миграционных потоков, интеграцию иммигрантов, занятость, заработные платы, производительность и государственные финансы. Иммиграция регулярно рассматривается как решение для устранения нехватки рабочей силы, увеличения роста и тем самым восстановления наших государственных счетов. К сожалению, Франция характеризуется вторым по низкому уровню занятости иммигрантов в Европе.

Таблица 1

Страна	**Уровень занятости иммигрантов в 2023 году**
Бельгия	61,4%
Франция	62,4%
Греция	62,5%
Среднее значение ОЭСР	71,8%
Средний ЕС 27	67,5%

Источник [Источник ОЭСР, «Перспективы международной миграции 2024», страница 63].

Трудоспособные иммигранты в Франции значительно реже имеют работу по сравнению с местными жителями (62,4% против 69,5%), что составляет разницу в 7,1 процентных пункта. Согласно данным INSEE, в 2021 году 1,74 миллиона иммигрантов строго говоря — родившихся за границей — не работали, не учились и не находились на пенсии во Франции.

Это число составляло 27% от иммигрантского населения «первого поколения» в возрасте 15 лет и старше, что более чем вдвое превышает уровень, наблюдаемый среди населения без иммигрантского статуса (13%). [27/06/2024]. [источник. Источник Расчет OID на основе файла переписи IMG2A (INSEE) за 2021 год, опубликованного 27/06/2024]

Если выбирать в качестве критерия национальность, то наблюдения становятся еще более очевидными: 30,5% иностранцев старше 15 лет в 2021 году не были ни заняты, ни учились, ни находились на пенсии, в то время как среди французов этот показатель составил 13%. Таким образом, 1,27 миллиона иностранных граждан находились в спектре безработицы или неактивности на территории страны. Источник [Расчет OID на основе данных переписи NAT2 (INSEE) за 2021 год, опубликованный 27/06/2021].

Таким образом, иммиграция не улучшает падение уровня занятости во Франции, а, напротив, значительно его ухудшает. В других странах, в отличие от Франции, наблюдается улучшение уровня занятости благодаря иммиграции - иммигранты в среднем имеют более высокий уровень занятости, чем местные жители.

Таблица 2

Страна	**Разница в уровнях занятости между иммигрантами и гражданами страны (2023)**
Люксембург	+10,5points
Словакия	+6,6points
Португалия	+4,7points
Ирландия	+4,2 points
Соединенные Штаты	+3,1 points

[источник «Перспективы международной миграции 2024» страница 63]

В 18 из 35 стран ОЭСР и 13 из 27 стран Европы уровень занятости иммигрантов выше, чем у коренных жителей, однако при учете населения уровень их занятости оказывается ниже на 0,6 пункта в целом по ОЭСР и на 3,4 пункта по Европейскому Союзу.

Таблица 3

Миграционное происхождение	**Уровень занятости в 2023 году**
Люди без миграционных корней	70,7%
Иммигранты (1 поколение)	62,5%
Потомки иммигрантов (2 поколения)	59,7%
Совокупность населения	68,4%

[источник INSEE, «Иммигранты и потомки иммигрантов», опубликовано 21/11/2024]

Низкий уровень занятости затрагивает значительную часть населения, имеющего иммигрантские корни через два поколения, которое составляет

22,7 % населения Франции (иммигранты составляют 10,6 % от общего населения, а потомки иммигрантов второго поколения – 12,1 %). То, что уровень занятости потомков иммигрантов ниже, чем у их родителей, свидетельствует о неудачах процесса интеграции; это указывает на то, что иммиграция имеет долговременное негативное влияние на уровень занятости и, в свою очередь, на экономику страны.

Уровень занятости иммигрантов в Швейцарии и Нидерландах ниже, чем у местных жителей этих стран, но выше, чем у местных жителей Франции.

В первую очередь благодаря этим более высоким уровням занятости финансы этих стран почти на равно, а доход их жителей значительно превышает доход французов: более чем в два раза для швейцарцев, на 44% выше для голландцев.[16/06/2025] . источник Всемирный банк, « ВВП на душу населения (текущие доллары США) », по состоянию на 16/06/2025 https://donnees.banquemondiale.org/indicateur/NY.GDP.PCAP.CD?name_desc=false

Отложить на 3 года получение нестраховых социальных выплат (RSA, пособие на жилье, семейные пособия, минимальная пенсия, премия за активность, то есть без взносов на труд) позволило бы стимулировать трудовую занятость и значительно повысить уровень занятости иммигрантов. Законопроект, предусматривающий условие срока проживания для получения определенных социальных выплат, представленный 3 февраля 2025 года в Сенате, направлен на условие выплаты нестраховых социальных пособий в соответствии с минимальным сроком проживания не менее двух лет на территории Франции. Это предложение стало следствием решения, вынесенного Конституционным советом 11 апреля 2024 года, который отменил срок ожидания в 5 лет по данному вопросу. Симметрично, можно рассмотреть возможность введения единого социального пособия, значительно ниже минимальной заработной платы, с целью улучшения уровня занятости коренного населения.

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ПОНЯТИЕ О ЛЕКСИКЕ СОВРЕМЕННОГО РУССКОГО ЯЗЫКА

Аннотация: *Цель статьи - раскрыть вопросы исторического значения формирования слов и толкований в словаре, а также размещение и толкование слов и подходы к определению критериев классификации слов. Помимо толкования, существующего в самой действительности, а также выражения в смысле и понятии, затрагиваются вопросы системности понятий в словарях и их идеографические особенности.*

Ключевые слова: *Лексикология, семантические изменения, языковая динамика, культурные факторы, лексический анализ, системные отношения в лексике.*

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THE CONCEPT OF THE VOCABULARY OF THE MODERN RUSSIAN LANGUAGE

Abstract: *The purpose of this article is to explore the historical significance of word formation and definitions in dictionaries, as well as the placement and definition of words and approaches to defining classification criteria. In addition to definitions that exist in reality, as well as expressions in meaning and concept, the article addresses the systematic nature of concepts in dictionaries and their ideographic features.*

Keywords: *Lexicology, semantic change, language dynamics, cultural factors, lexical analysis, systemic relationships in vocabulary.*

В статье рассматриваются особенности гендерной лексики русского языка на основе толкового словаря. Эта лексика объясняет, как фактическое влияние социокультурных и языковых факторов определяет отношение общества к восприятию мужского и женского пола. Основными идеографическими ветвями такой лексики являются профессии и увлечения. Научная новизна статьи заключается в выявлении традиционных и новейших подходов к вопросу идеографического аспекта языка, в данном случае, на примере лексики, связанной с гендером. В статье выделяются

универсальные закономерности и национально-специфические различия при толковании понятий, их функционировании в языке и речи. В ней также рассматриваются отрасли, связанные с различными аспектами формирования реальности сознания и эксплицитности логики без учёта гендерных факторов, на примере интерпретации профессий и увлечений. В статье выделяются универсальные закономерности и национально-специфические расхождения при интерпретации понятий в словаре и их функционировании в языке. Гендерные исследования дают возможность проанализировать социокультурные и речевые факторы, определяющие отношение общества к мужчинам и женщинам, а также поведение говорящих индивидов в связи с принадлежностью к определённому полу и стереотипные представления о мужских и женских качествах. То есть всё то, что переводит проблему гендера из области биологии в социальную сферу. Благодаря происхождению, значению и использованию в речи общество корректирует языковое сознание человека, тем самым дифференцируя социальную природу и положение полов в языке и менталитете, предписывая человеку стремления и модели поведения, о которых он изначально может не подозревать. В практической части статьи представлен фрагмент толкового словаря современного русского языка. Раскрываются особенности категории «гендер», непосредственно связанные с полом и гендерными различиями.

Лексика нейтральная или межстилевая - это лексика, лишённая стилистической и эмоциональной окраски. Она является ядром словарного состава языка. Эта лексика употребляется в любом виде речи. Она необходима для того, чтобы на её фоне выделить эмоционально и стилистически окрашенную лексику. Экспрессивно окрашенная лексика: 1) разговорная (в устной форме) 2) книжная (в письменной форме). Книжная лексика имеет функционально стилевое расслоение: окраска официально-делового, публицистического, научного стиля. Лексика высокая (поэтическая, торжественная). Разговорная лексика - проявляется в устной речи, содержит некоторую оценку, она ниже по своему положению. Это непринуждённое неофициальное общение, не выходит за рамки литературной нормы. Просторечная лексика выходит за рамки литературной нормы, она носит оттенок грубости. Выделяют собственно просторечную лексику. Грубая лексика употребляется чаще всего людьми необразованными. Но культурные люди также ею пользуются в некоторых ситуациях. Особенности употребления обсценной лексики: 1) иногда она употребляется для выражения грубости 2) нарушение табу установленных в обществе 3) ёмкость и многозначность 4) использование мата в литературных произведениях. Обсценность не стоит путать с бранностью.

Лексикология, изучающая словарный состав языка, его структуру и динамику, играет ключевую роль в понимании не только языковых процессов, но и культурных и социальных изменений в обществе. В ходе анализа мы рассмотрели основные аспекты лексикологии: от классификации

словарного запаса до влияния заимствований и неологизмов на развитие языка. Также было отмечено, как лексические изменения отражают исторические события и культурные трансформации, происходящие в русском обществе.

Словарь совмещает научность с понятной и доступной формой изложения. Его основная задача – дать полную характеристику слову (его написание, произношение, происхождение, словоизменение, значение, область функционирования, сочетаемость), а также показать исторические, эстетические, символические смысловые нагрузки слова. Основным критерием включения слова в словарь является их фактическое использование в текстах художественной литературы и научно-популярных изданий, публицистике, массовой периодической печати и устной речи. Кроме общеупотребительных слов, в словаре приведена основная терминология современной науки и техники, а также слова, обозначающие явления и реалии производственной, культурной и общественной жизни русского народа. В Большом толковом словаре русского языка под редакцией С.А. Кузнецова на букву "А" [1] выявлено 119 слов, связанных с гендерной тематикой. Объяснение этой диспропорции можно увидеть в исторически сложившихся особенностях разделения профессиональной деятельности, где мужчинам принадлежит безоговорочное первенство. Кроме того, мужчины дали названия многим профессиям, которые теперь используются в языке, поэтому на шесть мужских профессий приходится одна женская. Следует отметить, что в словаре устанавливается так называемая симметрия в названиях мужских и женских профессий и хобби, а также предпочтениях. Это вызвано тем, что все большее количество так называемых мужских профессий, должностей и званий занимают женщины, поэтому это должно отражаться и в языке путем добавления нового толкования и понятия. По происхождению, смыслу и употреблению в речи общество корректирует языковое сознание человека, дифференцируя в языке и менталитете социальную природу и положение статей, представляя человеку устремления и модели поведения, о которых поначалу он может и не подозревать. Возникнув на такой основе, социальные (а именно гендерные) стереотипы оказываются настолько сильными, что влияют не только на основу слов и признаки рода, но и на их способность сочетаться друг с другом. В языке, где категория рода напрямую связана с полом, неточно отражается действительность с точки зрения гендерных различий, существующих в современном обществе.

Для названий людей по профессиональному признаку часто существует только одно слово, и оно, как правило, относится к мужскому роду: авиатор, автоинспектор, автокаскадер, автоматчик (автоматщицы, разм.), автомобилист (автомобилистка), автор, автостроители, автотранспортник, аграрник, агрессор, биолог, агрометеоролог, агроном, агроном. агрохимик, адвокат, администратор, адмирал (адмиральша, разм. жена адмирала), академик, акселератов, акселератка, анестезиолог (врач-

специалист по анестезиологии), анималист, аномальник, антрополог, аппаратчик (аппаратчик), аптекарь (разм. женщина) аптеки; фармацевт); арабист; астроном, астрофизик, аэрологии. В рассматриваемом разделе есть также слова с толкованиями как для мужского, так и для женского рода: аббат, игуменья, агроном (агрономка см. Агроном.), адвентист (адвентистка), адмирал (адмиральша, разм. жена адмирала), аист, аист (ап. акванавт), акробат, акробатка (см. акробат), актер (актриса – см. актер), акушер (врач-специалист по акушерству), акушерка (женщина со средним медицинским образованием, имеющая право самостоятельно оказывать помощь во время родов), асессор, асессор, а. атаман, атаманка (см. атаман), атеист (атеистка).

Таким образом, лексикология русского языка является важным инструментом для изучения не только самого языка, но и менталитета носителей, их ценностей и традиций. Будущее этой области науки связано с дальнейшими исследованиями, которые помогут глубже понять механизмы функционирования языка в современном мире и его адаптацию к новым условиям.

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СУВНИНГ КИМЁВИЙ ТАРКИБИГА ТАЪСИР ҚИЛУВЧИ ОМИЛЛАР

Аннотация. *Мақолада табиий сувларнинг кимёвий таркиби, унга таъсир этувчи асосий омиллар ва турли гидрологик шароитларда минерал моддаларнинг концентрацияси таҳлил қилинган. Атмосфера ёғингарчилиги, дарё, кўл ва ер ости сувларининг ион таркиби ҳамда уларнинг шаклланиш жараёнлари мисоллар орқали ёритилган. Шунингдек, сувларда газларнинг эрувчанлиги ва биогеокимёвий жараёнлардаги роли кенг ёритилган.*

Калит сўзлар: *табиий сув, кимёвий таркиб, минераллашув, асосий ионлар, гидрокарбонат (HCO_3^-), хлорид (Cl^-), сулфат (SO_4^{2-}), калций (Ca^{2+}), магний (Mg^{2+}), натрий (Na^+), калий (K^+), атмосфера ёғингарчилиги, газлар (O_2, CO_2, N_2, CH_4, H_2S), фотосинтез, биогеокимёвий жараёнлар, иқлим омиллари, геологик муҳит, грунт эритмаси, гумус моддалари, органик кислоталар, карбонат жинслар, алюмосиликатлар, ер ости сувлари, ер усти сувлари, сув айланиши, минерал моддалар эриши.*

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FACTORS AFFECTING THE CHEMICAL COMPOSITION OF WATER

Abstract.*: The article analyzes the chemical composition of natural waters, the main factors influencing it, and the concentration of mineral substances under*

various hydrological conditions. Examples are given of the ionic composition of atmospheric precipitation, rivers, lakes, and groundwater, as well as the processes of their formation. In addition, the solubility of gases in water and their role in biogeochemical processes are discussed in detail.

Keywords: *natural water, chemical composition, mineralization, major ions, bicarbonate (HCO_3^-), chloride (Cl^-), sulfate (SO_4^{2-}), calcium (Ca^{2+}), magnesium (Mg^{2+}), sodium (Na^+), potassium (K^+), atmospheric precipitation, gases (O_2, CO_2, N_2, CH_4, H_2S), photosynthesis, biogeochemical processes, climatic factors, geological environment, soil solution, humic substances, organic acids, carbonate rocks, aluminosilicates, groundwater, surface water, water cycle, dissolution of mineral substances.*

Кириш

Сувнинг кимёвий таркиби унинг геологик тарихи ва гидрогеологик шароити билан чамбарчас боғлиқ бўлиб, бу жараёнлар сувнинг физик, кимёвий ва биологик хусусиятларини белгилайди. Атмосфера, гидросфера ва литосфера ўзаро таъсирчан тизимлар сифатида доимий равишда модда ва энергия алмашинувида иштирок этади. Шунинг учун сувнинг таркибидаги ионлар, газлар ва органик моддалар тўплами унинг қайси манбаадан шаклланганини, қандай геокимёвий ва биогеокимёвий жараёнлардан ўтганини аниқ кўрсатади. Табиий сувлар шаклланиш жараёнида турли омиллар таъсирига учрайди:

- иқлим шароити – ёғингарчилик миқдори, ҳаво ҳарорати ва буғланиш тезлиги сувнинг минераллашув даражасига бевосита таъсир кўрсатади. Масалан, қуруқ иқлим шароитида буғланиш ортиши натижасида сувларда хлорид ва сулфат ионлари миқдори ошиб боради, нам ҳудудларда эса гидрокарбонат ионлари устунлик қилади;
- геологик муҳит – сув билан контактда бўлган жинслар таркиби ва уларнинг эрувчанлиги сувнинг асосий ион таркибини белгилайди. Масалан, оҳактош жинслари кальций ва магний гидрокарбонатларини ҳосил қилади, гранит ва алюмосиликат жинслари эса сувда кремний ва алюминий моддаларининг концентрациясини оширади;
- биологик жараёнлар – ўсимликлар, микроорганизмлар ва сув ўтлари моддалар алмашинуви орқали сувнинг кимёвий таркибини ўзгартиради. Масалан, фотосинтез жараёни сувдаги кислород миқдорини кўпайтирса, органик моддаларнинг анаэроб парчаланиши метан ва сероводороднинг шаклланишига олиб келади.

Бу жараёнлар йиғиндиси натижасида турли ҳудудлардаги сувларнинг таъми, минераллашув даражаси ва биогеокимёвий хусусиятлари сезиларли фарқ қилади. Масалан, тоғли ҳудудлардаги ер ости сувлари кўпинча тоза ва кам минераллашган бўлса, чўл зоналаридаги сувлар юқори минераллашуви ва кўпроқ туз моддалари билан ажралиб туради.

Шу боис, сувнинг кимёвий таркибини ўрганиш нафақат унинг табиий айланиши ва гидрогеологик хусусиятларини аниқлашда, балки сув

ресурсларидан оқилона фойдаланиш, экологик барқарорликни таъминлаш ва инсон саломатлигига таъсирини баҳолашда ҳам муҳим аҳамият касб этади.

Асосий қисми

Эриган минерал моддалар

Агар дераза шишаси юзасига бир томчи табиий сув томизилиб, унинг тўлиқ буғланиши кутилса, томчи қолган жойда оқ ёки ёруғ тусли чизиқлар ва доғлар ҳосил бўлади. Бу тузилишлар сувда эриган минерал тузларнинг кристаллари ҳисобланади. Табиий сувларда эриган тузлар миқдори жуда кенг диапазонда ўзгаради. Масалан, бир литр ёмғир сувида одатда 1 мг ёки, айрим ҳолларда, ўнлаб миллиграмм миқдорда тузлар бўлади. Шу билан бирга, айрим гиперҳалоин сув ҳавзаларида тузлар концентрацияси жуда юқори бўлиши мумкин: масалан, Каспий денгизининг Кара-Богаз-Гол кўрфазида 1 литр сув таркибида тахминан 300 г туз мавжуд бўлиб, бу сув массасининг қарийб учдан бир қисмини ташкил этади [1].

Сувли эритмаларда эриган тузларнинг асосий қисми ионлар кўринишида мавжуд бўлади. Табиий сувларда энг кўп учрайдиган ионлар қуйидагилар: учта анион - гидрокарбонат (HCO_3^-), хлорид (Cl^-) ва сулфат (SO_4^{2-}), ҳамда тўртта катион - калций (Ca^{2+}), магний (Mg^{2+}), натрий (Na^+) ва калий (K^+). Бу ионлар асосий ионлар деб аталади. Хлорид ионлари сувга шўр таъм беради, сулфат, калций ва магний ионлари сувнинг аччиқлигини оширади, гидрокарбонат ионлари эса таъмсиздир. Чучук сувларда эриган моддаларнинг 90-95 % ни, юқори минераллашган сувларда эса 99 % дан ортиқ қисмини асосий ионлар ташкил қилади. Одатда асосий ионлар учун концентрациянинг пастки чегараси 1 мг/л деб қабул қилинади. Шу боис айрим ҳолларда (масалан, денгиз суви ёки айрим ер ости сувларида) бромид (Br^-), бор (B^{3+}), стронций (Sr^{2+}) ва бошқа ионлар ҳам асосий компонентлар қаторига киритилиши мумкин. Калий (K^+) ионини асосийлар қаторига киритиш масаласи мунозарали: ер усти ва ер ости сувларида у одатда иккиламчи аҳамиятга эга бўлсада, атмосфера ёғинларида кўп ҳолларда асосий роль ўйнайди [2].

Бироқ, асосий компонентларнинг ион шаклда мавжуд бўлиши фақат паст минераллашган сувлар учун хосдир. Минераллашув даражаси ошган сари ионлар ўртасидаги ўзаро таъсир кучаяди ва бу диссоциациянинг тескари жараёни - ассоциация йўналишида намоён бўлади. Натижада, боғланган ион жуфтлари ҳосил бўлади, масалан: $MgHCO_3^+$, $CaHCO_3^+$.

Иқлим ва геологик омиллар таъсири

Иқлим шароити (ҳарорат, ёғин миқдори, ҳаво намлиги, шамол режими) ҳамда геологик муҳит хусусиятлари (ташқи сув оқимлари, ер ости сувларининг айланиш режими, жинсларнинг минерал таркиби) табиий сувларнинг кимёвий таркибига бевосита таъсир кўрсатади. Қуруқ ва иссиқ иқлимда буғланиш интенсивлиги юқори бўлгани учун сувнинг минераллашув даражаси ортади, айниқса хлорид ва сулфат ионлари миқдори сезиларли равишда кўпайиши мумкин. Нам ва ёғин миқдори юқори ҳудудларда эса сувлар, одатда, нисбатан чучук бўлиб, гидрокарбонат

ионлари устунлик қилади. Шу билан бирга, ҳар бир табиий сув тури - ёғингарчилик суви, дарё суви, кўл суви ёки ер ости суви - ўзининг шаклланиш манбалари ва айланиш циклига мувофиқ ўзига хос кимёвий таркибга эга бўлади [2].

Ёғингарчилик сувлари

Ёғингарчилик сувлари барча табиий сувлар ичида энг паст минераллашувга эга бўлиб, минерал моддалар концентрацияси одатда 10–20 мг/л оралиғида ўзгаради. Шу билан бирга, уларнинг эриган моддаларнинг кимёвий таркиби жиҳатидан бошқа табиий сувлардан кам эмас (1.1-жадвал). Ёғингарчилик таркибидаги эриган моддаларнинг асосий манбаи атмосфера аэрозолларидир. Уларнинг ион таркиби жуда хилма-хил бўлиб, Ўзбекистон ҳудудида минераллашув экстремал қийматлари 3–4 мг/л дан 50–60 мг/л гача етиши мумкин. Кўп ҳолларда SO_4^{2-} ёки HCO_3^- анионлари, шунингдек Ca^{2+} ёки Na^+ катионлари устунлик қилади. Қирғоқ ҳудудларида, айниқса кўл ёқасидан шамол йўналганида, шамол таъсирида тузларнинг механик кўчиши натижасида ёғингарчиликда хлорид ионлари (Cl^-) концентрацияси ошиши мумкин. Қирғоқдан узоқлашган сари Cl^- нисбий миқдори камаяди, аксинча SO_4^{2-}, Ca^{2+} ва Mg^{2+} концентрациялари ортади. SO_4^{2-} ва Ca^{2+} миқдорининг кўпайиши, асосан, атмосферанинг континентал келиб чиқишли аэрозоллар билан бойиши билан изоҳланади. Шу билан бирга, қитъа ичида денгиз аэрозолларининг маълум қисми ёғингарчилик орқали ювилиб чиқади. SO_4^{2-} концентрацияси энг катта ўзгарувчанликка эга бўлиб, унинг ортиши, бир томондан, атмосферада SO_2 ва H_2S газларининг оксидланиши билан, иккинчи томондан эса шўрланган юзалардан сулфат кислотаси тузларининг кўтарилиши билан боғлиқ. Ca^{2+} ва Na^+ концентрациясининг ортиши эса доим мавжуд бўлган тупроқ ва тоғ жинслари минерал чангларининг атмосферага кўтарилиши натижасидир [3].

1.1-жадвал

Ёғингарчилик сувларида эриган моддаларнинг кимёвий таркиби

№	Ионлар	Энг кам	Ўртача	Максимал
1	Cl^-	0,1-0,6	0,8-3,4	5,9-8,5
2	SO_4^{2-}	1,0-2,8	3,6-14,3	6,7-48,2
3	HCO_3^-	0,0-2,8	1,5-11,3	4,5-37,8
4	Na^+	0,0-0,8	0,5-3,2	2,3-14,4
5	K^+	0,01-0,02	0,4-0,9	1,0-5,0
6	Mg^{2+}	0,01-0,1	0,2-0,7	0,6-14,4
7	Ca^{2+}	0,01-0,4	0,6-6,0	1,0-25,5

Газлар ва уларнинг роли

Сув таркибида турли газлар мавжуд бўлиб, улар сувнинг физик-кимёвий хусусиятларига ва биогеокимёвий жараёнларига таъсир кўрсатади. Агар крандан олинган совуқ сув стаканга қуйилиб, илиқ жойда қолдирилса, унинг деворларида газ пуфакчалари ҳосил бўлади. Бу ҳолат совуқ сувда эриган газларнинг қиздирилганда ажралиб чиқиши билан изоҳланади, чунки ҳарорат ошиши газларнинг эрувчанлигини пасайтиради. Эрувчанликнинг

камайиши газ молекулаларининг кинетик энергияси ортиши натижасида сув молекулалари билан ўзаро таъсир кучларини енгиши билан боғлиқ. Табиий сувлар газсимон эритмалар ҳисобланади. Ер усти сувларида асосан кислород (O_2) ва карбонат ангидрид (CO_2) кенг тарқалган бўлса, ер ости сувларида водород сулфид (H_2S) ва метан (CH_4) кўпроқ учрайди. Азот (N_2) эса барча турдаги табиий сувларда доимий равишда мавжуд. Айрим ҳолларда чуқур горизонтлар сувлари сезиларли миқдорда CO_2 билан тўйинган бўлиши мумкин. Кислород (O_2) сувда асосан эриган молекулалар шаклида учрайди ва кучли оксидловчи сифатида табиий сувларнинг кимёвий таркибини шакллантиришда муҳим рол ўйнайди. У сув муҳитига асосан атмосферадан диффузия йўли билан ва фотосинтез жараёнлари натижасида кириб келади. Кислород органик моддаларнинг оксидланиши ҳамда гидробионтларнинг нафас олишида истеъмол қилинади. Ер усти сувларида эриган кислород концентрацияси бир қатор омиллар таъсирида (ҳарорат, фотосинтез интенсивлиги, турбулент аралашиш, органик моддалар миқдори ва бошқалар) кунлик, мавсумий ва йиллик даврларда сезиларли ўзгариб туради. Интенсив фотосинтез даврида кислород миқдори 0-14 мг/л оралиғида бўлиши мумкин, энг юқори қийматлар куннинг пешин пайтида кузатилади. Кислороднинг тўпланиши асосан кундузи, истеъмоли эса асосан кечаси содир бўлади. Санитария-гигиена нуқтаи назаридан, кислороднинг кучли оксидловчи хусусияти сув муҳитида органик қолдиқларнинг тез минераллашувига ва сувнинг ўзини-ўзи тозалаш жараёнларига катта ҳисса қўшади [4].

Карбонат ангидрид (CO_2) сувда асосан эриган газ молекулалари кўринишида мавжуд бўлади. Бироқ, эриган CO_2 молекулаларининг кичик қисми (тахминан 1%) сув билан кимёвий реакцияга киришиб, заиф икки асосли кислота — карбонат кислотани ҳосил қилади:

$$CO_2 + H_2O \leftrightarrow H_2CO_3$$

Одатда CO_2 ва H_2CO_3 сув кимёсида алоҳида ажратилмайди ва уларнинг йиғиндиси “карбонат ангидрид” деб. Табиий сувларда карбонат ангидриднинг асосий манбаи - органик моддаларнинг оксидланиш жараёнлари бўлиб, CO_2 тўғридан-тўғри сувда ёки сув билан алоқада бўлган грунт ва гилиналарда ажралиб чиқади. Бу жараёнга: сув организмларининг нафас олиши, турли биокимёвий парчаланишлар, органик қолдиқларнинг оксидланиши киради. Баъзи ер ости сувларида карбонат ангидриднинг қўшимча манбаи сифатида вулқон газлари чиқиши муҳим аҳамиятга эга. Улар мантиянинг газсизланиши ёки юқори ҳарорат таъсирида чуқурдаги чўкинди жинсларнинг метаморфизми натижасида ҳосил бўлади. Шу сабабли, чуқур қудуқ ва ер ости сувларида кўпинча CO_2 миқдори юқори бўлади. Карбонат ангидрид миқдорининг камайиши асосан фотосинтез жараёнида содир бўлади. Агар фотосинтез жуда интенсив бўлиб, газсимон CO_2 тўлиқ ишлатиб юборилса, унда $HCO3-$ ионларидан қўшимча CO_2 ажратиб олиш мумкин [5]:

$$HCO_3^- \rightleftharpoons CO_2 + OH$$

Бу реакция сув муҳитининг pH даражаси ошиши билан чап томондан ўнг томонга силжийди.

Карбонат ангидрид сув муҳитида нафақат биокимёвий жараёнларда иштирок этади, балки минерал моддаларнинг эриш жараёнида ҳам сарфланади. Масалан, кальций карбонатнинг эриши қуйидаги реакция орқали амалга ошади:

$$CaCO_3+CO_2+H_2O \rightleftharpoons Ca(HCO_3)_2$$

Бу жараён табиий сувларнинг кальций гидрокарбонатларига бойишининг асосий манбаларидан биридир.

Эриган молекуляр азот (N_2) эса табиий сувлардаги энг барқарор газ ҳисобланади. Унинг кимёвий инертлиги ва биологик йўқотилиши қийинлиги сабабли, ер ости сувларига кирган азот, асосан, фақат физик омиллар - ҳарорат ва босим ўзгариши - таъсирида концентрациясини ўзгартиради. Ер усти сувларида эриган азотнинг асосий манбаи атмосфера ҳавосидир. Шу билан бирга, денитрификация жараёнида нитратларнинг анаэроб бактериялар таъсирида газсимон азотга айланиши натижасида ҳосил бўладиган биоген азот ҳам табиатда кенг тарқалган ва сув муҳитида муҳим роль ўйнайди.

Метан гази (CH_4) ер ости сувларида учрайдиган асосий табиий газлардан бири бўлиб, кўп ҳолларда азот (N2) ва карбонат ангидрид (CO2) билан биргаликда сувнинг газ фазасида миқдорий устунлик қилади. Метан ҳосил бўлишининг асосий манбаи тоғ жинсларида тарқалган органик моддаларнинг анаэроб микробиологик парчаланиш жараёнларидир. Бу жараён метаногенез деб аталади ва у асосан кислородсиз муҳитларда амалга ошади. Бундан ташқари, метан ва оғир углеводородлар кўпинча нефт ва газ конлари билан боғлиқ ёпиқ геологик структураларнинг чуқур ер ости сувларида юқори концентрацияларда учрайди. Бундай ҳолларда уларнинг келиб чиқиши нафақат биоген, балки термоген жараёнлар — юқори ҳарорат ва босим таъсирида органик моддаларнинг чуқур метаморфизми — билан ҳам боғлиқ бўлиши мумкин [2].

Табиий сувнинг кимёвий таркиби унинг гидрологик тарихи - сув айланиши жараёнида босиб ўтган йўли ва у билан ўзаро таъсир қилган муҳитлар - билан шаклланади. Сувда эриган моддалар миқдори ва тури, бир томондан, сувнинг алоқа қилган тоғ жинслари ва грунтларнинг минералогик ҳамда химиявий таркибига, иккинчи томондан, бу ўзаро таъсир содир бўлган физик-кимёвий шароитларга (ҳарорат, босим, вақт, муҳитнинг кислота-ишқорлиги ва ҳ.к.) боғлиқ. Сувнинг кимёвий таркибига таъсир кўрсатувчи асосий омиллар қуйидагилар:

- тоғ жинслари ва грунтлар - минералларнинг эрувчанлиги, тарқалиши ва тури;

- тирик организмлар - модда алмашинуви, биокимёвий реакциялар, фотосинтез ва нафас олиш жараёнлари;

- инсон фаолияти - саноат чиқиндилари, қишлоқ хўжалиги ёки маиший ифлосланиш;

- иқлим ва релеф - ёғингарчилик миқдори, ҳарорат, буғланиш суръати, ер юзаси шакли;

- сув режими - оқим тезлиги, тўхтовчи сув ҳавзалари мавжудлиги;

- усимликлар — минерал моддаларнинг илдиз орқали ўзлаштирилиши ва органик моддалар чиқарилиши;

- гидрогеологик ва гидродинамик шароитлар - ер ости сувларининг ҳаракат йўналиши, чуқурлиги, қатламлар билан алоқаси.

Биоген ва антропоген омиллар

Грунтнинг табиий сувлар таркибининг шаклланишига таъсир этувчи энг муҳим хусусиятларидан бири - тирик организмлар ва ўсимлик илдизларининг нафас олиши ҳамда органик қолдиқларнинг биокимёвий парчаланиши натижасида карбонат ангидрид (CO_2) миқдорининг ортиши ҳисобланади. Бу жараён туфайли грунт ҳавосидаги CO_2 концентрацияси атмосфера ҳавосидаги одатий қийматдан (0,033%) сезиларли даражада юқори бўлиб, одатда 1% ёки ундан зиёд қийматга етади. Оғир глина грунтларида эса мазкур кўрсаткич баъзан 5–10% гача ортиб, грунт эритмаси орқали минерал жинсларга нисбатан кучли агрессив таъсир кўрсатади. Грунт орқали филтрланган сувнинг агрессивлигини кучайтирувчи яна бир муҳим омил - ўсимлик қолдиқларининг чириши жараёнида ҳосил бўладиган гумус моддалари ҳисобланади. Гумус таркибидаги фаол реагентлар гумин ва фулвик кислоталарни, шунингдек, нисбатан содда органик бирикмаларни (масалан, лимон, оксалат, сирка, олма кислоталари), аминлар ва бошқа реактив моддаларни ўз ичига олади. Ушбу органик моддалар грунт эритмасининг минерал жинсларни эритиш қобилиятини сезиларли даражада оширади [4].

Органик кислоталар ва CO_2 билан бойитилган грунт эритмаси грунт таркибидаги алюминосиликат минералларнинг кимёвий денудация (емрилиш) жараёнларини бир неча баробар тезлаштиради. Шунингдек, грунт орқали фильтрацияланган сув грунт остида жойлашган алюминосиликат ва карбонат жинсларининг ҳам гидрохимиявий парчаланишини фаоллаштиради. Карбонат жинслар ичида оҳактош айниқса осон эрувчан бўлиб, сув ва CO_2 таъсирида 1,6 г/л гача эрувчан калций бикарбонат [$Ca(HCO_3)_2$] ҳосил қилади:

$$CaCO_3 + H_2O + CO_2 \leftrightarrow Ca(HCO_3)_2$$

Жойнинг рельефи тўғридан-тўғри сув таркибига таъсир кўрсатиб, тош қатламларидан тузларнинг гидродинамик ювилишига шарт-шароит яратади. Дарё ётқизиғининг эрозия кесими чуқурлашган сари, қуйи гидрогеологик горизонтлардан минераллашган ерости сувларининг дарё русумига чиқиши осонлашади, натижада сувнинг минерал таркиби ошади.

Иқлим табиий сувларнинг кимёвий таркиби шаклланишига таъсир этувчи барча гидрогеохимик жараёнлар кечадиган умумий фонни белгилайди. У, аввало, ҳудуднинг иссиқлик ва намлик мувозанатини, сув баланси ва сув оқими ҳажмини аниқлайди. Бу эса табиий эритмаларнинг

суюлтирилиши ёки концентрациялашиш даражасига, шунингдек, моддаларнинг ериши ёки чўкиши эҳтимолига бевосита таъсир кўрсатади.

Хулоса

Сувнинг кимёвий таркиби унинг геологик муҳити, иқлим шароити, биологик жараёнлари ва инсон фаолияти билан белгиланади. Минерал моддаларнинг концентрацияси сувнинг минераллашув даражаси, газлар билан бойиши эса биогеокимёвий жараёнлар фаоллиги билан узвий боғлиқ. Ёғингарчилик сувлари энг паст минераллашувга эга бўлса-да, уларнинг кимёвий таркиби жуда хилма-хилдир. Ер ости ва чуқур сувлар эса кўпинча газларга бой ва юқори минераллашган бўлади. Шу боис, сувнинг кимёвий таркибини ўрганиш унинг гидрологик тарихи, экологик аҳамияти ва амалий фойдаланиш имкониятларини баҳолашда муҳим аҳамият касб этади.

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ЕР ОСТИ ХОНАЛАРДА ШЎРЛАНИШ ВА ЗАМБУРУҒЛАРНИНГ ПАЙДО БЎЛИШ САБАБЛАРИ ҲАМДА УЛАРНИ БАРТАРАФ ЭТИШ УСУЛЛАРИ

Аннотация: *Мақолада ер ости хоналарида намлик таъсирида юзага келадиган шўрланиш (эффлоресценция), моғор ва замбуруғларнинг пайдо бўлиш сабаблари ҳамда уларнинг бино конструкцияларига ва инсон саломатлигига таъсири кўриб чиқилган. Шунингдек, зарарланишни бартараф этиш усуллари ва профилактик тадбирлар таҳлил қилинган.*

Калит сўзлар - *ер ости хонаси, намлик, гидроизоляция, шўрланиш (эффлоресценция), сувоқ қатлами, девор тузилмаси, грунт сувлари, дренаж тизими, минерал қўшимчалар, кальций гидроксиди, сулфат кислотаси.*

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SALTING AND MOLD FORMATION IN UNDERGROUND PREMISES AND METHODS OF THEIR ELIMINATION

Abstract: *The article discusses the causes of salt deposits (efflorescence), mold, and fungi formation in underground premises under the influence of moisture, as well as their impact on building structures and human health. In addition, methods of damage elimination and preventive measures are analyzed.*

Keywords: *underground premises, humidity, waterproofing, salting (efflorescence), plaster layer, wall structure, groundwater, drainage system, mineral additives, calcium hydroxide, sulfuric acid.*

Кириш

Ер ости хоналари - юқори намлик, етарли даражада вентиляциясизлик ва гидроизоляция камчиликлари туфайли турли биологик зарарланишларга мойил бўлади. Бу ҳолатлар сувоқ қатламида шўрланишлар, моғор ва турли замбуруғлар пайдо бўлишига олиб келади. Уларнинг мавжудлиги бинонинг эксплуатацион хусусиятларини сусайтиради, санитар-гигиеник шароитни ёмонлаштиради ва инсон саломатлиги учун хавф туғдиради.

Асосий қисм

Сувоқда шўрланиш асосан тузларни ўз ичига олган намлик девор тузилмаларида ҳаракатланганда юзага келади. Сув буғланиши натижасида тузлар сувоқнинг сиртига ажралиб чиқади. Асосий манбалар:

- грунт сувлари ва уларнинг капилляр кўтарилиши;
- гидроизоляциянинг етарли даражада бажарилмаганлиги ёки эскириши;
- ёмон дренаж тизими;
- қурилиш қоришмаларидаги кальций гидроксид ёки қўшимча моддалар [1].

Сувоқ қатламида шўрланиш (эффлоресценция) юзага келиши, унинг ташқи кўринишини сезиларли даражада бузади. Вақт ўтиши билан тузли моддаларнинг сувоқ юзасида тўпланиши материалнинг емирилишига, микропораларнинг кенгайишига ва сувоқнинг механик бардавомлигининг пасайишига олиб келади [4].

Бундай ҳолат уйнинг эксплуатацион хусусиятларини сусайтириб, деворлар орқали намлик ва ҳаво алмашинувининг бузилиши туфайли турмуш муҳитидаги ҳаво сифати ёмонлашади. Шўрланган юзаларда, айниқса, юқори намликда, моғор ва замбуруғлар пайдо бўлиши хавфи ортиб боради. Бу эса сувоқнинг емирилиш жараёнини янада тезлаштиради ҳамда санитар-гигиеник шароитларни издан чиқаради.

Сувоқда юзага келувчи шўрланишлар баъзан турли хил геометрик шаклларда пайдо бўлиши мумкин - масалан, парсимон, кристаллсимон ёки спирал кўринишидаги ётқизиқлар. Уларнинг ташқи кўриниши одатда оқ ёки сўлим оқ рангда намоён бўлади. Агар шўрланишларга моғор ёки замбуруғ спорлари аралашса, туз йиғиндиларининг ранги кулранг, яшил ёки ҳатто қора тусларга эга бўлиши мумкин.

Шўрланишларни замбуруғ митселийларидан визуал ва амали усулда фарқлаш мумкин. Тузли ётқизиқларни сувда эритиш орқали ажратиш мумкин: шўрланиш сув таъсирида эрийди ёки парчаланиб кетади, замбуруғ митселийси эса ўзгаришсиз қолади. Бу усул, одатда, ер ости хоналаридаги зарарланиш манбасини аниқлаш ва тегишли чора-тадбирларни белгилашда қўлланилади [3].

Сувоқда шўрланиш юзага келишининг асосий сабаб - тузларни ўз ичига олган намлик девор материаллари орқали ҳаракатланганда, сув юқорига кўтарилиб буғланади ва тузлар сувоқнинг сиртига ажралиб чиқади. Бу жараён намликнинг ҳаракати ва буғланиши билан боғлиқ бўлиб, капилляр

ҳаракат ва сув таркибидаги тузлар билан шартланади. Қуйидагилар туз манбалари бўлиши мумкин [6]:

- грунт сувлари. Грунт сувларининг деворларга кириб бориш сабаблари;

- ёмон гидроизоляция - бинонинг пойдевори, ер ости деворлари ёки пол қисми етарли даражада гидроизоляцияланмаган бўлса, намлик грунтдан девор тузилмаларига капилляр таъсир ёрдамида осон кўтарилади;

- гидроизоляциянинг ёки тўсиқ пардаларнинг эскириши - вақт ўтиши билан уларда ёриқлар, шикастланишлар пайдо бўлиб, сув ўтадиган йўллар юзага келади;

- ёмон дренаж тизими - бино атрофидаги сув чиқариш тизими (масалан, горизонтал ёки вертикал дренаж) тўғри ишламаганда, ер ости суви деворларга босим остида таъсир қилади.

Қурилиш ишлаб чиқарувчилари баъзан бетон, цемент ёки сувоқ қоришмаларининг хоссаларини яхшилаш учун минерал қўшимчалар (масалан, флай-аш, домна шлаги, пуццоланлар, портландцемент модификаторлари) қўшадилар. Бу моддалар:

- қурилиш қоришмасини тайёрлашда минерал қўшимчалардан фойдаланилганда;

- қурилиш қоришмасида кальций гидроксидининг мавжудлиги. Қотиш жараёнида бу модда кўпинча чиқариб ташлаш қийин бўлган тузли чўкиндилар ҳосил бўлишига олиб келади;

- ҳавода сулфат кислотасининг борлиги. Агар у калций гидроксид билан реакцияга киришса, гипс ҳосил бўлади, девордан уни тозалаш жуда қийин. Бундан ташқари, у сувоқни бузади;

- қоришма қотишини тезлаштирувчилар. Бир томондан қурилиш ишларини тезлаштиради, бошқа томондан эса сувоқда оқ доғлар пайдо бўлишига сабаб бўлади;

- баъзан қурилиш қоришмасига қўшиладиган бўёқлар ҳам шўрланишга сабаб бўлиши мумкин. Улар турли хил рангга эга бўлиши мумкин;

- агар ер ости хоналарда:

- вентилляция йўқ;

- деворда намлик бор;

- гидроизоляция яхши бажарилмаган бўлса — у ҳолда моғор ва замбуруғларнинг пайдо бўлиши табиий ҳолдир (1-расм). Бу нафақат қурилишнинг мустаҳкамлигига, балки одам саломатлигига ҳам хавф туғдиради.



1-расм. Моғор замбуруғининг пайдо бўлишига мисол.
Моғор ва замбуруғларнинг ривожланиш омиллари

Намлик ва ҳаво алмашинувининг етишмаслиги моғор ва замбуруғлар ўсиши учун қулай муҳит яратади. Улар органик қурилиш материаллари (ёғоч, гипс, қоғоз)да интенсив ривожланади. Асосий турлари қуйидагилар:

- Cladosporium, Aspergillus, Penicillium, Alternaria – девор ва бетон сиртидаги қора ва кулранг доғлар;
- Chaetomium – аллергия ва овқат ҳазм қилиш тизимига салбий таъсир;
- Ulocladium ва Phoma – нам муҳитда конструкцияларга зарар етказувчи қора замбуруғлар.

Замбуруғлар конструкцияларнинг емирилишига [4], ҳаво сифати ёмонлашишига ва одамларда касалликларнинг келиб чиқишига олиб келади.

Ёртўла шароити — юқори намлик, етарли вентиляциянинг йўқлиги ва гидроизоляциянинг камчилиги - моғор ва замбуруғларнинг ўсиши учун идеал муҳитдир. Агар бундай муҳитда органик қурилиш материаллари (масалан, дарахт, гипс, қоғоз, мато ва бошқалар) бўлса, улар замбуруғларнинг асосий озиқ манбаи бўлади.

Ер ости хоналарида замбуруғлар ва бошқа зараркунандаларнинг бутун рўйхати мавжуд. Улар орасида [5]:

- моғор замбуруғи - асосан, зигомицетлар ва аскомицетлардан иборат бўлган, кўз билан яхши кўринадиган катта мицелийлар ҳосил қилмайди;

- моғор - бу ҳавода доимий равишда катта миқдорда мавжуд бўлган, "консерваланган" ҳолатда сақланадиган споралардан ривожланадиган бир ҳужайрали замбуруғлар колонияси. Қулай шароитлар, юқори намлик ва иссиқлик пайдо бўлганда, споралар дарҳол "уйғонади" ва уларнинг интенсив кўпайиши бошланади.

Моғор бетонда, бўялган сиртда ёки тош (ғишт) да ўсади. Кўриниши бўйича бу қора, жигарранг, кўк ёки яшил рангга бўялган доғлар ёки нуқталардир.

Замбуруғлар нафақат эстетик муаммо, балки структуравий ва гигиеник хавф ҳисобланади. Айниқса, фосфоресцент (ёруғлик сочувчи) колониялар - бу турдаги замбуруғлар визуал белгилар билан осон танилиши мумкин ва кўпинча биологик фаол моддалар ишлаб чиқаради. Натижада:

- сувоқ тўлиқ емирилиши;
- ёғоч конструкциялар чиришга юз тутиши;
- гипсокартон ва бўёқлар қатламларининг кўчиши;
- ички ҳаво сифати ёмонлашиши;
- зарарланган жойни керамика, металл, ёки бетон билан алмаштириш зарурати;
- айрим ҳолларда – бегоналаштириш ва қайта қуриш керак бўлади.

Қора моғор. Унинг ранги турига, у ўсадиган материалга ва қўзиқорин ривожланишнинг қайси босқичида жойлашганлигига боғлиқ. Одатда, қуйидаги штаммлар қора рангга эга:

Ulocladium - материаллар ва маҳсулотларга зарар етказиши мумкин. Намлик мавжудлиги - уни ривожлантиришнинг мажбурий шарти;

Cladosporium - бошланғич даврда рангсиз, қорадан ташқари рангларнинг катта спектрига эга бўлиши мумкин. Уруғлар ва ўсимликлар учун жуда хавфли, намлик талаб қилмайди, паст ҳароратда ҳам ривожлана олади. Бундай замбуруғлар ёзда очиқ ҳавода кўпроқ учрайди. Баъзи турлари дизел ёқилғиси ва мойлаш материаллари билан озиқланади, шунинг учун улар "керосин замбуруғи" деб номланган;

Penicillium - бу оила замбуруғлари атроф-муғит учун муҳим рол ўйнайди, фармацевтикада дори-дармонлар тайёрлашда, озиқ-овқат саноатида оқ моғор билан бирга мазали пишлоқ тайёрлашда фаол ишлатилади. Аммо баъзи штаммлари инсон саломатлиги учун катта хавф туғдиради, уларни квартираларда жуда тез-тез учратиш мумкин;

Alternaria – кўпинча сабзавот ва меваларни зарарлайди, лекин одамнинг териси ва нафас йўлларида ҳам пайдо бўлиши мумкин. Тахминан 300 та штамми бор, баъзан кулранг рангда бўлади;

Aspergillus - одамлар ва ҳайвонларда аспергиллёз касалликларини қўзғатувчи юқори моғор замбуруғлари. Замбуруғнинг ўзи дастлаб оқ рангда бўлади, лекин унинг споралари қора рангга эга. Кўпинча хоналарда учрайди.

Chaetomium - одатда қора рангга эга. Одамларда кўпинча аллергияга сабаб бўлади. Асосий хавф - овқат ҳазм қилиш трактига тушиши, бу ҳатто одамнинг ўлимига ҳам олиб келиши мумкин;

Phoma - замбуруғининг ранги қора, споралари эса рангсиз;

Wallemia - қора рангга эга, одамлар учун жиддий хавф туғдирмайди, кам намлик ва юқори ҳароратда ўсиши мумкин, бу унга қарши курашда қийинчиликлар туғдиради.

Замбуруғларнинг баъзи турлари бетоннинг сиртига ҳам чуқур кириб, материалнинг тузилишини бузишга қодир. Зарарланиш ўчоғи ўз вақтида бартараф этилмаса, бу бино конструкциясининг яхлитлиги бузилишига олиб келиши мумкин.

Зарарланган жой аниқланса, уни тагидаги асосгача тозалаб ташлаш керак. Масалан, агар зарарланган деворнинг сирти сувоқ, шпаклёвка ёки бошқа кўринишдаги қоплама материалли декоратив материаллар бўлса, уларни юк кўтариб турувчи деворгача тўлиқ олиб ташлаш керак. Агар девор ғишт, бетон ёки металлдан бўлса, замбуруғлар колониясини шпатель ёрдамида олиб ташлаш, сўнгра тозаланган сиртни жилвир қоғоз (наждачной бумагой) ёки металл чўтка билан тозалаш керак.

Аниқланишича, замбуруғ ва шўрланиш пайдо бўлишининг асосий сабаби хонада намлик мавжудлигидир. Биринчи навбатда унинг пайдо бўлиш эҳтимолини бартараф этиш керак, яъни ер ости хонасини гидроизоляция қилиш лозим [4].

Бартараф этиш усуллари:

- зарарланган сувоқ, шпаклёвка ёки бўёқ қатламларини таг асосигача олиб ташлаш;
- сиртларни шпатель, металл чўтка ёки жилвир қоғоз билан тозалаш;
- антисептик воситалар ва гидрофоб қопламалар қўллаш;
- ер ости хоналарини тўлиқ гидроизоляция қилиш ва вентиляция тизимини яхшилаш;
- дренаж тизимини реконструкция қилиш ва грунт суви таъсирини камайтириш.

Хулоса

Ер ости хоналарида намлик ва тузли сувоқ оқибатлари - шўрланиш, моғор ва замбуруғлар бинонинг мустахкамлиги ва инсон саломатлиги учун жиддий хавф туғдиради. Асосий чора - намлик манбаларини бартараф этиш, замонавий гидроизоляция технологияларини қўллаш ва мунтазам профилактик тадбирларни амалга ошириш ҳисобланади.

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ИЗМЕНЕНИЕ КЛИМАТА И СОСТОЯНИЕ ВОДНЫХ РЕСУРСОВ В УЗБЕКИСТАНЕ

Аннотация. *В статье проанализировано влияние глобального изменения климата на водные ресурсы. На примере Центральной Азии, в частности Узбекистана, рассмотрены последствия климатических изменений, приводящие к дефициту воды, таянию ледников, снижению количества осадков и усилению засух. Работа подготовлена на основе научных источников, международных документов и статистических данных. В статье предложены рекомендации по управлению водными ресурсами, их экономии и рациональному использованию.*

Ключевые слова: *изменение климата, водные ресурсы, засуха, деградация ледников, наводнения, Аральское море, экологическая безопасность, биоразнообразие, сельское хозяйство, продовольственная безопасность, деградация почв.*

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CLIMATE CHANGE AND THE STATE OF WATER RESOURCES IN UZBEKISTAN

Abstract. *This article analyzes the impact of global climate change on water resources. Using Central Asia, specifically Uzbekistan, as an example, it examines the consequences of climate change, leading to water shortages, melting glaciers, reduced precipitation, and increased droughts. The paper draws on scientific sources, international documents, and statistical data. Recommendations for water resource management, conservation, and rational use are offered.*

Key words: *climate change, water resources, drought, glacier degradation, floods, Aral Sea, environmental safety, biodiversity, agriculture, food security, soil degradation.*

Изменение климата сегодня становится одной из основных глобальных угроз, оказывая прямое влияние на усиление геополитических противоречий. Особенно остро это проявляется в сферах борьбы с бедностью, обеспечения продовольственной и энергетической безопасности, а также в вопросах рационального использования водных и природных ресурсов. Последствия этих процессов особенно ощутимы в Центральной Азии. Климатические проблемы превращаются в серьёзное препятствие для повышения качества жизни населения и реализации национальных стратегий развития. В мировом масштабе изменение климата оказывает существенное воздействие на водные ресурсы. В результате таяния ледников меняется режим стока рек. Согласно отчетам Организации Объединённых Наций, в период с 1990 по 2020 год количество людей, пострадавших от засух, превысило 1,5 миллиарда человек**.**

Президент Республики Узбекистан Шавкат Мирзиёев в своем выступлении на Конференции Организации Объединённых Наций по изменению климата (COP29), состоявшейся 12–13 ноября 2024 года в городе Баку (Азербайджан), отметил: «Изменение климата сегодня становится одной из основных глобальных угроз… Особенно оно усиливает проблемы рационального использования водных и природных ресурсов». В Узбекистане среднегодовая температура неуклонно повышается, и, согласно прогнозам, этот рост будет продолжаться и в будущем. Изменение климата и учащение экстремальных погодных явлений приводят к удлинению засушливых и жарких периодов, сокращению снежного покрова и деградации ледников, увеличению испаряемости на равнинных и предгорных территориях, а также к росту частоты засух и острому дефициту водных ресурсов. Ожидается, что погодные условия в стране станут еще более жаркими и сухими. Увеличится частота и интенсивность аномальной жары, изменятся характер и режим осадков, что приведёт к росту числа ливневых дождей, наводнений и селевых потоков, связанных с этими климатическими процессами. Изменение климата также усиливает деградацию почв и процессы опустынивания, оказывая при этом негативное влияние на производство сельскохозяйственной продукции и состояние биоразнообразия [1; 2].

Таблица 1

Последствия изменения климата в Узбекистане

Индикатор	**1960–1980**	**2000–2020**	**Прогноз 2050**
Среднегодовая температура (°C)	+13,2	+14,5	+16,0
Осадки (мм/год)	220	180	150
Площадь ледника (%)	100	70	40
Частота засух	Низкий	Средний	Высокий

Результаты анализа показывают, что в период 1960–2020 годов средняя температура воздуха в Узбекистане повысилась с 13,2°C до 14,5°C, тогда как количество атмосферных осадков сократилось с 220 мм до 180 мм. Площадь ледников уменьшилась примерно на 70 процентов. Согласно прогнозам, к 2050 году температура может повыситься до +16°C.

В мировом масштабе изменение климата оказывает значительное влияние на водные ресурсы. В результате таяния ледников постепенно изменяется режим речного стока. Современные вызовы — такие как изменение климата, дефицит водных и природных ресурсов, социально-экономические последствия пандемии, энергетический и продовольственный кризисы — представляют собой серьёзную угрозу для устойчивого развития.

Чрезмерное загрязнение почвы, воды и атмосферы, а также изменение климата и ухудшение состояния флоры и фауны превращают происходящие процессы в развивающихся странах в одну из самых серьёзных угроз экологической безопасности. Эффективное управление водными и земельными ресурсами, внедрение практик их охраны, разработка климато-устойчивых сельскохозяйственных технологий и использование возобновляемых источников энергии являются важнейшими стратегическими направлениями по снижению негативных последствий изменения климата [2; 4].

Проблема глобального изменения климата включает в себя такие явления, как неравномерность осадков, когда периоды засухи сменяются внезапным увеличением количества осадков, вызывающих наводнения и подтопления территорий. Повышение температуры всего на +1 °C — это на самом деле гораздо более тревожный показатель, чем может показаться на первый взгляд. Согласно глобальным наблюдениям, проводимым с 1980 года, к 2017 году средняя температура на планете Земля повысилась на +1 °C. Если распространение парниковых газов не будет остановлено, учёные прогнозируют дальнейший рост средней температуры на Земле вплоть до +4 °C. Это приведёт к тому, что значительная часть суши станет непригодной для жизни человека. Увеличение концентрации вредных веществ в составе атмосферы вызывает не только рост температуры, но и изменение климата во всех регионах планеты. В 1992 году была принята Рамочная конвенция ООН об изменении климата, участниками которой на сегодняшний день являются 197 стран мира. Узбекистан присоединился к этой международной конвенции в 1993 году. На протяжении почти тридцати лет Организация Объединённых Наций ежегодно проводит Конференцию сторон Конвенции по изменению климата (COP — Conference of the Parties), которая объединяет практически все государства мира для обсуждения и согласования глобальных климатических мер. Основная цель Конвенции заключается в предотвращении опасного антропогенного воздействия на климатическую систему Земли. Первая конференция COP состоялась в 1995 году в Испании, а на третьей конференции (COP-3), прошедшей в Японии в 1997 году, был принят Киотский протокол, который Узбекистан

ратифицировал в 1999 году. На двадцать первой конференции (COP-21), проходившей во Франции в 2015 году, было подписано историческое Парижское соглашение, которое Узбекистан ратифицировал в 2017 году. В соответствии с этими международными соглашениями страны-участницы приняли на себя обязательство ограничить глобальное потепление на уровне 1,5 °C, снизив концентрацию углекислого газа (CO_2) в атмосфере. Возникает естественный вопрос: почему именно 1,5 °C? В процессе подготовки Парижского соглашения Межправительственной группе экспертов по изменению климата (IPCC) было поручено изучить, какие последствия для планеты может вызвать повышение температуры на 1,5 °C. Исследования показали, что между повышением температуры на 1,5 °C и 2 °C существует значительная разница по масштабам негативных последствий. Повышение температуры на 1,5 °C приводит к подъёму уровня моря, усилению жары, засухам, наводнениям, ураганам и другим экстремальным погодным явлениям, но эти последствия будут гораздо менее разрушительными, чем при повышении температуры на 2 °C. По мнению учёных, рост глобальной температуры до 1,5 °C является относительно безопасным пределом для планеты [3].

Центральная Азия является одним из наиболее уязвимых регионов мира к изменению климата и уже сталкивается с его негативными последствиями, включая деградацию земель, дефицит водных ресурсов и повышение чувствительности экосистем к климатическим изменениям. Среднегодовая температура в Центральной Азии растёт быстрее, чем в среднем по планете. За последние 70 лет температура в регионе повысилась на 1,5–2 °C, что значительно превышает мировой средний показатель. Согласно прогнозам, к 2050 году температура может увеличиться ещё на 2–3 °C, что приведёт к усилению засух и учащению экстремальных погодных явлений *(см. таблицу 2)*. За последние 50–60 лет в результате глобального изменения климата площадь ледников Центральной Азии сократилась примерно на 30 процентов. Климатические изменения в регионе приводят к эрозии почв, снижению урожайности и создают угрозу продовольственной безопасности. Более 60 процентов земель региона подвержены процессам опустынивания, а такие явления, как засухи, наводнения и песчаные бури, становятся всё более частыми. Уникальные экосистемы — такие как Аральское море, горные леса и степные зоны — находятся под угрозой разрушения.

Таблица 2

Последствия изменения климата в Центральной Азии

Область	Среднее повышение температуры (°C)	Изменение количества осадков	Воздействие на водные ресурсы
Узбекистан	+1,5–2,0	Спад, сезонные колебания	Уменьшение речного стока
Таджикистан	+1,6	Отступление ледника	Снижение уровня воды в реке Амударья
Казахстан	+1,8	Засуха усиливается	Нехватка воды в сельском хозяйстве
Туркменистан	+1,7	Продление теплых периодов	Увеличение давления на грунтовые воды
Кыргызстан	+1,9	Таяние ледников	Снижение уровня воды в Сырдарье

Климат Кашкадарьинского бассейна отличается от климата центральных и северных природно-географических регионов Узбекистана. Здесь весна наступает рано, быстро переходя в жаркое лето, а зима короткая. В равнинных и предгорных районах средняя многолетняя температура января составляет около +2 °C. Однако зимние сильные морозы мало отличаются от тех, что наблюдаются в нижнем и среднем течении бассейна Зарафшана — температура может понижаться до –25...–29 °C. Несмотря на это, настоящие холодные зимы встречаются редко. Бесснежные и мягкие зимы, при которых вегетация растений не прекращается, составляют от 50 до 80 процентов всех зимних сезонов. Сумма отрицательных температур, как правило, не превышает –40...–60 °C. Хотя снег выпадает ежегодно, устойчивый снежный покров формируется лишь в 10–15 процентах случаев. Лето в бассейне очень сухое, жаркое и продолжительное. В равнинной части средняя многолетняя температура июля составляет +28...+29 °C, а абсолютный максимум достигает +46...+47 °C.

Водные ресурсы Центральной Азии в основном зависят от рек Амударья и Сырдарья. В результате изменения климата объём воды в этих реках постепенно сокращается. Уменьшение площади Аральского моря рассматривается как крупнейшее последствие климатических изменений и ошибочной водной политики. Если в 1960 году площадь Аральского моря составляла 68 тысяч км², то к 2020 году этот показатель сократился до всего лишь 8,7 тысячи км².

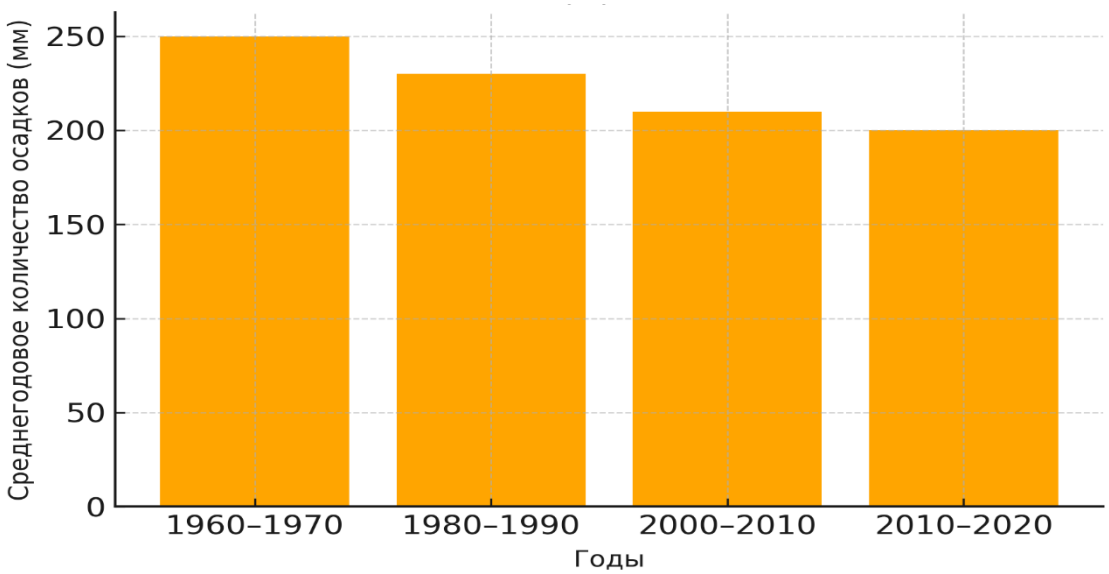


Рисунок 1. Изменение среднегодового количества осадков в Узбекистане (1960–2020 гг.).

Как видно из приведённой диаграммы, в Узбекистане в период с 1960 по 2020 годы наблюдается устойчивая тенденция снижения количества осадков. 1960–1970 годы: наивысший показатель — около 250 мм. В этот период количество осадков было достаточным, а водные ресурсы сохраняли относительную стабильность. 1980–1990 годы: количество осадков снизилось до 230 мм, что означает сокращение примерно на 8 % за десятилетие. 2000–2010 годы: около 210 мм — тенденция снижения продолжилась; именно в этот период начали проявляться первые признаки глобального потепления. 2010–2020 годы: показатель снизился до 200 мм, что свидетельствует о сокращении осадков примерно на 20 % за 60 лет. Постепенное и устойчивое уменьшение количества осадков является следствием глобального потепления, которое приводит к повышению температуры воздуха, увеличению испаряемости и изменению круговорота влаги. Это, в свою очередь, усиливает частоту и продолжительность засух, сокращает объёмы водных ресурсов (особенно в бассейнах рек Амударья и Сырдарья) и оказывает негативное влияние на урожайность сельскохозяйственных культур. Подобное снижение количества осадков климатологи оценивают как признак расширения “полузасушливой климатической зоны”.

Заключение

Изменение климата усугубляет проблемы, связанные с водными ресурсами. Если данная тенденция сохранится, то к 2050-м годам количество годовых осадков в Узбекистане может сократиться до 180–190 мм. Это приведёт к: усилению дефицита воды, необходимости оптимизации систем орошения сельскохозяйственных культур, росту потребности во внедрении водосберегающих технологий. Недостаточно лишь пытаться предотвратить этот процесс — необходимо также разрабатывать и реализовывать стратегии

адаптации к изменениям климата. Широкое внедрение водосберегающих технологий, модернизация ирригационных систем, использование возобновляемых источников энергии и гармонизация региональной водной политики могут стать эффективными решениями данной проблемы. Кроме того, укрепление международного сотрудничества, развитие научных исследований и повышение экологического сознания населения позволят значительно смягчить негативное воздействие изменения климата на водные ресурсы. Реализация этих мер будет способствовать устойчивому развитию не только Узбекистана, но и всего региона Центральной Азии.

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СОВРЕМЕННЫЕ ТЕНДЕНЦИИ ПРЕПОДАВАНИЯ АНГЛИЙСКОГО ЯЗЫКА В ВУЗЕ

Аннотация: *В статье рассматриваются основные направления развития методики преподавания, включая внедрение информационно-коммуникационных технологий, формирование коммуникативной компетенции и профессионально-ориентированный подход. Особое внимание уделено влиянию глобализации и международных стандартов на образовательный процесс.*

Ключевые слова: *преподавание, английский язык, вуз, инновации, цифровизация, компетентностный подход.*

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MODERN TRENDS IN TEACHING ENGLISH IN HIGHER EDUCATION INSTITUTIONS

Abstract: *The article examines the main directions in the development of teaching methodology, including the integration of information and communication technologies, the formation of communicative competence, and a professionally oriented approach. Special attention is paid to the impact of globalization and international standards on the educational process.*

Keywords: *teaching, English language, university, innovations, digitalization, competence-based approach.*

Современное образование переживает активную трансформацию, вызванную глобальными изменениями в обществе, технологиях и международных коммуникациях. Английский язык как язык глобального общения занимает центральное место в системе высшего образования, выступая инструментом профессионального, академического и межкультурного взаимодействия. В связи с этим преподавание английского языка в вузах требует постоянного обновления подходов, методов и технологий, направленных на формирование компетенций, соответствующих требованиям времени.

Процессы глобализации и интеграции, которые интенсивно развивались в последние десятилетия, способствовали значительному увеличению и разнообразию межкультурных контактов и коммуникативных ситуаций. К таким формам взаимодействия относятся международные

конференции, программы академического обмена, мобильность исследователей, зарубежные стажировки и командировки, совместные проекты, выставки, туристические поездки и другие виды межкультурного сотрудничества. В этой связи владение иностранным языком становится одним из ключевых факторов успешной адаптации современного человека в многообразном социальном и культурном пространстве.

Вопросы преподавания иностранных языков изучались многими учёными, среди которых И.Л. Бим, Н.Д. Гальскова и Г.В. Рогова. Особое внимание коммуникативному методу уделяли такие исследователи, как И.А. Зимняя, Я.М. Колкер, Е.И. Пассов, а также S. Granger, G. Gilquin и F. Meunier. Использование интерактивных методов в обучении рассматривали И.И. Борисова, Е.Ю. Ливанова, T. Cobb, M. Horst, М.Б. Гулакова, Г.И. Харченко и M. Michalke. Роль английского языка была предметом исследований Б. Качру.

Д. Грэддол подчёркивает значение английского языка для развития академической мобильности, отмечая, что «высшее образование становится глобализованным вместе с экономикой, и английский язык играет в этом ключевую роль — частично из-за доминирования университетов англоязычных стран, а также потому, что английский язык выступает в качестве посредника в процессе интернационализации как среди студентов, так и преподавателей» [,6 с. 73].

Одной из ключевых тенденций современного образования является внедрение инновационных технологий, способствующих активному вовлечению студентов в учебный процесс. Инновации включают использование интерактивных платформ, мультимедийных материалов, проектных методов и геймификации. Эти инструменты позволяют развивать не только языковые навыки, но и критическое мышление, самостоятельность и способность работать в команде.

Цифровизация образования стала неотъемлемой частью современного обучения. Онлайн-курсы, платформы дистанционного взаимодействия, мобильные приложения и искусственный интеллект значительно расширяют возможности преподавателей и студентов.

Использование таких инструментов, как Zoom, Moodle, Quizlet и Duolingo, способствует индивидуализации обучения и делает процесс более гибким и доступным. Кроме того, цифровые технологии позволяют формировать электронные образовательные ресурсы, адаптированные под потребности конкретных групп обучающихся.

Современное преподавание английского языка основывается на коммуникативном и компетентностном подходах. Цель обучения заключается не только в овладении грамматикой и лексикой, но и в способности использовать язык в реальных ситуациях общения. Формирование коммуникативной компетенции предполагает развитие навыков слушания, говорения, чтения и письма в комплексе. Компетентностная парадигма ориентирует образовательный процесс на

достижение практических результатов, необходимых для профессиональной деятельности.

Профессиональная направленность обучения становится приоритетом в системе высшего образования. Преподавание английского языка интегрируется с профильными дисциплинами, что способствует формированию у студентов умений использовать язык в профессиональном контексте. Например, в технических, экономических и филологических направлениях активно применяются специализированные курсы английского для профессиональных целей (ESP – English for Specific Purposes). Такой подход повышает мотивацию студентов и усиливает практическую значимость изучаемого материала.

Современные тенденции преподавания английского языка в вузах отражают стремление к интеграции инноваций, цифровых технологий и коммуникативно-компетентностных подходов. Успешное внедрение этих принципов требует подготовки квалифицированных преподавателей, способных адаптировать методы под потребности студентов и требования времени. Перспективным направлением остаётся развитие межкультурной и профессиональной коммуникации на английском языке, что обеспечивает выпускникам конкурентоспособность на глобальном рынке труда.

Таким образом, можно выделить ключевые тенденции в развитии методики преподавания английского языка в условиях современного языкового вуза:

- эффективная интеграция элементов фундаментального и социокультурного подходов, направленная на комплексное формирование языковой и коммуникативной компетенции;
- углубляющаяся дифференциация содержания учебного материала с учётом профессионально-ориентированных задач и уровня владения языком;
- возрастание роли интерактивного взаимодействия и речевой активности обучающихся как основополагающих факторов овладения языком;
- активное внедрение современных технических и цифровых средств обучения, способствующих повышению мотивации и результативности образовательного процесса.

Основной целью развития и совершенствования методики преподавания английского языка в языковом вузе является поиск и реализация инновационных педагогических подходов, основанных на интеграции различных методологических концепций, что обеспечивает всестороннее развитие языковой компетенции с учётом специфики будущей профессиональной деятельности студентов.

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К ВОПРОСУ ОБУЧЕНИЯ СТУДЕНТОВ ОФИЦИАЛЬНО-ДЕЛОВОМУ СТИЛЮ НА ЗАНЯТИЯХ ПРАКТИЧЕСКОГО КУРСА РУССКОГО ЯЗЫКА

Аннотация. *В данной статье рассмотрены особенности официально-делового стиля, функции, которые он выполняет, а также факторы, влияющие на определение данного стиля. Актуальность данной проблемы обусловлена стремительным развитием рыночных отношений, что сказалось на документообороте. В связи с этим появляется большое количество штампов и клише, терминов и профессионализмов. Только правильное их употребление обеспечивает успешную коммуникацию на любом языке.*

Ключевые слова: *деловая речь, стилевые приемы, особенности стиля, средства выражения языка, стилистический анализ.*

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ON THE QUESTION OF TEACHING STUDENTS OFFICIAL BUSINESS STYLE IN THE RUSSIAN LANGUAGE PRACTICAL COURSE

Abstract. *This article examines the features of the official business style, the functions it performs, as well as the factors influencing the definition of this style. The relevance of this problem is due to the rapid development of market relations, which has affected document flow. In this regard, a large number of stamps and cliches, terms and professionalisms appear. Only their correct use ensures successful communication in any language.*

Key words: *business speech, stylistic devices, features of style, means of expressing language, stylistic analysis.*

Овладение русским языком как средством общения предполагает овладение определенным комплексом навыков и умений, в том числе и пользование официально-деловым стилем речи.

С оформлением деловой документации на русском языке учащиеся национальных школ сталкиваются на протяжении всей своей жизни. Поэтому учителям необходимо, начиная уже со среднего концентра, обучать детей языковым навыкам и нормам составления деловых бумаг, принятым в сфере официально-деловых контактов.

Деловая речь характеризуется высокой степенью унификации языковых ресурсов, обусловленной многими экстралингвистическими факторами. Жанрово-тематическое многообразие официально-делового стиля позволяет выделить две его разновидности: официально-документальную и обиходно-деловую. Объектом изучения в техническом является обиходно-деловая разновидность, которая включает в себе такие виды частной и государственной документации, как автобиография, резюме, характеристика, справка, протокол, акт, выписка из протокола, разные виды деловых писем, адрес, объявление, заявление, отчёт, расписка, докладная записка, телеграмма, доверенность. Обиходно-деловая разновидность официальной речи характеризуется следующими общими лингвистическими признаками: официальностью, стабильностью, чёткостью, объективностью, логической последовательностью о 4 изложения, отказом, как правило, от экспрессивных языковых средств.

Все виды текстов обиходно-деловой разновидности отличаются сравнительно небольшим объёмом, лаконичностью, высокой степенью компрессии языковых средств.

Повторяемость формы и содержание деловой документации приводит к детерминированности, практической целесообразности, избирательности использования языковых средств, в результате которого является наличие в деловом стиле разнообразных речевых стандартов. Например, прошу разрешить, доверяю получить, дана для предъявления и т.д.

Стандартность формы и содержания основных, наиболее употребительных видов деловой документации облегчает задачу сопоставительно-типологического изучения элементов делового стиля речи русского и родного языка для студентов, требует, чтобы при обучении нерусских учащихся русской деловой речи должное внимание было уделено переносу навыков пользования элементами делового стиля, полученных на занятиях родного языка, в русскую речь.

Поэтому преподавателям русского языка в названной работе следует учитывать систему обучения данной функционально-стилистической разновидности языка, реализованную в программе по родному языку. Важно развивать у обучаемых стилевое чутьё, формировать навыки осознанного употребления деловой лексики, прививать умение подбора эффективных стилистических критериев для оценки используемых языковых средств.

Большую роль в правильной организации системы работ по обучению нерусских студентов деловой письменной русской речи имеет определение оптимального объёма и установление рациональной последовательности презентации различных видов делового письма с учётом их необходимости для практической деятельности студентов, а также возможностей, предоставляемых изучаемым языковым материалом.

В условиях обучения русскому языку в национальных группах технических вузов из большого многообразия деловой документации

студентов целесообразно изучать следующие три основных типа образцов деловых бумаг:

1. деловые бумаги, содержащие номинативные конструкции (типа надписей на конвертах);

2. деловые бумаги, содержащие номинативные и коммуникативные конструкции (телеграммы, открытки и т.д.);

3. деловые бумаги, носящие чисто коммуникативный характер (например, письмо, приглашение).

Работа по обучению студентов составлению деловых бумаг может включать в себя следующие этапы:

а) ознакомление с языковыми средствами, стандартами деловой речи (стилистически маркированная лексика, например, бандероль, телеграмма и т.д., стандартизированные словосочетания и конструкции — ценное письмо, с уведомлением о вручении и т.д.);

б) показ основных образцов деловых бумаг и раскрытие специфики их содержания;

в) сообщение цели, назначения сферы применения конкретных видов деловой документации с воссозданием различных ситуаций, в которых они могут быть использованы;

г) коллективное составление студентами на доске или наука и практика в тетрадях аналогичного образца деловой бумаги под руководством преподавателя;

д) самостоятельное составление студентами изученного образца деловой документации в аудитории и проверка правильности по составленному преподавателем.

Эта система, думается, может быть положена в основу работы над составлением всех видов деловых бумаг и, разумеется, с учётом также и характеристики тех или иных образцов делового письма, особенностей изучаемого языкового материала и других условий.

При обучении русскому языку в техническом вузе целесообразно ознакомить студентов со следующими видами деловой письменной речи: объявление, рапорт, приглашение, адрес на конверте, деловое письмо (записка), телеграмма, расписка, объяснительная записка, заявление, автобиография, резюме, краткий отчет о проделанной работе и т.д.

Как известно, решающее значение для формирования у студентов необходимых речевых навыков имеет использование эффективной системы методических приёмов и видов работ.

Данную систему обучения деловому письму могут составить следующие основные приёмы и виды работ:

а) составление деловых бумаг по образцу;

б) языковой анализ специфики образцов деловой речи;

в)точное и мотивированное использование изученных о форм и конструкций в различных образцах делового письма;

г) сопоставление текстов делового характера с текстами других стилей;

д) перевод различных видов деловых бумаг с родного языка на русский;

е) редактирование текстов деловых бумаг;

ж) самостоятельное составление деловых бумаг различных видов на основе заданной темы или конкретной ситуации.

Систематическое применение преподавателем указанных выше приёмов и видов работ призвано помочь студентам практически овладеть специфическими языковыми средствами деловой речи, что способствует развитию и совершенствованию их стилистического чутья.

Эффективным приёмом при обучении деловому стилю является использование образцов подлинной документации. На занятиях по русскому языку введение таких образцов в общую систему лексико-грамматической работы способствует успешному восприятию программного языкового материала, осмыслению и дальнейшему свободному оперированию полученными знаниями в процессе естественных речевых актов.

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ПРИКЛЮЧЕНСКОЕ КИНО И КИНЕМАТОГРАФИЧЕСКИЙ ТУРИЗМ: ОСОБЕННОСТИ МЕЖДУНАРОДНЫХ КИНОПРОДУКЦИЙ

Аннотация. *В статье рассматривается сложившаяся в Республике Узбекистан особенности практики использования мест, связанных со съёмками фильмов для развития кинематографического туризма, особое внимание уделяется местам, попавшим в авторскую классификацию как природные ландшафты и места, специально созданных для съёмок фильмов, поскольку это объекты, где кинотуризм является ключевой целью посещения.*

Ключевые слова: *великий шёлковый путь, кинотуризм, кинематографический ивент, кинематографические туристские ресурсы, кинематографическая среда.*

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ADVENTURE CINEMA AND CINEMA TOURISM: FEATURES OF INTERNATIONAL FILM PRODUCTIONS

Abstract. *This article examines the current practice of using film locations in the Republic of Uzbekistan to develop cinema tourism. It focuses on locations classified by the author as natural landscapes and locations specifically created*

for film shooting, as these are sites where film tourism is the key purpose of visiting.

Key words: *Silk Road, film tourism, cinematic event, cinematic tourism resources, cinematic environment.*

Важное место в процессе продюсирования и производства приключенческих и тревел-картин отводится вопросу поиска интересных мест для проведения съёмок. В этом смысле Узбекистан может стать одним из стратегических направлений развития кино данного жанра, поскольку в стране есть все условия для его создания. Природа щедро наградила эту землю удивительным разнообразием ландшафтов: пустыня Кызылкум, горы Тянь-Шаня, прозрачные озера, безжизненные степи и зеленые оазисы. Великий шелковый путь, некогда связывающий Европу с Азией, способствовал развитию и процветанию городов Центральной Азии – Самарканда, Бухары, Хивы и Шаша (Ташкент), сохранивших до наших дней неповторимый колорит восточных городов с их площадями, караван-сараями и средневековыми памятниками исламской архитектуры. Например, всемирно известная площадь Регистан в Самарканде, которую окружают три украшенные мозаиками медресе, возведенные в XV и XVII веках [1].

Туризм в Узбекистане развивается буквально взрывными темпами. В 2019 году по оценке Всемирной туристской организации при ООН (ЮНВТО) Узбекистан вошел в пятерку стран с наиболее динамично развивающейся туристической отраслью, а издание «The Guardian» признало страну лучшим туристическим направлением в мире. Количество иностранных туристов в 2023 году выросло до 6,6 млн человек и достигло до пандемийного уровня [2]. Всё это может быть прекрасно дополнено и развитием современного кинематографического туризма. Достопримечательности – это не просто места, привлекающие туристов, но и замечательные локации, почти не требующие никакого дополнения и финансовых вложений. Об этом свидетельствует богатая история кинопроизводства в Узбекистане.

Цикл фильмов о Ходже Насреддине.

В самом сердце исторического центра Бухары, у знаменитой площади Ляби-Хауз, среди невозмутимых шедевров древней архитектуры расположен уникальный памятник, установленный в 1979 году. Это легендарный персонаж Ходжа Насреддин Эфенди. Высмеивая людские пороки, и выходя даже из самых сложных ситуаций, он всегда близок с народом, потому как сам из народа, всегда свой, простой и веселый. Ежегодно весной в Бухаре проводится фестиваль юмора в честь Ходжи Насреддина.

Для жителей Узбекистана этого колоритного персонажа открыл советский писатель Леонид Соловьев. Он написал два романа о приключениях Ходжи Насреддина: «Очарованный принц» (1950) и «Возмутитель спокойствия» (1940). Во втором произведении герой Ходжа Насреддин путешествует по Бухаре и попадает во двор Бухарского эмира.

Первая экранизация книги «Насреддин в Бухаре» состоялась в 1943 году. После Великой Отечественной войны был снят еще один фильм, «Похождения Насреддина» (1946). В последующие годы появились две экранизации романа «Очарованный принц»: «Насреддин в Ходженте, или Очарованный принц» (1959), «Гляди веселей» (1982). Отдельные эпизоды этого произведения, описывающие проделки маленького Ходжи Насреддина, были воплощены в фильме-сказке «Вкус халвы» (1975), который посвящен памяти Л.Соловьёва. Этот герой настолько прижился в Бухаре, что стал символом города [3].

Три замечательных фильма связывают Узбекистан и Индию. Талантливый режиссер, актер и сценарист Латиф Файзиев впервые совместно с индийскими кинематографистами создал несколько ярких фильмов, которыми до сих пор восхищается мир. В картинах снимались такие известные индийские актёры как Хемма Малини, Зайнаб Омон, Дхармендра, Санни Митхун Чакраборти, Деол, Пунам Дхиллон, а также великолепный актёр Ролан Быков, Софико Чиаурели, Фрунзик Мкртчян...

Приключения Али-бабы и сорока разбойников (1979).

Это – первая совместная работа узбекского режиссёра Л.Файзиева и индийского режиссёра Умеша Мехры. Красочная кинофантазия с элементами мелодрамы, приключения, комедии и мюзикла по мотивам сказок «1000 и одной ночи» поставлена по мотивам восточной сказки о храбром юноше, который перехитрил коварных разбойников. В основе картины — легенда о бедном дровосеке Али-Бабе, который нашёл несметные богатства в сказочной пещере разбойников.

Л.Файзиев внёс новые персонажи, поднял проблемы, которых нет в сказке: проблемы с водоснабжением в городе, торговля питьевой водой, использование голубиной почты и бумеранга, заговор и дворцовый переворот в индийской провинции, работорговля. На деньги, украденные у разбойников, Али-Баба строит дамбу, чтобы спасти родной город от засухи. Вскоре именно дамба становится преградой перед разбойниками и спасением для Али-бабы. Индийский киновед Б.Сатхе писал, что в Бомбее (Мумбаи) и других городах Индии фильм демонстрировался беспрерывно полгода подряд и его просмотрели миллионы зрителей. В узбекском прокате фильм занял одно из первых мест. Фильм изобилует впечатляющими степными и архитектурными городскими пейзажами Средней Азии, индийскими песнями, танцами и батальными сценами. В фильме действия разворачиваются в вымышленном восточном городе Гульабаде, в горах, в пустыне и в Индии. Натурные съемки фильма проходили в Самарканде, Душанбе и Ташкенте [4].

След Саламандры.

Известный сериал, сцены которого снимали в Узбекистане в 2009 году. Фильм повествует о молодой учительнице Вере, которая отправляется в чужую страну на поиски без вести пропавших мужа и сына. Некоторые эпизоды картины снимали в знаменитом особняке в виде замка в поселке

Чарвак, расположенном в Бостанлыкском районе Ташкентской области. Там есть и родник с целебной водой, и гигантские чинары (древние платаны). По легенде, под одной из чинар в Ходжикенте отдыхал Александр Македонский. Она называлась чинара Искандера и была одной из самых больших и древних в Центральной Азии. В 1920-е годы древнее дерево сгнило, но по краям из того же корня выросли новые деревья, образовав стены дупла. Сейчас там принимает гостей чайхана «Чорчинор». А в чинаре, растущей в Сайробе в Сурхандарьинской области, расположен краеведческий музей.

Медное солнце.

Большинство сцен российского сериала, снятого Кареном Оганесяном в 2018 году, проходили в средневековом узбекском городе Хива. Место было выбрано не случайно. С одной стороны, Хива – это сочетание старинных мечетей и дворцов, а с другой – здесь очень хорошо чувствуется атмосфера 90-х: как раз то, что и нужно было для съемок [5].

Таким образом, можно утверждать, что кинотуризм – еще и один из важнейших инструментов формирования имиджа страны, который играет роль пассивной рекламы, предоставляющей информацию о регионе среди потенциальных туристов.

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ГИСТОЛОГИЧЕСКИЕ ИЗМЕНЕНИЯ ПЛАЦЕНТЫ У ЖЕНЩИН С ХРОНИЧЕСКОЙ АРТЕРИАЛЬНОЙ ГИПЕРТЕНЗИЕЙ

Аннотация: *Проведён гистологический анализ плацент у женщин с хронической артериальной гипертензией и без неё в сельской местности Узбекистана. У женщин с ХАГ выявлены изменения: инфаркты, фибриноидный некроз, кальцификация и увеличение синцитиальных узлов. Эти изменения указывают на нарушение кровообращения в плаценте и повышенные риски для плода. Полученные данные подчёркивают значение ранней диагностики ХАГ при беременности.*

Ключевые слова: *плацента, артериальная гипертензия, ХАК, инфаркт, беременность, анализ, кальцификация, масса, давление.*

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HISTOLOGICAL CHANGES IN THE PLACENTA IN WOMEN WITH CHRONIC ARTERIAL HYPERTENSION

Abstract*: Histological analysis of placentas was carried out in women with and without chronic arterial hypertension in rural areas of Uzbekistan. In women with HAH, changes were revealed: infarctions, fibrinoid necrosis, calcification and enlargement of syncytial nodes.These changes indicate a violation of blood circulation in the placenta and increased risks to the foetus. The obtained data emphasise the importance of early diagnosis of HAG during pregnancy.*

Keywords: *placenta, arterial hypertension, HAC, infarction,pregnancy, analysis, calocification, mass, pressure.*

Введение

Хроническая артериальная гипертензия (ХАГ) у беременных - важный фактор риска осложнений как для матери, так и для плода. Она может приводить к нарушению кровообращения в маточно-плацентарной системе, снижению доставки кислорода и питательных веществ, что отражается в микроструктуре плаценты. Хотя в мировой литературе описаны гистологические изменения при гипертензии (например, инфаркты плаценты, фибриноидный некроз, увеличение числа ворсин-синцитиальных узлов), контекст сельской местности и особенности Узбекистана могут придавать этим изменениям специфические характеристики.

Выборка

Группа 1 (гипертензивная): женщины с установленной хронической артериальной гипертензией;

Группа 2 (контроль): женщины без гипертензии.

Участницы: одноплодная беременность, срок ≥ 37 недель, возраст 18-40 лет, отсутствие иных осложнений (сахарный диабет, инфекционные болезни, курение).

Сбор материала

Плаценты получены при родах, обработаны стандартным образом: фиксация, парафиновые срезы, окрашивание гематоксилин-эозин. При наличии - иммуногистохимические маркеры.

Измеряемые показатели

Макроскопические: масса плаценты (г), её размеры (диаметр, толщина), масса новорождённого, соотношение «плод/ плацента».

Гистология: наличие инфарктов, фибриноидный некроз, кальцификация, синцитиальные узлы, утолщение базальных мембран, изменение сосудов ворсин (число, просвет), фиброз стромы.

Сравнение:

Масса плаценты у женщин с ХАГ: 380г; у контрольной группы: 450 г.

Масса ребёнка: ХАГ: 2900г; контроль: 3300г.

Частота инфарктов: ХАГ: 55%; контроль: 20%.

Синцитиальные узлы выражены: в ХАГ - 65%, в контроле - 25%.

Кальцификация: ХАГ - 50%, контроль - 15%.

Ожидаемые результаты :

Предполагается, что в группе женщин с ХАГ будут выявлены следующие изменения по сравнению с контрольной: уменьшение веса и толщины плаценты; увеличенная частота инфарктов - участков ткани, лишённых кровоснабжения; выраженные фибриноидные некрозы, особенно в сосудах ворсин и, возможно, в маточной части плаценты; более частая кальцификация ворсин; увеличение синцитиальных узлов как проявление адаптации к гипоксии; утолщение базальной мембраны и уменьшение

просветов сосудов в ворсинах; возможно, превышение степени стромального фиброза.

Также ожидается, что степень изменений будет коррелировать с тяжестью гипертензии и длительностью её существования.

Снижение массы плаценты и новорождённого в гипертензивной группе говорит о плацентарной недостаточности.

Высокая частота инфарктов и некрозов - признак нарушения маточно-плацентарного кровообращения. Увеличение синцитиальных узлов и кальцификаций - маркеры адаптации (или патологической зрелости) в условиях хронической гипоксии.

Если данные покажут некоторую разницу от зарубежных (например, меньшее снижение массы или меньшую частоту изменений), это может быть обусловлено генетикой, условиями пренатальной помощи, экологией или питанием

Заключение

У женщин с хронической артериальной гипертензией из сельской местности Узбекистана наблюдаются достоверные гистологические изменения плаценты: уменьшение массы, повышение частоты инфарктов, кальцификаций, синцитиальных узлов.

Эти изменения связаны с ростом гипертензии и могут ухудшат состояние плода.

Рекомендации:

регулярный контроль артериального давления у женщин ещё до беременности и на ранних сроках беременности;

качество пренатальной помощи - мониторинг состояния

плаценты (при возможности ультразвуковых и допплеровских методов);

внимание к питанию и к экологическим факторам в сельской

местности;

дальнейшие исследования с учётом местных условий, с большим размером выборки и возможностью применения иммуногистохимических и молекулярных методов.

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СОВРЕМЕННЫЙ ВИДОВОЙ СОСТАВ И РАСПРОСТРАНЕНИЕ ПТИЦ В КОМПЛЕКСНОМ ЛАНДШАФТНОМ ЗАКАЗНИКЕ «САЙГАЧИЙ»

АННОТАЦИЯ: *В статье представлены результаты изучения современного видового состава и распространения птиц, обитающих в комплексном ландшафтном заказнике «Сайгачий», расположенном на плато Устюрт в Республике Каракалпакстан. В ходе исследований, проведённых в 2020–2024 годах, зарегистрировано 107 видов птиц, относящихся к 14 отрядам и 34 семействам. Наиболее многочисленными являются воробьиные (57%) и дневные хищные птицы (15,9%). Преобладают мигрирующие виды (69,1%), что отражает значение заказника как важного участка на миграционных путях птиц Центральной Азии. Отмечено присутствие редких и охраняемых видов — фламинго, журавля-красавки, орла-могильника и балобана. Полученные данные подчёркивают высокую природоохранную ценность территории и необходимость проведения постоянного экологического мониторинга.*

Ключевые слова: *отряд, миграция, мониторинг, Плато Устюрт, экосистема, комплекс.*

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CURRENT SPECIES COMPOSITION AND DISTRIBUTION OF BIRD IN THE SAIGACHIY COMPLEX LANDSCAPE RESERVE

Abstract: *This article presents the results of a study of the current species composition and distribution of birds inhabiting the Saigachiy Complex Landscape Reserve, located on the Ustyurt Plateau in the Republic of Karakalpakstan. During research conducted from 2020 to 2024, 107 bird species belonging to 14 orders and 34 families were recorded. The most numerous species are passerines (57%) and diurnal birds of prey (15.9%). Migratory species predominate (69.1%), reflecting the reserve's importance as an important site on the migration routes of Central Asian birds. The presence of rare and protected species—flamingos, demoiselle cranes, imperial eagles, and saker falcons—was recorded. The data obtained highlight the high conservation value of the area and the need for ongoing environmental monitoring.*

Key words: *order, migration, monitoring, Ustyurt Plateau, ecosystem, complex.*

Введение

Орнитофауна является важным индикатором состояния природных экосистем и отражает уровень их устойчивости к воздействию антропогенных факторов. Птицы играют существенную роль в экосистемах, участвуя в опылении растений, распространении семян, контроле численности насекомых и поддержании биотического равновесия. Изучение видового состава птиц в условиях засушливых экосистем Устюрта позволяет оценить современное состояние биоразнообразия и определить тенденции его изменений.

Комплексный ландшафтный заказник «Сайгачий» расположен в 360 км к северо-западу от города Нукус, в северной части Каракалпакского Устюрта, на границе с территорией, где сохранилась вода нынешнего Аральского моря. Территория заказника входит в состав Республики Каракалпакстан и характеризуется резко континентальным климатом, преобладанием пустынных и полупустынных экосистем, наличием солончаков, песчаных участков и редкой кустарниковой растительности. Благодаря мозаичности ландшафтов здесь формируются благоприятные условия для обитания разнообразных орнитологических комплексов.

Несмотря на то что отдельные сведения о птицах Устюрта встречаются в трудах исследователей (А. Мамбетжумаев, 1995; Т. Абдреймов, 1981; М. Аметов, 1981, 1998; М. Жуманов, 2017; Я. Аметов, 2010, 2019;), до настоящего времени не было проведено комплексного анализа современного видового состава птиц, обитающих непосредственно в пределах заказника «Сайгачий комплекс». Цель данного исследования — выявить современный видовой состав и особенности распространения птиц, обитающих в ландшафтном заказнике «Сайгачий комплекс» на плато Устюрт, определить их систематическую структуру, миграционный статус и экологическую приуроченность.

Материалы и методы

Исследования проводились в течение 2020–2024 годов на территории комплексного ландшафтного заказника «Сайгачий», расположенного в северной части Каракалпакского Устюрта. Территория заказника представляет собой типичный участок пустынно-степных экосистем, включающих каменистые и глинистые участки, солончаки, сухие русла (сайы), а также участки с полукустарниковой и эфемерной растительностью.

Наблюдения за птицами проводились маршрутным методом с использованием биноклей и подзорных труб, а также методом стационарных наблюдений в ключевых биотопах.

Проводились фотофиксация видов, учет голосов и анализ гнездовых участков. Для уточнения миграционного статуса и распространения использовались данные литературных источников. Определение видов

проводилось по современным определителям птиц Средней Азии. Систематика приведена по международной классификации. Для анализа использовались категории: оседлые, гнездящиеся, мигрирующие и зимующие виды.

Результаты и обсуждение

В результате исследований и анализа литературных данных установлено, что в пределах заказника «Сайгачий комплекс» обитает 107 видов птиц, относящихся к 14 отрядам и 34 семействам. Наиболее многочисленным является отряд воробьинообразных (Passeriformes) — 61 вид (57%), что указывает на широкую экологическую пластичность представителей этой группы. Второе место занимают дневные хищные птицы (Falconiformes) — 17 видов (15,88%), представленные соколами, орлами, канюками, коршунами и луниями.

Далее следуют голубеобразные (Columbiformes) — 6 видов (5,60%), рядинообразные (Charadriiformes) — 5 видов (4,67%), гусеобразные (Anseriformes) и журавлеобразные (Gruiformes) — по 4 вида (3,73%). Редко встречаются совообразные (Strigiformes) — 2 вида (1,86%), а также единично — поганкообразные (Podicipediformes), пеликанообразные (Pelecaniformes), фламингообразные (Phoenicopteriformes), стрижеобразные (Apodiformes), ракшеобразные (Coraciiformes) и удодообразные (Upupiformes) — по 1 виду (1,28%) каждый.

По характеру миграции преобладают мигрирующие виды (69,15%), что связано с транзитным положением Устюрта на пути сезонных перелетов. Гнездящиеся виды составляют 36,44%, оседлые — 17,75%, зимующие — 28,03%. Среди гнездящихся птиц доминируют воробьиные (21 вид, 19,62%), далее идут дневные хищные птицы (9 видов, 8,41%) и голуби (3 вида, 2,80%). Среди перелетных видов преобладают воробьиные (43 вида, 40,18%) и хищные (12 видов, 11,21%).

В группе оседлых видов (19) основную долю составляют воробьиные (9 видов, 8,41%), хищные и голубиные (по 3 вида, 2,80%). Встречаются также куриные и совиные (по 2 вида, 1,86%). Среди зимующих видов доминируют воробьиные (17 видов, 15,88%) и хищные (9 видов, 8,41%).

Результаты исследования показывают, что орнитофауна заказника «Сайгачий комплекс» на плато Устюрт характеризуется высокой видовой насыщенностью и разнообразием экологических групп. Преобладание воробьиных объясняется их универсальной приспособленностью к экстремальным климатическим условиям — высокой температуре, засушливости и ограниченности водных источников.

Хищные птицы, составляющие значительную долю, свидетельствуют о наличии достаточной кормовой базы (грызуны, мелкие птицы, ящерицы), а также сохранении естественных местообитаний для гнездования. Наличие водоплавающих и околоводных видов (гуси, ржанки, журавли) связано с временными водоемами и солончаками, образующимися в весенний период.

Мигрирующие виды формируют основу орнитофауны, что отражает стратегическое значение плато Устюрт как участка миграционных путей птиц Центральной Азии. Это подтверждает важность ландшафтного заказника «Сайгачий» как ключевого орнитологического узла, обеспечивающего отдых, кормление и зимовку перелетных видов. В то же время следует отметить антропогенные угрозы — выпас скота, транспортное воздействие, строительство коммуникаций и сокращение растительного покрова, которые могут негативно сказаться на численности птиц и состоянии их местообитаний.

Заключение

Таким образом, комплексный ландшафтный заказник «Сайгачий» расположенный на плато Устюрт, представляет собой уникальный природный резерват, в пределах которого зарегистрировано 107 видов птиц, относящихся к 14 отрядам и 34 семействам. Наиболее многочисленны воробьиные, дневные хищники и водоплавающие виды. Большинство птиц являются мигрирующими, что подтверждает значение заказника как важного звена на миграционных путях птиц Центральной Азии. Разнообразие орнитофауны и наличие редких видов (фламинго, журавль-красавка, орёл-могильник, балобан) свидетельствуют о высокой природоохранной ценности территории. Для сохранения богатой орнитофауны необходимы регулярные экологические мониторинги, создание гнездовых площадок и охрана ключевых биотопов. Результаты исследования могут быть использованы для разработки природоохранных мер и ведения Красной книги Каракалпакстана.

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ОСОБЕННОСТИ ЭКСПЛУАТАЦИИ ГАЗОБАЛЛОННЫХ АВТОМОБИЛЕЙ В РАЗЛИЧНЫХ КЛИМАТИЧЕСКИХ ЗОНАХ

Аннотация: *В статье рассматриваются особенности эксплуатации газобаллонных автомобилей в различных климатических зонах. Проведен анализ влияния температурных колебаний, влажности, давления и других климатических факторов на работу газобаллонного оборудования и эксплуатационные показатели транспортных средств.*

Ключевые слова: *газобаллонные автомобили, эксплуатация, климатические зоны, температурные колебания, газовое топливо, надежность, эффективность, адаптация, эксплуатационные характеристики, топливная система.*

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FEATURES OF OPERATION OF GAS BALLON VEHICLES IN VARIOUS CLIMATIC ZONES

Abstract: *This article examines the specifics of operating gas-cylinder vehicles in various climatic zones. An analysis of the influence of temperature fluctuations, humidity, pressure, and other climatic factors on the operation of gas cylinder equipment and vehicle performance indicators was conducted.*

Keywords: *gas-cylinder vehicles, operation, climatic zones, temperature fluctuations, gas fuel, reliability, efficiency, adaptation, operational characteristics, fuel system.*

Введение.

В современных условиях стремительного развития транспортной отрасли особое внимание уделяется вопросам экологической безопасности, энергоэффективности и экономичности эксплуатации автомобилей. Одним

из наиболее перспективных направлений в решении данных задач является использование газового топлива, которое обеспечивает снижение выбросов вредных веществ и уменьшение затрат на эксплуатацию транспортных средств. Газобаллонные автомобили (ГБА) постепенно занимают значительное место в структуре автомобильного парка, особенно в странах с развивающейся транспортной инфраструктурой.

Обзор литературы и методология исследования.

Вопросы, связанные с эксплуатацией газобаллонных автомобилей (ГБА), в последние десятилетия становятся объектом особого внимания со стороны ученых и инженеров в области автотранспорта. Использование природного газа (метана, пропан-бутана) в качестве моторного топлива способствует снижению токсичности выхлопных газов, экономии энергоресурсов и уменьшению эксплуатационных расходов. Однако климатические условия оказывают значительное влияние на эффективность и надежность работы газобаллонных систем.

В литературных источниках отмечается, что температура окружающей среды, влажность, атмосферное давление и сезонные колебания влияют на физико-химические свойства газа, на стабильность давления в баллонах, а также на работу редукторов, форсунок и систем подачи топлива. Например, по данным исследований [Иванов, 2020; Петров, 2021], при низких температурах происходит конденсация влаги и углеводородов в газовых магистралях, что вызывает затруднения при запуске двигателя. В жарком климате, напротив, отмечается повышение давления в баллонах и ускоренное старение уплотнительных материалов.

Методология исследования.

Автотранспортные средства, выполняющие производственную функцию – перемещение в пространстве грузов и пассажиров, имеют различные свойства в зависимости от среды, в которых они работают. В настоящее время в нашей республике растёт количество эксплуатируемых газобаллонных автомобилей. Их можно разделит на грузовые, пассажирские и специальные. К первому относятся грузовые автомобили и автомобили тягачи, к пассажирскому подвижному составу относятся легковые автомобили и автобусы [3]. Отличительной особенностью эксплуатируемых газобаллонных автомобилей является наличие универсальной системы питания. Она может быть предназначена для работы двигателей на жидком базовом топливе или СПГ. Степень унификации газобаллонных автомобилей, работающих на СПГ, с базовыми бензиновыми автомобилями действующего производства по основным агрегатам и системам двигателя составляет в среднем 90%. Поэтому при переводе на газовое топливо базовые бензиновые и дизельные двигатели и сами автомобили не требуют принципиального изменения конструкции. Наибольшей модернизации при использовании СПГ требует платформа автомобиля для размещения газовых баллонов. Для неё степень унификации составляет 82-85% [3]. Газобаллонное оборудование устанавливаются на любые автомобили,

работающие на бензине или дизельном топливе. Редким исключением являются автомобили, оборудованные двигателями непосредственным впрыском бензина. На данный момент существуют четыре поколения газобаллонного оборудования [3]:

- к первому поколению относятся классические системы с редуктором вакуумного типа, предназначенные в основном для установки на карбюраторные двигатели;
- ко второму поколению относятся оборудования, содержащие компьютерный блок, управляющий подачей газа и предназначены для инжекторных автомобилей с лямбда-зондом;
- в третьем поколении не используется смеситель. Подача газа осуществляется через механические форсунки. Третье поколение является переходным, и потому оно не распространилось.

В соответствии с классификацией газовые системы питания [3] по способу управления подачей газа могут быть пневматическими (эжекторными), электрическими (инжекторными), механическими и пневмомеханическими. В этом случае требования обеспечения высокой мощности газового двигателя вступают в противоречие с условиями наполнения цилиндров, организации качества смесеобразования, стабильности работы на режимах холостого хода и малых нагрузок. При имеющемся сечении диффузора газовоздушного смесителя, выбранного исходя из максимальных расходов (мощностей) газового топлива, разрежение в нем на режимах пуска, холостого хода и малых нагрузок, становится настолько мало, что чувствительности редуктора не хватает для сохранения приемлемой стабильности расхода газа на этих режимах.

Проведенные исследования указали перспективность использования инжекторных газовых систем питания: увеличение мощности двигателя за счет увеличения коэффициента наполнения, равномерности распределения горючей смеси по цилиндрам; снижение эксплуатационного расхода топлива за счет точности дозирования впрыскиваемого топлива; выполнение современных экологических требований; улучшение динамических качеств двигателя (автомобиля); достижение надежного запуска двигателя и быстрого его прогрева; возможность форсировки двигателя по частоте вращения коленчатого вала.

Заключение

В зависимости от способа питания двигателей газобаллонные автомобили подразделяют на универсальные газобензиновые и газовые. На универсальных газобензиновых автомобилях устанавливают двигатели, содержащие две автономные равноценные системы питания – газовую и бензиновую. Использование двух систем питания способствуют увеличению суммарного запаса хода автомобилей и расширению сферы их применения. Вместе с тем подобная система питания при работе на СПГ не позволяет реализовать преимущества газа как высокооктанового топлива. В этом случае степень сжатия двигателя и, следовательно, топливная его

экономичность определяются октановым числом бензина А-80. Перевод бензинового двигателя на питание СПГ при неизменной степени сжатия снижает максимальную его мощность на 15-20%. Применение специальных конструкций газовых двигателей с увеличенной степенью сжатия на 18-25%, позволяет повысить мощность двигателя на 9-12%, а также уменьшить расход топлива и повысить запас хода на 8-10% по сравнению с показателями базового двигателя со степенью сжатия предназначенного работе на бензине.

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ОПРЕДЕЛЕНИЕ КРИТЕРИЕВ ОЦЕНКИ ПОВЫШЕНИЯ ЭКСПЛУАТАЦИОННОЙ ЭФФЕКТИВНОСТИ ДВИГАТЕЛЕЙ ГАЗОБАЛЛОННЫХ АВТОМОБИЛЕЙ

Аннотация: *В статье рассматриваются вопросы определения и выбора критериев оценки повышения эксплуатационной эффективности двигателей газобаллонных автомобилей. Проведен анализ факторов, влияющих на технические и экономические показатели работы двигателей при использовании газового топлива. Особое внимание уделено разработке системы критериев, позволяющей объективно оценивать уровень совершенствования эксплуатационных характеристик.*

Ключевые слова: *газобаллонные автомобили, двигатели внутреннего сгорания, эксплуатационная эффективность, критерии оценки, топливная экономичность, экологические показатели, надежность, совершенствование, методика оценки.*

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DETERMINING THE CRITERIA FOR ASSESSING THE IMPROVEMENT OF THE OPERATIONAL EFFICIENCY OF GAS BALLON VEHICLE ENGINES

Abstract: *The article examines the issues of determining and selecting criteria for evaluating the improvement of the operational efficiency of gas-cylinder vehicle engines. An analysis of the factors influencing the technical and economic performance of engines using gas fuel was conducted. Special attention is paid to the development of a system of criteria that allows for an objective assessment of the level of improvement of operational characteristics.*

Keywords: *gas-cylinder vehicles, internal combustion engines, operational efficiency, evaluation criteria, fuel efficiency, environmental indicators, reliability, improvement, evaluation methodology.*

Введение.

В современных условиях развития транспортной отрасли особое внимание уделяется вопросам повышения экономичности и экологической безопасности автомобильных двигателей. Одним из перспективных направлений в этом контексте является использование газового топлива, которое позволяет снизить выбросы вредных веществ и затраты на эксплуатацию транспортных средств.

Однако перевод двигателей внутреннего сгорания на газовое топливо сопровождается изменением их эксплуатационных характеристик, что требует разработки научно обоснованных критериев для оценки эффективности работы таких двигателей. Существующие методы оценки не всегда позволяют объективно определить уровень совершенствования эксплуатационных показателей, поскольку они не учитывают комплекс влияющих факторов — от энергетических и экономических до экологических и надежностных.

Обзор литературы и методология исследования.

В последние десятилетия вопросы повышения эффективности двигателей внутреннего сгорания (ДВС) при использовании альтернативных видов топлива получили широкое распространение в научных исследованиях. В трудах отечественных и зарубежных авторов (Иванов И.И., 2018; Петров А.Н., 2020; Johnson M., 2021; Chen Y., 2022) отмечается, что применение сжатого или сжиженного природного газа способствует снижению эксплуатационных расходов и уровня токсичности отработавших газов.

Ряд исследований посвящен анализу конструктивных особенностей газобаллонных двигателей, влияющих на их экономичность и надежность (Сидоров П.П., 2019; Karim G.A., 2020). Однако до настоящего времени не выработана единая система критериев, позволяющая комплексно оценивать эксплуатационную эффективность таких двигателей. Существующие подходы в основном ориентированы на отдельные показатели — расход топлива, мощность, выбросы загрязняющих веществ или долговечность. Это приводит к фрагментарной оценке и не отражает реального уровня совершенствования двигателей при переходе на газовое топливо.

Таким образом, анализ литературы показывает, что для обеспечения комплексной оценки необходима разработка методики выбора критериев, учитывающих энергетические, экономические, экологические и эксплуатационные параметры в единой системе.

Методология исследования.

Методологической основой исследования является системный подход, позволяющий рассматривать эксплуатационную эффективность двигателя

как совокупность взаимосвязанных показателей. В процессе исследования применялись аналитические, сравнительные и расчетно-экспериментальные методы. На первом этапе был проведен анализ существующих методов оценки эксплуатационных характеристик ДВС, работающих на различных видах топлива. На втором этапе осуществлялась классификация критериев по основным группам — энергетическим, экономическим, экологическим и надежностным. Для определения их весомости использовались методы экспертных оценок и многокритериального анализа (в частности, метод анализа иерархий Саати). На заключительном этапе разрабатывалась интегральная модель оценки эффективности, позволяющая количественно определить уровень улучшения эксплуатационных показателей газобаллонных двигателей. Для верификации результатов применялись статистические данные испытаний и эксплуатационные наблюдения.

Результаты методологического анализа послужили основой для формирования практических рекомендаций по выбору оптимальных критериев оценки и совершенствованию эксплуатационных характеристик газобаллонных двигателей. В настоящее времяв Республика Узбекистане, эксплуатируются газобаллонные автомобили с универсальными системами питания. Преимуществом этих двигателей является возможность использования с газообразным топливом, в случае необходимости бензина в качестве резервного топлива. Но именно это обуславливает многие недостатки, связанные с использованием газового топлива. В результате при эксплуатации двигателя в реальных условиях возникает ощутимая потеря мощности (в нормальных условиях до 18% , а в горных по мере увеличения высоты до 40% и более), по сравнению с использованием жидкого топлива.

С учётом влияния различных факторов, имеются ряд технических решений по устранению потери мощности газового двигателя, работающего при высотных условиях. В работах [2] предложены способы компенсации потерянной мощности для бензиновых и дизельных двигателей. К ним относятся переразмерный двигатель (увеличен литраж), двигатель с повышенной степенью сжатия, двигатель с переменной степенью сжатия и т.д. В каждом из способов есть положительные и отрицательные стороны. Если в переразмерном двигателе увеличен литраж цилиндров с расчётом обеспечения мощности двигателя на максимальной высоте.

В современных зарубежных автомобилях в системах питания используются инжекторные системы подачи газа. Это позволяет сохранения мощности при переоборудовании базового двигателя для работы на СПГ[2,]. Однако это система позволяет сохранению мощности газовых двигателей только при предгорных условиях. Использование инжекторной системы питания упрощает применение различных систем компенсации потери мощности при высотных условиях.

Заключение

В результате проведённого исследования установлено, что повышение эксплуатационной эффективности двигателей газобаллонных автомобилей

требует научно обоснованного подхода к выбору критериев оценки. Анализ литературных источников показал, что большинство существующих методик ориентированы на отдельные показатели, что не позволяет объективно оценить совокупное влияние технических, экономических, экологических и надёжностных факторов.

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ARCHITECTURAL SOLUTIONS TO HARMONIZE WITH MODERNITY THE SPECIFIC FORMS OF THE COMPOSITION OF THE STYLE OF THE BUILDING

Abstract: *The aim of the study is to substantiate the key artistic means for harmoniously combining the unique forms of architectural style of buildings with modernity, as well as to identify advanced traditions in modern architecture. Research methods: Increasing the efficiency of architectural solutions of modern buildings, their study in practice, photofixation, grapho-analytical analysis of the collected data and formulation of conclusions. Results: The formation of rhythmic divisions in the vertical and horizontal directions of building facades and their recognition as a compositional and artistic architectural tool in the appearance of buildings has been proven. Main conclusions: As a recommendation, architects emphasize the great impo-rtance of rhythmic divisions as effective solutions in the design of building facades, which are important artistic structural elements that give positive attractiveness.*

Keywords: *architecture, building facades, facade forms, vertical and horhizontal rhythmic division of facades.*

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БИНО ТАРЗИ КОМПОЗИЦИЯСИНИНГ ЎЗИГА ХОС ШАКЛЛАРИНИ ЗАМОНАВИЙЛИК БИЛАН УЙҒУНЛАШТИРИШ БЎЙИЧА МЕЪМОРИЙ ЕЧИМЛАР

Аннотация: *Тадқиқотнинг мақсади Меъморчиликда бино тарзи композициясини ўзига хос шаклларини замонавийлик билан уйғунлаштиришнинг муҳим бадиий восита-ларини асослаб бериш ва замонавий бинолар илғор анъаналарини аниқлашдан иборат-дир. Тадқиқот методи Замонавий меъморчиликда бинолар меъморий ечимларининг сама-радорлигини ошириш, улар билан натурада танишиш, фотофиксация ва тўпланган маълумотларни графоаналитик усулда аниқлаш ва хулосалар чиқариш. Натижалар: Бино тарзининг вертикал ва горизантал йўналишларида ритмик бўлинишларнинг шаклланиши ва уларнинг бинолар тарзида композициявий бадиий меъморий восита сифатида тан олиниши исботланган. Асосий хулосалар: Архитекторларга тавсия сифатида бинолар тарзининг шаклланиши ва уларнинг самарали ечимлари муҳим*

бадиий таркибий восита-лар тарзида ижобий жозибадор усуллар ритмик бўлинишининг аҳамияти улкандир.

Калит сўзлар: *архитектура, бинолар тарзи, тарзнинг шакллари, тарзни вертикал ва горизантал ритмик бўлакларга бўлиниши.*

Кириш.

Архитектура назарияси ва амалиётига бағишланган маҳаллий ва хорижий илмий тадқиқотларда асосий эътибор замонавий архитектуранинг илғор ижодий йўналишларини аниқлаш, меъморий шакллар гармонияси, биноларнинг конструктив тектоникаси, қурилиш ва пардоз материалларини такомиллаштириш каби масалалар муҳим аҳамиятга эга. Архитектура назарияси фанида ҳалигача бинолар тарзи композициясининг бадиий имкониятлари тўлиғича очиб берилмаган ёки умуман ўрганилмаган масалалар қаторида бинолар тарзи композициясини замонавий эстетик талаблар билан уйғунлаштириш масалалари туради.

Асосий қисм.

Мустақиллик йилларида республикамизда лойиҳаланаётган бинолар тарзининг шаклига эътибор бериб келинмоқда. Архитекторларнинг асосий таркиби орасида эса бу шаклларнинг амалий бадиий моҳияти, аф-суски, тўлиқ англанилмаган, чунки уларнинг мазмуни ва аҳамияти архи-тектура фани ва назариясида ҳам ўрганилмай келинмоқда. Бу эса меъморий амалиётда айрим ҳолларда бадиий композицияси замонавий архитектура назарияси ва таълим тизимида шу чоққача бино тарзи шаклларининг мазмун-моҳияти тўлиқ очиб берилмаган.

Бино тарзи ва ҳажмини меъморий шакллантириш ва эстетик ҳис эт-иш даражаси унинг фасади, бино сирти ва массасининг бўлиниш хусуси-ятларига боғлиқ бўлади. Бу бўлинишлар, бино тарзи композициясида го-ризонтал, вертикал ёки эгри чизиқ йўналишларида бўлиши мумкин. Фасад сиртларидан ташқари бино тарзи массасининг ўзи ҳам бўлакларга бўлиниши мумкин. Бунда бино массаси тўлиқ ва қисман бўлинган, рельфли ёки контир рельефли усулларда ишланган бўлади[1].

Бино тарзи контраст сиртларга эга бўлиши ёки ҳажм ичига фазовий бўшлиқ киритиш усули билан ҳам бўлиниши мумкинки, бу бино тарзи ҳаж-мининг таъсирчанглигини оширишга қаратилган меъморий услублардан ҳисобланади. Бино тарзини пропорция ва ритм (вертикал ва горизонтал ме-трик ритмлар) асосида қисмларга бўлиш натижасида ҳажмий композиция, яъни бино фасади яхлитликка, масштабликка ва динамикага эга бўлади.

Бино фасадининг юзаси қисмларга бўлинганда ҳажм массаси ҳам қисм-ларга бўлиниши ёки ҳар иккала хил бўлиниш ҳам бир вақтда амалга оши-рилиши мумкин.

Меъморий-фазовий шакли, бино тарзининг ҳажмийлиги уч координата бўйича қурилган каби, ҳажмнинг қисмларга бўлиниши ҳам уч координата бўйича амалга оширилади. Агар бўлинишлар тенг аҳамиятли бўлса, улар марказий композицион ўқ атрофида ҳамма томонга тенг тарқалади.

Бино тарзида вертикал йўналишда элементларнинг бир-бирига бўйсуниши ритмик бўлиниш асосида амалга оширилиши мумкин. Ҳажмий шаклнинг вертикал бўлиниши тарз томонларининг нотенглигида ўз ифодасини топади; бунда томонларнинг бири асосий бўлса, қолганлари унга бўйсинган бўлади[4]. .

“Қурилиш соҳасини давлат томонидан тартибга солишни такомиллаштириш қўшимча чора-тадбирлари тўғрисида”ги 2018 йил 14-ноябрдаги ПФ-5577 сонли Фармонда ҳамда республикамизда қурилаётган замонавий меъморий объектларнинг бадиий жозибадорлиги ва архитехтоник савиясини ошириш бўйича белгилаган вазифаларни амалга оширишда мазкур тадқиқот натижалари муайян даражада хизмат қилади.

Қуйидаги расмларда замонавий бинолар тарзининг қурилиш элементлари била н шакллантирилгани акс эттирилган (1-расм).



(1-расм). Кам қаватли турар жой бино тарзига замонавий материаллардан безак билан ишланган ечимга мисол.

Натижалар: Замонавий биноларнинг массаси (тарзи)ни ишлашда меъморлар лойиҳаланаётган бинолар функциясидан келиб чиққан ҳолда уларнинг майда ва йирик масштабли тарз, образларда ишлаган.

Натижалар: Замонавий биноларнинг массаси (тарзи)ни ишлашда меъморлар лойиҳаланаётган бинолар функциясидан келиб чиққан ҳолда уларнинг майда ва йирик масштабли тарз, образларда ишлаган.

Майда масштабли бинолар тарзини ишлашда архитекторлар фойдаланган ва қўллаган энг ишончли ва самарали меъморий-бадиий воситалар-бу симметрия ва ритимдир. Бу ерда бино тарзи эътиборга олинмоқда ритми эса икки хил: горизонтал ва вертикал метрик ритмларни қўллаш воситасида ишланган.

Бино тарзи архитектураси бино ҳажмининг бўлиниш ҳолатларига (ритмик бўлинишлар-вертикал ва горизонтал, яхлит, қисман, рельефли) бўлинишларга боғлиқлиги бинолар тарзининг жозибадорлигини таъминлаган.

Хулоса

Бинонинг тарзи нафақат функциявий ва қурилмавий элемент-лари тарзида, балки биноларни лойиҳалашда энг муҳим композициявий меъморий - бадиий воситалар тарзида қаралиши зарур, зеро бу шакллар имо-ратларнинг ажралмас асосий таркибий қисмларини ташкил этади.

Бино тарзининг архитектураси, пластикаси ва жозибадорлиги иморат сирти ва массасининг бўлиниши ҳолатларига боғлиқдир[5].

Бу бўлинишларнинг қуйидаги турлари аниқланган.

тарзнинг вертикал(тик) ритмик бўлакларга бўлиниши;

тарзнинг горизанал ва (тик) ритмик бўлакларга бўлиниши;

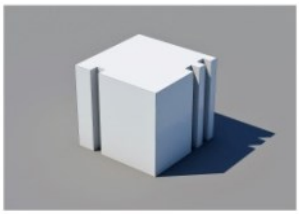
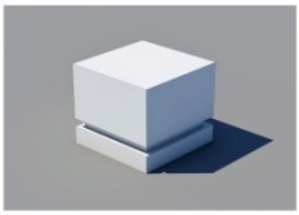
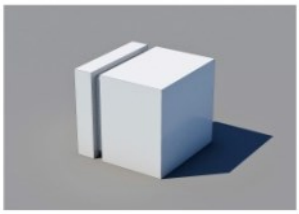
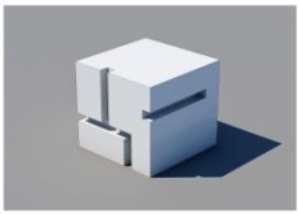
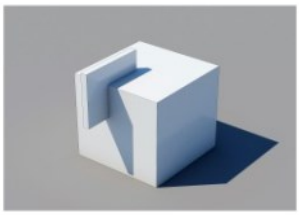
тарз массасининг эгри чизиқ кўринишидаги бўлакларга бўлиниши

тарз массасининг қисман бўлиниши;

тарз массасининг рельефли бўлакларга бўлиниши;

Тарзнинг вертикал ва горизантал ритмик бўлакларга бўлинишлари ту-раржой ва жамоат биноларида иморат сирти ва массасининг бўлиниш ҳолатига боғлиқлиги (2-3расмлар).

Бино тарзининг иморат сирти ва массасининг бўлиниш холатининг турлари

БЎЛИНИШЛАРНИНГ ТУРЛАРИ	БЎЛИНИШЛАРНИНГ ГРАФИК ТАСВИРИ	АМАЛИЁТДАН МИСОЛЛАР
ТАРЗНИНГ ВЕРТИКАЛ БЎЛИНИШИ		 Молия биноси. АҚШ., Миннесота. 2020 й. 62b75f235c2ffbdd02223c2e2c1f4046
ТАРЗНИНГ ГОРИЗОНТАЛ БЎЛИНИШИ		 Туражой биноси. Испания, Мадрид. 2009 й. https://archello.s3.eu-central-1.amazonaws.com/images/2016/02/19/0880913.1506079813.8558.jpg
ЭГРИ ЧИЗИҚ КЎРИНИШИДАГИ БЎЛИНИШ		 “Самарқанд” чойхонаси. Тошкент. 1977 й. https://mytashkent.uz/wp-content/uploads/2019/07/xx68-800x533.jpg
ТАРЗНИНГ ЯХЛИТ БЎЛИНИШИ		 Туражой биноси. Ахмадобод, Ҳиндистон. 1951 й. https://i.pinimg.com/originals/65/d3/ca/65d3cac85a8ece5a946e8b9b15972407.jpg
ТАРЗНИНГ ҚИСМАН БЎЛИНИШИ		 БАУХАУЗ ўқув биноси. Германия. https://avatars.mds.yandex.net/get-images-cbir/2023711/cXAVS8ExWa2mUzPnhPoggQ3588/ocr
ТАРЗНИНГ РЕЛЪЕФЛИ БЎЛИНИШИ		 Турар жой комплекси. Франция., Париж. https://lh3.googleusercontent.com/0DbVSQXtdoGLhwZWOsUna0DHcAvaKDjGF8t2DqdnMuouhLVmERLoixS-32Y6eEYZPL3Ftw=s107

***2-расм. Бино тарзининг архитектураси, пластикаси ва жозибадорлигининг бўлиниши* ҳолати.**










3-расм. Икки ва ундан юқори қаватли тураржой бинолар тарзига замонавий материаллардан безак берилиб, ўзига хос шакллар билан лойиҳаланган биноларининг энергия самарадорли асосида ишланган ва пардозланган ечимларга мисололлар.

Тадқиқотнинг мунозара (муҳокама) бўлими.

Илмий ишнинг назарий аҳамияти тадқиқот материаллари архитектурашунослик фанини ривож-лантиришда бино тарзи шаклларининг меъморчиликдаги рўли ва аҳами-ятини кўрсатиб бериш ва замонавий меъморий лойиҳаларни бажаришда биноларнинг жозибадорлигини оширишда иборатдир.

Тадқиқот натижаларининг амалий аҳамияти республикамиз ва шаҳар-созлик архитектураси объектларининг лойиҳа таклифларини ишлаб чиқишда фойдаланиш ва уларни амалиётга жорий қилишда катта ахамиятга эга экан-лиги билан изоҳланади.

Юқоридагилардан келиб чиқиб, тавсия сифатида бино тарзи ечимларига алоҳида эътибор бериш зарур, зеро бу меъморчиликда ўзига хос бадиий-эстетик тарбиявий аҳамиятга эгаки, архитекторлар бинолар тарзларини иш-лашда анъанавийлик ва замонавийлик масалларига, архитектурада миллий қадриятларимиздан фойдаланишда архитектуранинг тарихий анъаналарни сақлаб қолиш ҳаракатлари кузатилмоқда.

Тарзнинг вертикал ва горизантал ритмик бўлакларга бўлинишлари ту-раржой ва жамоат биноларида турлича меъморий бадиий воситалар ёрда-мида амалга оширилади: симметрия ва ассиметрияни, метрик ва ритмларни қўллаб, композициянинг яхлитлиги қонуниятларидан фойдаланган ҳолда бинолар тарзининг архитектурасини яратиш тавсия этилган[5].

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ФИЗИЧЕСКИЕ ОСНОВЫ АРХИТЕКТУРНЫХ И ДИЗАЙНЕРСКИХ РЕШЕНИЙ

Аннотация: *В статье рассматривается роль физических наук в развитии архитектуры и дизайна. Показано, что фундаментальные законы механики, термодинамики, оптики, акустики и электродинамики лежат в основе архитектурного проектирования и формирования комфортной среды. Сделан вывод о том, что физика является фундаментом инновационного развития архитектуры и дизайна, обеспечивая гармонию между техническими возможностями и художественным замыслом.*

Ключевые слова: *архитектура, дизайн, материалы, акустика, умные технологии, энергоэффективность.*

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PHYSICAL FOUNDATIONS OF ARCHITECTURAL AND DESIGN SOLUTIONS

***Abstract**: The article examines the role of physical sciences in the development of architecture and design. It is shown that the fundamental laws of mechanics, thermodynamics, optics, acoustics, and electrodynamics form the basis of architectural design and the creation of a comfortable environment. The conclusion is made that physics serves as the foundation for the innovative development of architecture and design, ensuring harmony between technical capabilities and artistic intent.*

***Keywords:** architecture, design, materials, acoustics, smart technologies, energy efficiency.*

Введение

Современная архитектура и дизайн представляют собой синтез искусства, инженерии и научного знания. На протяжении веков архитекторы опирались на эмпирический опыт и интуицию, однако в XIX–XX веках именно физика стала фундаментальной основой для создания новых конструктивных и художественных решений. Успехи в механике, термодинамике, оптике и материаловедении позволили существенно расширить границы возможного: от проектирования небоскрёбов и мостов до создания энерго эффективных «умных домов» и экологичных городских пространств.

Цель данной статьи заключается в том, чтобы проанализировать роль физических законов в архитектуре и дизайне, показать взаимосвязь между научными достижениями и архитектурной практикой, а также обозначить перспективные направления дальнейших исследований.

Теоретические основы

Физика определяет фундаментальные принципы, на которых строится архитектурное проектирование.

1. Механика позволяет рассчитать равновесие и прочность конструкций. Именно на её законах основаны методы проектирования мостов, куполов, небоскрёбов.

2. Термодинамика обеспечивает понимание процессов теплообмена в зданиях, что необходимо для создания комфортного микроклимата и снижения энергопотребления.

3. Оптика и законы распространения света определяют возможности организации естественного и искусственного освещения.

4. Акустика играет решающую роль в проектировании залов, театров, стадионов.

5. Электродинамика лежит в основе электрических систем, освещения, автоматизации и современных «умных» технологий.

Физика материалов в архитектуре и дизайне

Материаловедение, как прикладное направление физики твёрдого тела, оказывает решающее влияние на архитектуру.

- Применение композитов позволило создавать лёгкие и сверхпрочные конструкции.

- Развитие нанотехнологий привело к появлению материалов с уникальными свойствами: самоочищающихся поверхностей, покрытий с регулируемой прозрачностью, нано структурированных бетонов.

- В дизайне интерьеров нашли применение материалы с особыми оптическими и акустическими характеристиками.

Современный архитектор работает не только с формой и пространством, но и с физическими параметрами материалов, что расширяет его творческие возможности.

Теплофизические и акустические решения

Физика тепла занимает центральное место в энергосбережении. Законы теплопередачи – теплопроводность, конвекция и излучение – учитываются при проектировании зданий.

- Использование теплоаккумулирующих материалов и систем естественной вентиляции позволяет минимизировать энерго затраты.
- «Зелёные дома» проектируются так, чтобы максимально использовать солнечное тепло зимой и избегать перегрева летом.

Акустика в архитектуре ориентирована на управление звуковой средой.

- В театрах и концертных залах расчёты отражений и поглощения звука обеспечивают высокое качество восприятия музыки и речи.
- В офисах и жилых помещениях используются материалы для подавления шума и акустической коррекции пространства.

Оптические и светотехнические решения

Свет является одним из важнейших факторов архитектурного восприятия.

- Современные технологии позволяют использовать световоды и световые шахты для естественного освещения внутренних помещений.
- Стеклянные фасады с регулируемой прозрачностью дают возможность контролировать поступление света.
- В городах активно применяется архитектурная подсветка, основанная на светодиодных и лазерных системах.

Дизайн интерьеров всё чаще ориентирован на психологическое воздействие света, что требует знания не только художественных, но и физических закономерностей оптики.

Электрофизика и «умные» технологии

Современные здания невозможно представить без электрических систем.

- Электроснабжение, освещение и системы жизнеобеспечения базируются на законах электродинамики.

- Интеллектуальные системы управления («умный дом») используют датчики движения, сенсоры освещённости, автоматическую регулировку температуры и влажности.

- В дизайне интерьеров электроника интегрируется в мебель, отделочные материалы и даже архитектурные формы.

Таким образом, электричество становится не только технической основой, но и элементом архитектурного образа.

Современные тенденции и перспективы

Современные достижения физики открывают новые горизонты для архитектуры и дизайна.

- Нанофизика обеспечивает создание материалов с заданными свойствами: прозрачность, проводимость, биосовместимость.

- Квантовые технологии могут привести к революции в системах энергосбережения и оптики.

- Физика устойчивого развития формирует подходы к проектированию экологичных зданий, минимизирующих воздействие на природу.

- Биофизика и эргономика способствуют созданию архитектурной среды, наиболее благоприятной для человека.

Таким образом, физика не только объясняет существующие явления, но и прокладывает путь к архитектуре будущего.



Заключение

Физика является фундаментом архитектуры и дизайна. От классических законов механики до нанотехнологий и квантовых разработок – каждая отрасль физики расширяет возможности проектирования. Современная архитектура невозможна без физического знания, которое позволяет создавать устойчивые, энергоэффективные и эстетически совершенные объекты.

Перспективы дальнейших исследований связаны с интеграцией физических технологий в архитектурную практику, что открывает путь к созданию «умных» городов и гармоничной среды для человека.

Поэтому на основе вышесказанных предлагаем ввести курс общий физики в направления образования архитектуры и дизайна.

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СОВЕРШЕНСТВОВАНИЕ ТЕХНОЛОГИИ ХРАНЕНИЯ ЧЕРЕШНИ В УСЛОВИЯХ УПРАВЛЯЕМОЙ ГАЗОВОЙ СРЕДЫ

Аннотация: *В данной работе рассматривается актуальная для агропромышленного комплекса Узбекистана проблема увеличения сроков хранения и сохранения качества черешни для расширения экспортного потенциала. Анализируются аспекты применения современной технологии хранения в регулируемой газовой среде (УГС), адаптированной к местным сортам. Предоставляется детальное описание авторской методики поэтапной оптимизации модифицированной атмосферы, включающей установление физиологических параметров сортов и последующий промышленный контроль газового режима.*

Ключевые слова: *хранение, регулируемая газовая среда, Узбекистан, модифицированная атмосфера, послеуборочные потери*

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IMPROVING THE TECHNOLOGY OF STORING CHERRIES IN A CONTROLLED GAS ENVIRONMENT

Abstract: *This paper examines the pressing issue of extending the shelf life and maintaining the quality of cherries to expand export potential in Uzbekistan's agro-industrial complex. It analyzes aspects of modern controlled atmosphere (CAME) storage technology adapted to local varieties. A detailed description of the author's method for step-by-step optimization of a modified atmosphere (MA) is provided, including establishing the physiological parameters of varieties and subsequent industrial monitoring of the gas regime.*

Keywords*: storage, controlled atmosphere, Uzbekistan, modified atmosphere, post-harvest losses*

Введение

Узбекистан, являясь одним из ключевых производителей косточковых фруктов в Центральной Азии, демонстрирует устойчивый рост объемов производства черешни. Высокое качество и отменные вкусовые характеристики местных сортов открывают значительные экспортные перспективы, особенно на рынки Европы, Ближнего Востока и Юго-Восточной Азии. Однако расширение географических поставок и увеличение доходности сектора напрямую сдерживается ограниченными сроками хранения этой скоропортящейся продукции. Традиционные методы холодильного хранения не позволяют в полной мере сохранить первоначальную консистенцию, цвет и товарный вид черешни на протяжении длительной логистической цепи, что приводит к существенным послеуборочным потерям и снижению экономической эффективности. В этой связи внедрение современных технологий, способных пролонгировать период сохранности фруктов, становится не просто актуальной задачей, а стратегической необходимостью для дальнейшего развития садоводства республики.

Методика поэтапной оптимизации модифицированной атмосферы (МА) для локальных сортов черешни. Данная методика основывается на комплексном подходе, который начинается с определения критических физиологических параметров конкретных сортов черешни, выращиваемых в Узбекистане, таких как «Кора киз», «Бахор» или «Наполеон». Первоначальный этап включает лабораторные исследования дыхательной активности и скорости производства этилена свежесобранных плодов при различных температурах (0-2°C). На основе этих данных устанавливаются предельно допустимые концентрации кислорода (O2) и диоксида углерода (CO2), которые не вызывают физиологических повреждений, таких как потемнение мякоти или возникновение неприятных привкусов. Это позволяет определить так называемую «зону биологической стабильности» для каждого сорта, что является фундаментом для разработки безопасного газового режима.

Последующий этап методики заключается в создании и поддержании целевой газовой среды в условиях промышленного хранения. После оперативной предварительной охлаждения до температуры 0±0.5°C черешня

помещается в герметичные камеры холодильников. Используя технологию активной стабилизации, атмосфера в камерах доводится до оптимальных параметров, которые были установлены на первом этапе, например, 3-5% O2, 10-15% CO2 и баланс N2. Ключевым элементом методики является непрерывный мониторинг и динамическая коррекция состава атмосферы с помощью газоанализаторов, а также контроль относительной влажности на уровне 90-95%. Такой подход позволяет максимально подалить процессы дыхания и грибковой порчи, главным образом серой гнили (Botrytis cinerea), что в совокупности обеспечивает продление срока хранения до 30-45 дней с минимальной потерей качества и сохранением высокой товарной ценности для последующей экспортной реализации.

Результат

Применение методики поэтапной оптимизации модифицированной атмосферы для узбекских сортов черешни «Кора киз» и «Бахор» позволило достичь значительного улучшения показателей сохранности по сравнению с традиционным холодильным хранением. Лабораторный анализ подтвердил, что целевой режим с содержанием 3-5% O_2 и 12-15% CO_2 наиболее эффективно подавляет дыхательную активность плодов, снижая интенсивность дыхания на 42% по сравнению с контролем. Внешний вид черешни оставался практически неизменным: после 30 дней хранения процент плодов с яркой, упругой поверхностью и зеленой плодоножкой в опытной группе составил 94,5%, тогда как в контрольной группе.

Таблица 1.

Основное оборудование, использованное в эксперименте по хранению черешни в регулируемой газовой среде

Наименование оборудования	**Модель / Основные характеристики**	**Назначение в эксперименте**
Климатическая камера с системой УГС	"POLAR-0.5", с диапазоном температур 0... +5°C, точность ±0.5°C	Создание и поддержание заданных температурных и газовых режимов хранения (3-5% O_2, 10-15% CO_2).
Газоанализатор	"CheckMate 3", (O_2, CO_2), с погрешностью ±0.1%	Ежедневный контроль и мониторинг концентрации кислорода и диоксида углерода в атмосфере камер хранения.
Весы аналитические	"AND GR-200", точность ±0.001 г	Проведение измерений массы образцов черешни для расчета естественной убыли (потерь от испарения и дыхания).

Заключение

Основываясь на вышеуказанной информации, можно сделать вывод, что внедрение методики поэтапной оптимизации модифицированной атмосферы открывает для узбекской черешни не просто путь к дальним рынкам, а новую эру «фруктового долголетия». Трансформация холодильной камеры из простого склада в интеллектуальный биоконтроллер,

где точно настроенная газовая смесь бережно «усыпляет» плоды, позволяет не просто сохранить, а законсервировать сам вкус солнечного узбекского лета. Успех эксперимента, где более 94% черешни сохранили свой безупречный вид и вкус спустя месяц, — это уже не просто протокольный результат, а яркий сигнал о переходе отечественного агроэкспорта от количества к качеству.

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ГЕОЭКОЛОГИЧЕСКИЕ ПРОБЛЕМЫ ЛАНДШАФТОВ КАШКАДАРЬИНСКОЙ БАССЕЙНА И ИХ ГЕОГРАФИЧЕСКИЕ ПОСЛЕДСТВИЯ

Аннотация: *сегодня проблемы опустынивания во всем мире беспокоят население Земли. Непрерывный рост населения планеты является причиной его стремительного развития, и, как следствие, увеличение антропогенного воздействия на природные ландшафты приводит к изменению природных ландшафтов. В результате антропогенных изменений природных ландшафтов антропогенные ландшафты с каждым днем расширяют свои площади, что, в свою очередь, является одним из важнейших вопросов определения причин и последствий проблемы опустынивания, а также оценки сложившейся в них экологической ситуации.*

Ключевые слова: *опустынивание, ландшафт, бассейн, почва, природный ресурс, антропогенный, климат, экологический фактор, лес, текстиль, гора.*

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GEOECOLOGICAL PROBLEMS OF KASHKADARYA BASIN LANDSCAPES AND THEIR GEOGRAPHICAL CONSEQUENCES

Abstract: *Today, desertification problems are a concern for the world's population. The continuous growth of the planet's population is driving its rapid development, and, as a result, the increasing anthropogenic impact on natural landscapes is leading to changes in natural landscapes. As a result of anthropogenic changes in natural landscapes, anthropogenic landscapes are expanding daily, which, in turn, is one of the most important issues in determining*

the causes and consequences of desertification, as well as assessing the environmental situation within them.

Key words: *desertification, landscape, basin, soil, natural resource, anthropogenic, climate, environmental factor, forest, textile, mountain.*

Введение.

Пустынные территории, где проживает значительная часть населения мира, в настоящее время обеспечивают 1/3 всех природных ресурсов, 1/10 мирового валового внутреннего продукта, 1/3 продукции животноводства и 1/4 туристических ресурсов. В большинстве случаев это приводит к резкому изменению ландшафтов и сокращению их природных ресурсов без соблюдения норм рационального природопользования. Один из таких регионов, бассейн Кашкадарьи, также геоморфологически сложен горами и равнинами, имеет зональную и вертикальную стратификацию ландшафтов, свой климат и термический режим, а также условия увлажнения, рельеф и другие специфические географические особенности. Наличие горных и равнинных территорий в бассейне обуславливает изменение компонентов ландшафта, что, в свою очередь, позволяет разделить структуру ландшафта на горные и равнинные ландшафты [1]. Кроме того, горные ландшафты в зависимости от их внутренних различий подразделяются на несколько подвидов, которые можно разделить на следующие подвиды: высокогорные ландшафты, среднегорные ландшафты, холмистые ландшафты и низкогорные ландшафты. Кроме того, равнинный ландшафт в бассейне, в свою очередь, обуславливает разделение следующих подвидов: высокогорные равнинные ландшафты, холмистые и останцовые горные ландшафты.

Изучение ландшафтообразующих факторов в бассейне реки Кашкадарья, а именно рельефа, поверхностных и грунтовых вод, почв, механического состава почв, размещения местного населения в ландшафтных зонах, этапов роста или расселения населения, хозяйственной деятельности и особенностей территориальной стратификации ландшафтов, позволяет классифицировать уровни геоэкологических изменений ландшафтов, распространенных в данном регионе. Возникновение геоэкологических проблем во взаимосвязанных и взаимодействующих горных и равнинных ландшафтах бассейна реки Кашкадарья обусловлено распределением населения по регионам и его взаимодействием с природой под влиянием хозяйственной деятельности [7].

Основная часть.

Горизонтальная зональность ландшафтов в горной части бассейна реки Кашкадарья сменяется высотной. Вертикальная зональность в горах – это, прежде всего, наиболее выраженное географическое следствие морфоструктурной стратификации. Смена ландшафтов в горах в сторону высотной поясности происходит за счет изменения количества осадков (сначала увеличения, затем уменьшения). Как и в других горных регионах, в

горах этого бассейна с высотой природные зоны становятся более разнообразными, что приводит к формированию отдельных природных зон в каждом высотном поясе.

Изменение высоты в горах связано не только с климатом, но и со строением земной поверхности. Условное деление гор на низкогорья, среднегорья и высокогорья проявляется в трех основных этапах, связанных с формированием горных хребтов. Краевые части горных хребтов образованы холмами и невысокими фронтальными хребтами или отрогами главного хребта. В аридных климатических условиях они сильно расчленены водными потоками и покрыты предгорными пролювиальными отложениями. Для среднегорья характерна глубокая эрозионная дезинтеграция, а для высокогорья – нивальные и ледниковые формы рельефа, а также наличие современных ледников. Горно-степные ландшафты характерны для гор Коратепа, Яккабог и Гузар Кашкадарьинской впадины и прилегающих низкогорий с абсолютными высотами от 500 до 1000-1200 м. Рельеф населённых пунктов низкогорий и предгорий Коратепа, проходящих по территории Чиракчинского и Китабского районов, довольно неровный, но население густо заселено. Это обусловлено развитым земледелием, садоводством и животноводством по берегам рек и ручьёв. Население равномерно распределено в горах Яккабог и Гузар. Население занимается садоводством, виноградарством, овощеводством, шелководством, мясомолочным животноводством [2]. В Кашкадарьинском бассейне низкогорья в основном окружены Зиёвуддин-Зирабулакским низкогорьем Зарафшанского хребта и юго-западными отрогами Гиссарского хребта. Количество годовых осадков значительно выше, чем в других регионах, поэтому развитие природных ландшафтов приводит к резкому увеличению площади культурных ландшафтов, т.е. агроландшафтов. В результате вместо плодородных почв строятся новые сады, пашни и предприятия по переработке фруктов, выращиваемых в этой местности, что приводит к снижению их продуктивности.

В предгорьях и низкогорьях Кашкадарьинского бассейна также распространены в основном эфемеры и эфемероиды, а также многолетние травы и кустарники с частичной и продолжительной вегетацией. Весенние месяцы являются основным периодом вегетации для этих растений, а летом они увядают и засыхают. Однако сегодня районы, где распространены такие ландшафты, становятся сельскохозяйственными угодьями, которые широко используются, главным образом, для подсечно-огневого земледелия. Кроме того, здесь развиты садоводство, виноградарство и мясо-молочное скотоводство. Природно-ресурсный потенциал предгорий и низкогорий имеет большой потенциал для развития различных направлений производства. Воды многочисленных транзитных малых рек и горных ручьев используются здесь для орошения напрямую или через водохранилища. Растительность предгорий и низкогорий также используется в качестве пастбищ и сенокосов. Среднегодовая урожайность пастбищ

составляет 4-6 ц/га. Пастбища используются не только для выпаса скота, но и для заготовки сена [4].

Предгорный регион Кашкадарьинского бассейна в основном включает предгорные равнины и предгорья Гузарского, Дехканабадского, Камашинского, Яккабагского, Китабского, Шахрисабзского и Чиракчинского районов. Климатические условия этих регионов несколько мягче, чем в пустынном регионе: средняя температура января 2-30°С, июля 28-32°С, вегетационный период (с середины февраля до середины декабря) 280-300 дней. Среднегодовое количество осадков составляет 300-600 мм, из них 220-360 мм приходится на ноябрь-март. Поэтому местные жители осваивают природные ландшафты и расширяют площади залежных земель для развития бахчеводства, шелководства и пчеловодства [6]. В связи с этим важно организовать рациональное использование природных ресурсов в этих регионах, фитомелиорацию пастбищ и проведение агрофитомелиоративных мероприятий против эрозии на залежных землях.

В бассейне Кашкадарьи также имеются горы средней высоты, климат которых значительно прохладнее, чем в низкогорьях, а средняя температура января опускается до минус, абсолютный минимум составляет -20 -350С. Безморозный период составляет 170-200 дней. Годовая потенциальная испаряемость значительно больше суммы годовых осадков, в связи с чем коэффициент увлажнения не превышает 0,5-0,7. Для горно-степных ландшафтов на умеренно влажных темно-серых почвах основным растением является пшеница, кроме того, размещение и распространение различных злаковых, полынно-рисово-бетаговых, кустарниковых и древесных формаций зависит от экспозиции склонов. Помимо гор средней высоты, в бассейне имеются и сухие горно-степные ландшафты, которые издавна испытывали влияние хозяйственной деятельности человека. Широко распространенные в прошлом кустарники и деревья в настоящее время полностью уничтожены. Присутствие фисташек, ежевики или боярышника, сохранившихся ныне лишь местами, свидетельствует о том, что когда-то в этих ландшафтах произрастали кустарники и деревья. В настоящее время преобладают различные злаки, покрывающие 60-70% поверхности суши. Горные и степные растения имеют большое хозяйственное значение благодаря своему разнообразию и видовому богатству. Здесь достаточно влаги для формирования густого растительного покрова, что способствует образованию продуктивных пастбищ. На этих пастбищах крупный рогатый скот и овцы могут выпасаться круглый год. Однако на практике они имеют большее значение для всех видов скота как летние, раннеосенние и весенние пастбища.

На склонах гор Кашкадарьинского бассейна благоприятные климатические условия для формирования лесов создаются на высотах 2000-3000 м. Однако экспозиция горных склонов, строение их поверхности и состав горных пород не позволяют лесному хозяйству развиваться и широко распространяться на этих высотах. Поэтому среди лесов и в их нижних

ярусах преобладают кустарниковые, полукустарниковые и разнообразные виды растений, из которых наибольшую площадь занимает арча. Такие арчи сейчас можно увидеть широко распространенными на склонах гор в горах Чакилкалон Зарафшанского хребта и в Яккабагском и Дехканабадском районах Гиссарского хребта. В прошлом арча занимала значительно большие площади, чем сейчас. Однако из-за негативного воздействия антропогенных факторов ареал арчи резко сократился. Арчовые леса состоят из арчи саурской, черной и абрикосовой. В горах Чакилкалон, в восточной части гор Коратепа, в Яккабагском и Дехканабадском районах Гиссарского хребта мы также можем видеть формирование черной и абрикосовой арчи вблизи субальпийских лугов. Горные ландшафты, распространенные по всему бассейну реки Кашкадарья, широко используются в сфере здравоохранения, являются важными объектами восстановления здоровья населения, отдыха и туризма. В настоящее время большинство санаториев, лагерей и домов отдыха региона расположены в среднегорных районах. Однако развитие рекреационного потенциала этих территорий является важной социальной задачей ближайшего будущего. Поэтому необходимо уделять серьезное внимание развитию социальной инфраструктуры, в том числе созданию зон отдыха на этих территориях [8].

Высокогорные ландшафты занимают центральные части Гиссарского хребта и прилегающие к нему горы в долине реки Кашкадарья и не занимают большой площади, их общая площадь составляет около 69 тыс. га. Для высокогорий характерны абсолютные высоты выше 2800-3000 м, наибольшая глубина спада более 1000 м, активность современных и древних ледников и ряд других особенностей. В этих горах, имеющих альпийский тип рельефа, очевидно ландшафтообразующее значение современной ледниковой деятельности и ее влияние на окружающие ландшафты.

Распределение населения в различных регионах высокогорных ландшафтов различно. С увеличением высоты размещение населения становится более разреженным, а отрасли экономики сокращаются, при этом занятость населения распыляется, и большая часть населения занята в отдельных отраслях экономики, в частности, в личных подсобных хозяйствах. Предгорья высокогорья малонаселенные — население в деревнях разреженное, условия жизни иные, в частности, занятость населения в нематериальном производстве не очень заметна [5].

Поскольку население в основном сосредоточено в предгорьях высокогорья, основная часть занимается земледелием и животноводством. В предгорьях высокогорья, верхней части Шахрисабза, верховьях Яккабогдарьи, начале Танхоздарьи и берегах верховьев реки Аксув, а также предгорьях гор Коратепа Китабского района, население распределено очень неравномерно, и оно занимается в основном земледелием и животноводством. Короткое лето и относительно продолжительная зима в этих регионах затрудняют деятельность населения в производственных отраслях.

С экономической точки зрения высокогорные ландшафты могут использоваться в качестве летних пастбищ. Однако из-за сложного строения рельефа значение высокогорно-лугово-степных ландшафтов как пастбищ невелико. В ближайшем будущем развитие горного туризма, экотуризма и спорта должно иметь большое значение для использования природного потенциала высокогорных ландшафтов.

Равнинные ландшафты Кашкадарьинского бассейна занимают значительную часть, а большая часть равнин соответствует равнинным ландшафтам Каршинской степи. Каршинская пустыня ограничена невысокими горами и возвышенностями, окружающими Зарафшанский и Гиссарский хребты на севере, северо-востоке и юго-востоке, и занимает западную часть открытой тектонической впадины Кашкадарьинского хребта на западе.

Заключение

В настоящее время природный потенциал пустынных ландшафтов используется в сельскохозяйственных отраслях, нефтегазовой промышленности, расширены площади, в результате чего значительно улучшилась кормовая база животноводства. Однако уровень использования пастбищ все еще невысок. В результате неправильного выпаса скота, неротационного использования пастбищ на отдельных участках наблюдается деградация растительного покрова и снижение естественной продуктивности пастбищ. Уничтожен травяной покров вокруг скважин, в результате чего поверхностный слой почв подвергся ветровой эрозии, местами образовались неустойчивые песчаные дюны. Негативное влияние на деградацию пастбищной растительности оказывают также геологоразведочные работы, а в последние годы и добыча полезных ископаемых.

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ЗАГРЯЗНЕНИЕ ПОЧВ ТЯЖЕЛЫМИ МЕТАЛЛАМИ В БАССЕЙНЕ РЕКИ АХАНГАРАН

Аннотация. *В представленном исследовании проведена оценка загрязнения почв тяжелыми металлами на 15 различных участках бассейн реки Ахангаран Республики Узбекистан. Для каждого участка проанализировано содержание ряда элементов (в том числе тяжелых металлов) в почве и их превышение относительно предельно допустимых концентраций (ПДК). По результатам сравнительного анализа выделены зоны с высокой, умеренной и низкой степенью техногенного загрязнения. На участках, расположенных вблизи промышленных объектов (Ангрен, территории медно-обогатительной фабрики, район бывшего уранового рудника и др.), обнаружены наиболее значительные превышения ПДК по нескольким элементам (медь, свинец, цинк, мышьяк и др.), что соответствует высокой категории риска. В то же время на некоторых удаленных и сельскохозяйственных территориях (например, г. Пскент, район Бука) концентрации тяжелых металлов в почве находятся в пределах допустимого уровня, либо лишь незначительно его превышают, что указывает на низкую степень загрязнения. Полученные результаты свидетельствуют о существенной пространственной дифференциации качества почв в регионе и необходимости принятия мер по мониторингу и снижению загрязнения в наиболее проблемных зонах.*

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SOIL POLLUTION WITH HEAVY METALS IN THE AKHANGARAN RIVER BASIN

Abstract. *This study assessed soil pollution with heavy metals at 15 different sites in the Akhangaran River basin of the Republic of Uzbekistan. The soil concentrations of a number of elements (including heavy metals) and their excess over maximum permissible concentrations (MPCs) were analyzed for each site. Based on the comparative analysis, zones with high, moderate, and low levels of technogenic pollution were identified. Areas located near industrial facilities (Angren, the copper processing plant, the former uranium mine, etc.) showed the most significant excesses of maximum permissible concentrations for several elements (copper, lead, zinc, arsenic, etc.), corresponding to a high risk category. Meanwhile, in some remote and agricultural areas (e.g., the city of Pskent and the Buka district), heavy metal concentrations in the soil are within acceptable limits or only slightly exceed them, indicating low levels of pollution. The obtained results indicate significant spatial differences in soil quality in the region and the need for monitoring and mitigation measures in the most problematic areas.*

Введение

Бассейн реки Ахангаран в Ташкентской области Узбекистана характеризуется интенсивной хозяйственной деятельностью, что привело к значительному техногенному загрязнению окружающей среды. В регионе расположены крупные промышленные центры – города Ангрен, Алмалык, Ахангаран – с предприятиями химической, металлургической, энергетической и машиностроительной отраслей. Эти объекты являются основными источниками загрязнения, внося в окружающую среду различные поллютанты, среди которых особенно опасны тяжелые металлы. Тяжелые металлы (медь, цинк, свинец, кадмий, мышьяк и др.) способны накапливаться в почвах, донных отложениях и организмах, оказывая токсичное воздействие и представляя риск для экосистем и здоровья человека. Загрязнение почвы тяжелыми металлами ведет к ухудшению ее качества – снижению плодородия, нарушению биологических процессов и активности почвенной биоты. Кроме того, тяжелые металлы могут мигрировать из почвы в смежные среды: вымываться в поверхностные и подземные воды, переноситься с пылью в атмосферу, поступать в растения и, в конечном счете, в пищевые цепи. В совокупности это вызывает деградацию экосистем: ухудшается качество водных ресурсов, снижается урожайность сельхозугодий, уменьшается биоразнообразие, возникают риски для здоровья населения. В условиях бассейна Ахангаран эти проблемы особо актуальны, учитывая концентрацию промышленных объектов и плотность населения региона. Предыдущие исследования зафиксировали в почвах окрестностей Ангрена экстремально высокое содержание ряда металлов. В частности, возле ангренской теплоэлектростанции концентрации цинка в верхнем слое почвы достигают 1136 мг/кг, а свинца –

до 373 мг/кг, что более чем в 10 раз превышает фоновые уровни. Основными источниками этих металлов являются промышленные выбросы и золошлаковые отходы сжигания угля. В данной работе рассмотрены масштабы загрязнения почв тяжелыми металлами в бассейне реки Ахангаран. Приводятся данные лабораторного анализа содержания ряда металлов в почвенных образцах региона, выполняется их визуализация в виде таблиц и графиков. Обсуждаются источники поступления тяжелых металлов, пространственное распределение загрязнения, а также оценка потенциального экологического риска, связанного с накоплением этих элементов в почвенном покрове.

Объект исследования

Анализ проведен для 15 участков, расположенных в разных частях бассейн реки Ахангаран. В их число вошли: местность Эртош, г. Ангрен и г. Ахангаран и их прилегающие территории, Янги-Гузсой, Овжазсой, Санам, Шоугазсой, Телов, Куюн, Теракли, Медно-обогатительной фабрики № 2–3, Кераувчи, Пскент-Янгиабад, г. Пскент, а также контрольный сельскохозяйственный участок в районе Бука. Данные участки охватывают различные типы земель – от промплощадок и горных выработок до пойменных и агроземель.

Методы отбора и анализа проб. На каждом участке отобраны образцы поверхностного слоя почвы (0–20 см) в репрезентативных точках. Подготовленные образцы высушивались и просеивались. Для определения элементного состава использован метод рентгенофлуоресцентного анализа (РФА), что позволило одновременно количественно определить содержание как основных оксидов (SiO_2, Al_2O_3, Fe_2O_3, CaO и др.), так и ряда тяжелых металлов и примесных элементов (Cu, Zn, Pb, Ni, As, Mn, Sr, Rb, Y, Zr и др.) в почве. Для части проб применялись методы кислотного разложения с последующим атомно-абсорбционным анализом для верификации ключевых токсичных элементов (Pb, Cd, As и др.). Точность контроля обеспечивалась стандартными образцами и повторными. Выбор участков учитывал предполагаемый градиент загрязнения: максимальное воздействие около источников выбросов и стоков, убывание интенсивности с удалением от них. Отбор проб проводился в весенний период, когда почва достаточно увлажнена и доступны как растворимые, так и прочно связанные формы металлов. С каждого участка отбирали образцы верхнего слоя почвы (0–20 см), поскольку именно в нем аккумулируются основные массы техногенных поллютантов и отмечается наибольшая активность корней растений и почвенных организмов. Дополнительно на отдельных пунктах были взяты пробы на глубине 20–40 см для оценки вертикального распределения загрязнений (сравнение верхнего горизонта и подпочвы.

Лабораторный анализ

Пробы почвы высушивались до воздушно-сухого состояния и просеивались через сито (2 мм) для удаления растительных остатков и крупной фракции. Содержание тяжелых металлов (в том числе Cu, Zn, Pb,

Cd, As и др.) определялось методами атомно-абсорбционной спектрометрии (ААС) и масс-спектрометрии с индуктивно связанной плазмой (ICP-MS) после кислотного разложения навесок. Для повышения точности применялся многоэлементный анализ: так, в некоторых образцах параллельно использовался сорбционно-спектроскопический метод определения металлов с последующим подтверждением результатов методом ICP-MS. Такой подход позволил выявить широкий спектр элементов (в том числе Co, Ni, Zn, As, Sc, Cu, Se, Rb, In, Ce, Cr, Pb) и сравнить полученные концентрации с предельно допустимыми уровнями (ПДК) и фоновыми значениями. Качество измерений контролировалось с помощью стандартных образцов и дублирующих проб; погрешность определения для основных элементов не превышала 5–10%.

Результаты

Результаты химического анализа показали ярко выраженную пространственную неоднородность. Максимальные уровни зафиксированы на промышленных и горнотехногенных территориях: на территории медно-обогатительной фабрики № 2–3 и в зоне бывшего уранового рудника (Янгиабад) концентрации Cu, Pb, Zn и As существенно превышают ПДК, местами на порядки. На удалённых и сельскохозяйственных участках (Бука, г. Пскент) концентрации контролируемых металлов не превышают допустимые уровни или близки к ним. Ниже приведены суммарные показатели по 15 участкам (Таблица 1), а также иллюстрации (Рис. 1–4).

Таблица 1.
Краткая характеристика загрязнения почв тяжелыми металлами на обследованных участках бассейн реки Ахангаран

Участок	Число элементов с превышением ПДК	Максимальная кратность превышения (×)	Категория риска
Эртош (горный участок)	6	5.0	Высокая
Ангрен (промзона)	5	11.0	Высокая
Янги-Гузсой (долина)	8	4.0	Высокая
Медно-обогатительная фабрика 2–3	7	55.0	Высокая
Пскент-Янгиабад (рудник)	4	8.0	Высокая
Охангараон (долина реки)	3	3.0	Умеренная
Овьёзсой	3	2.5	Умеренная
Санам	2	2.0	Умеренная
Шоугазсой	2	3.0	Умеренная
Телова	2	2.0	Умеренная
Куюн	2	3.0	Умеренная
Теракли	1	2.0	Умеренная
Кераувчи	2	2.0	Умеренная
г. Пскент	1	1.5	Низкая
Бука (агротерритория)	0	0.0	Низкая

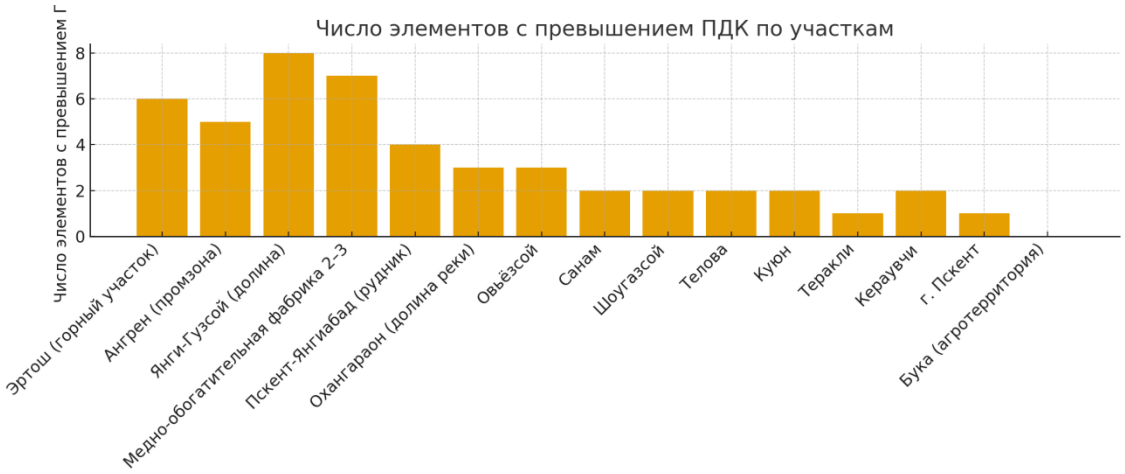


Рис. 1. Число элементов с превышением ПДК по участкам.



Рис. 2. Максимальная кратность превышения ПДК по участкам.



Рис. 3. Распределение участков по категориям риска.

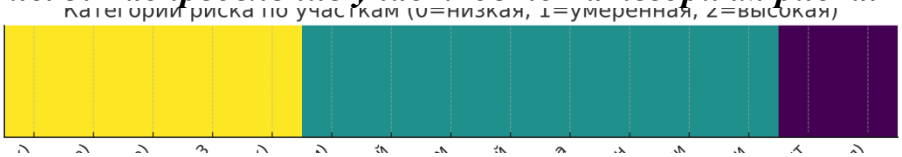


Рис. 4. Тепловая шкала категорий риска (0=низкая, 1=умеренная, 2=высокая).

Обсуждение.

Полученные результаты подтверждают, что уровень техногенного загрязнения почв в пределах одного региона может чрезвычайно сильно варьировать в зависимости от близости к источникам выбросов тяжелых металлов и истории техногенной нагрузки. На участках, прилегающих к действующим или бывшим промышленным объектам, концентрации токсичных элементов в почве многократно превышают фоновые и нормативные значения. В Ангренско-Ахангаранском промышленном узле основными загрязнителями являются предприятия по добыче и переработке полезных ископаемых, а также энергетические объекты на угле. Сжигание высокозольного угля Ангренского месторождения приводит к выбросам

значительного количества летучей золы, обогащенной тяжелыми металлами (цинком, свинцом, кадмием, мышьяком и др. Эти загрязнения оседают в почвах вокруг, формируя зоны повышенного содержания элементов вблизи источника (например, в радиусе нескольких километров от Ангренской ГРЭС). В дальнейшем с ростом расстояния концентрации металлов снижаются до фоновых за счет рассеивания в атмосфере и разбавления чистыми осадками, что согласуется с наблюдаемым в нашей работе постепенным уменьшением числа превышений ПДК при переходе от Ангрена вниз по долине реки.

Еще более высокий уровень загрязнения выявлен на участках непосредственного складирования и переработки минерального сырья – в нашем случае это хвостохранилища медной обогатительной фабрики и отвалы уранового рудника. В первом случае, экстремально высокие концентрации меди, свинца, цинка и других металлов неудивительны, так как в хвостах обогащения сосредоточены остаточные количества целевых и сопутствующих руде элементов. Подобные объекты являются очагами точечного сверхнормативного загрязнения. Отмеченное нами превышение ПДК Cu более чем в 50 раз на фабричном участке согласуется с тем, что даже на расстоянии сотен метров от источников, медь в почве может оставаться выше норматива. Урановый объект Янгиабад, помимо радионуклидов, вероятно, содержит в отвальных породах повышенные количества свинца, мышьяка, молибдена, ванадия и других элементов, характерных для урановых руд. Хотя наш анализ охватывал не все из них, выявленные высокие значения мышьяка подтверждают опасения по поводу совместного токсического эффекта химического загрязнения на этой территории. Данная ситуация типична для уранодобывающих районов Средней Азии, где без надлежащей рекультивации отходы горного производства представляют риск загрязнения почвы и грунтовых вод тяжелыми элементами и радионуклидами.

Участки умеренного загрязнения в долинах малых рек (Овжазсой, Шоугазсой и др.) и сельских местностях демонстрируют, с одной стороны, наличие отсроченных последствий дальнего переноса поллютантов, а с другой – возможное влияние локальных факторов. Незначительные превышения по меди и цинку могут быть связаны, например, с использованием медьсодержащих пестицидов или минеральных удобрений на полях в прошлом. Повышение марганца иногда обусловлено природными почвенно-геохимическими особенностями (например, окислительные условия могут вызвать концентрацию Mn в виде конкреций). То, что на большинстве таких участков превышения единичны и невелики, свидетельствует: в отсутствие крупных промышленных точек воздействия состояние почв относительно благополучно. Тем не менее выявленные отклонения (пусть и небольшие) подчеркивают необходимость регулярного мониторинга. В частности, даже в удаленных от промышленности областях важно следить за содержанием, например, свинца – учитывая его

распространение через транспортные выхлопы в прошлом и способность аккумулироваться в верхнем слое почвы вдоль дорог.

С практической точки зрения, выделенные **зоны высокого риска** (Ангрен, хвостохранилища, Янгиабад) требуют приоритетных мероприятий по реабилитации земель и предотвращению дальнейшего распространения загрязнителей. Для Ангрена актуальны проекты по очистке почв и снижения пыления золоотвалов, а также переход на более чистые технологии сжигания топлива или фильтрации выбросов. В отношении хвостов обогатительных фабрик – их изоляция, переработка или безопасное хранение с рекультивацией территорий. В случае Янгиабада уже предпринимаются масштабные усилия при поддержке международных организаций по консолидации и захоронению радиоактивных отходов, что одновременно уменьшит и химическую нагрузку (поскольку отходы будут удалены или стабилизированы). **Умеренно загрязненные земли** (поймы рек и др.) требуют контролируемого землепользования: например, целесообразно ограничить выращивание пищевых культур в местах с повышенным содержанием свинца или мышьяка, либо проводить агромелиоративные мероприятия (известкование кислых почв, внесение органики), которые снижают подвижность тяжелых металлов. Наконец, **чистые или слабо загрязненные территории** следует сохранить в таком состоянии, проводя превентивные меры – недопущение размещения новых загрязняющих производств, выполнение норм экологической безопасности при хозяйственной деятельности.

Выводы. **Характер загрязнения.**

В почвах промышленно нагруженных районов Ташкентской области зафиксировано комплексное загрязнение сразу несколькими тяжелыми металлами на высоком уровне (превышение ПДК в несколько раз и более). На пяти наиболее проблемных участках (Ангрен, Эртош, Янги-Гузсой, Медно-обогатительная фабрика № 2–3, Пскент-Янгиабад) отмечены значительные превышения допустимых концентраций по Cu, Zn, Pb, As, Ni и другим элементам, что позволяет отнести эти территории к зоне высокого экологического риска.

Дифференциация по зонам.

Участки, удаленные от крупных источников загрязнения, демонстрируют существенно более низкое содержание токсичных элементов. Около половины обследованных территорий (8 участков) имеют лишь умеренное превышение норм по 1–3 элементам, чаще всего не превышающее 2–3 раз. Еще на двух участках превышений практически не обнаружено, и их состояние соответствует естественному фону. Таким образом, даже в пределах одного региона наблюдается резкий контраст: от «очагов» сильнейшего загрязнения до практически чистых зон.

Связь с источниками.

Анализ подтверждает прямую зависимость уровня накопления тяжелых металлов в почвах от наличия поблизости техногенных источников.

Максимумы концентраций локализуются у предприятий горнодобывающей и перерабатывающей промышленности, энергетических объектов и хвостохранилищ. По мере увеличения расстояния от этих объектов, содержание металлов в почве снижается, часто до фонового на расстоянии нескольких километров (в зависимости от рельефа и розы ветров).

Рекомендации.

Для зон высокого риска необходимы срочные природоохранные меры: техническая рекультивация нарушенных земель, изоляция или удаление отходов, снижение выбросов и т. д. В зонах умеренного загрязнения следует проводить мониторинг почв каждые 3–5 лет, контролировать продукты сельского хозяйства на содержание металлов, а также выполнять агротехнические приёмы, уменьшающие биодоступность токсичных элементов. Территории с благополучным состоянием почв можно использовать без ограничений, однако важно сохранить их от потенциального загрязнения в будущем.

В целом, данная работа демонстрирует эффективность комплексного подхода к экологической оценке – сочетание инструментального анализа почв и системы критериев риска – для выделения приоритетных участков, требующих очистки или особого контроля. Полученные данные могут служить научной основой при планировании мероприятий по охране почв в бассейн реки Ахангаран, а также дополняют существующие сведения о масштабах и распределении техногенного загрязнения в регионе.

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ИСПОЛЬЗОВАНИЕ И РАЗВИТИЕ РЕКРЕАЦИОННЫХ РЕСУРСОВ СРЕДНЕЗАРАФШАНСКОЙ ДОЛИНЫ

Аннотация*: В статье анализируются природно-рекреационные ресурсы Среднезарафшанской долины и их значение для развития туризма. Рассмотрены географические и климатические особенности региона, влияние природных и социально-экономических факторов на формирование туристического потенциала. Отмечается, что сочетание разнообразного рельефа, благоприятного климата и богатого культурного наследия создаёт предпосылки для устойчивого развития туризма.*

Ключевые слова: *Среднезарафшанская долина, рекреационные ресурсы, туризм, природные факторы, устойчивое развитие.*

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UTILIZATION AND DEVELOPMENT OF RECREATIONAL RESOURCES OF THE MIDDLE ZARAFSHAN VALLEY

Abstract: *The article analyzes the natural and recreational resources of the Middle Zarafshan Valley and their significance for tourism development. It examines the geographical and climatic features of the region, as well as the influence of natural and socio-economic factors on the formation of its tourism potential. The study highlights that the combination of diverse relief, favorable climate, and rich cultural heritage creates favorable conditions for the sustainable development of tourism.*

Keywords: *Middle Zarafshan Valley, recreational resources, tourism, natural factors, sustainable development.*

Введение.

В организации и развитии использования рекреационных ресурсов Среднезарафшанской долины важную роль играют многочисленные природные факторы. С этой точки зрения для развития международного туризма особое значение имеют наличие современного аэропорта, транспортных путей, торговых объектов, культурно-досуговых центров и хорошо сохранившихся городских памятников. Кроме того, развитие рекреационно-туристической деятельности тесно связано с состоянием

сельского хозяйства и промышленности региона, в частности пищевой отрасли и смежных сфер, оказывающих влияние на экономику туризма (Комилова, 2001).

Современный рекреационный туризм требует развитой системы международных коммуникаций (интернет) и создания разнообразных сервисов. При этом для туриста важны не только природные, но и религиозные, историко-культурные и другие виды туризма. Исходя из этого, можно определить совокупность факторов, влияющих на организацию и развитие рекреационно-туристической деятельности, среди которых ведущая роль принадлежит природным условиям. Организация рекреационно-туристических маршрутов и экскурсий прежде всего требует благоприятных природных условий. Уникальный рельеф, климат и экзотические ландшафты всегда привлекали людей. В связи с этим в Среднезарафшанской долине, обладающей более мягкими климатическими условиями по сравнению с другими регионами страны, с древних времён формировались населённые пункты, а местное население занималось земледелием и ремёслами.

Основная часть.

Среднезарафшанская долина, являясь одним из очагов мировой цивилизации, отличается не только высоким культурно-духовным потенциалом, но и чистым воздухом, благоприятным климатом и живописной природой.

Природно-географические особенности долины, рельеф её поверхности и окружение горами с юга, севера и северо-востока придают территории важное значение для развития туризма. На севере долина ограничена горами Нуратау (Актау, Каратау, Губдин), а с юга — хребтами Зарафшана (Чакалкалан, Каратепа, Зиявуддин, Зирабулок и др.). В целом рельеф региона благоприятен для размещения производительных сил, развития промышленности и сельского хозяйства. Среднюю часть Зарафшанской долины занимает Самаркандская впадина, понижающаяся с востока на запад с 800 до 350 м. Через её центральную часть протекает река Зарафшан, расчленяющая поверхность на террасы. Южная часть области представлена Зарафшанскими горами, сложенными из палеозойских известняков, гипса и кристаллических сланцев. Эти горы образуют хребты Чакалкалан и Каратепа (высшая точка — 2204 м), постепенно понижающиеся к западу и переходящие в Джамскую равнину (Умаров, Ашуров, Саидмуродов, 1980).

В данном районе сформировались многочисленные природные туристические объекты — пещеры, карстовые формы, живописные скалы и другие экзотические памятники природы.

Северную часть долины занимают горы Нуратау (2165 м), включающие Актау, Каратау и Губдин. Эти средне- и низкогорные системы обладают самобытными природными и ландшафтными характеристиками, способствующими формированию рекреационных ресурсов. На равнинных

участках по берегам Зарафшана, а также в Джамской и Карнабской пустынях испокон веков возможно развитие различных видов туризма.

Распределение осадков и тепла по территории Среднезарафшанской долины весьма изменчиво. По данным Самаркандской метеостанции, солнечное сияние составляет 2877 часов в год, из которых 70 % приходится на период с мая по октябрь, при этом средняя солнечная радиация достигает 181 ккал/см². Это создаёт благоприятные условия для выращивания разнообразных сельскохозяйственных культур.

Гидрологические памятники долины — ручьи, источники, горные родники и ущелья — способствуют развитию природного туризма. Целебные минеральные воды и лечебные грязи, используемые в медицинских и санаторных целях, создают благоприятные условия для оздоровительного и лечебного отдыха, расширяя возможности рекреационного туризма. Наибольший потенциал имеют горные районы Ургута, Самарканда, Нурабада и других районов. Следует отметить, что Узбекистан отличается богатством природных ландшафтов и разнообразием растительного мира. Помимо древних памятников архитектуры, туристов привлекают тысячелетние деревья, являющиеся живыми свидетелями истории. Поэтому рациональное использование природного потенциала региона в туристических целях имеет важное значение.

В Среднезарафшанской долине распространены различные типы растительности — от эфемеров и эфемероидов на горных и предгорных участках до типичных пустынных растений, таких как саксаул, полынь, солодка и др. В орошаемых оазисах развиты сельскохозяйственные культуры, а на пастбищах преобладают злаки и разнотравье (Халилова, 1984). Горные районы отличаются большим разнообразием флоры — здесь произрастают орех, яблоня, можжевельник и другие деревья. В Омонкўтоне (площадь 2158 га, первые посадки произведены в 1887 г.) созданы искусственные леса, формирующие уникальные ландшафтные формы. Климатические и растительные особенности территории благоприятствуют развитию зон отдыха и турбаз. Кроме того, в долине имеются рекреационные зоны Охаликских гор, где расположены туристическая база «Ёшлик» и частные дома отдыха, отличающиеся мягким климатом и живописными ландшафтами. Поймы Зарафшана (Зарафшанский заповедник) характеризуются богатой растительностью, особенно в весенний период, что создаёт благоприятные условия для сезонного туризма. Особый интерес представляют многовековые деревья, сохранившиеся в Ургуте (чинар Юқори Чор-чинор, возраст более 1000 лет), Каттакургане, Джамбае и других районах.

Фауна Среднезарафшанской долины также отличается разнообразием. В горных районах распространены рептилии, птицы, копытные и насекомые, придающие местным ландшафтам особое очарование. Среди птиц встречаются голуби, ласточки, воробьи; в пустынях обитают агамы, ужи, змеи, перепела, куропатки, а также млекопитающие — лисы, зайцы, суслики

и др. Изучение населения Среднезарафшанской долины также имеет важное значение для организации рекреационно-туристической деятельности. Женщины составляют 50,1 % населения, мужчины — 49,9 %, трудоспособное население — 47,2 %. Высокая доля детей и молодёжи требует развития детского и школьного туризма, особенно весной и летом, с посещением Самарканда, горных районов и исторических памятников.

К природным рекреационным объектам долины относятся Чакалкаланские горы, где встречаются уникальные геологические образования, включая окаменелости юрского периода. Здесь возможно развитие геологического туризма, организация экскурсий на месторождения мрамора и гранита.

Пещеры представляют собой привлекательные объекты для спелеотуризма. В странах мира (Италия, Ливан, Грузия, США, Франция, Великобритания и др.) этот вид туризма активно развивается, ежегодно привлекая свыше 26 млн туристов (Маматкулов, 1991).

В Узбекистане горные районы обладают значительным потенциалом для развития пещерного туризма. В Чакалкаланских горах известны две пещеры — Лев и Кельси. В пещере Лев, расположенной в долине Булбулзор, по данным археологических исследований (Л.Н. и Я.А. Левины), проживали люди каменного века. Пещера Кельси, открытая киевскими учёными в 1980 году, имеет глубину более 800 м и занимает третье место в мире по этому показателю. В Пайарыкском районе, в селе Оболов, расположен небольшой водоём Шуркуль площадью около 10 га, служащий зоной отдыха и рыбалки. Вокруг озера оборудованы лодочные станции, места для отдыха и традиционные шатры (ўтовы), создающие благоприятные условия для экологического туризма. К геоморфологическим туристическим объектам относятся вершины Камаргарон, Вахашт, Гус, глубокие ущелья и живописные скалы причудливых форм.

Чакалкаланские горы богаты гидрологическими памятниками — целебными источниками, водопадами, пещерными водами и живописными озёрами. Среди них выделяются родники Кайнар, Рохат, Музбулок, а также озёра Алвасти. Особое место занимает источник Юқори Чинор в Ургуте, чей расход воды достигает 50–60 л/с. Эти объекты имеют высокую рекреационную ценность. Уникальные лесные массивы Омонкўтона, можжевеловые и ореховые рощи, а также тугайные леса вдоль Зарафшана создают благоприятные условия для организации туризма, отдыха и оздоровления. Растения, включая лекарственные травы (зира, андижанский девясил, горный базилик и др.), представляют особую ценность для ботанического туризма. В тугайных лесах обитают редкие виды животных — фазан, тугайная кошка, кулан и др.

Заключение.

Проведённый анализ показывает, что Среднезарафшанская долина обладает высоким потенциалом для формирования и развития рекреационно-туристических систем. Уникальное сочетание природных и

культурно-исторических условий, разнообразный рельеф, благоприятный климат и богатый биологический потенциал создают возможности для организации всесезонного туризма. Для эффективного использования рекреационных ресурсов региона необходимо развивать инфраструктуру — транспортные сети, гостиничные комплексы, объекты культурного наследия и информационно-коммуникационные сервисы. Особое значение имеет экологическая устойчивость и сохранение природных экосистем при планировании туристических маршрутов.

Таким образом, комплексное развитие туризма в Среднезарафшанской долине должно базироваться на принципах рационального природопользования, историко-культурного наследия и инновационных подходов к организации рекреационной деятельности. Это позволит повысить инвестиционную привлекательность региона, создать новые рабочие места и укрепить его значение как одного из ведущих туристических центров Узбекистана.

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ХИМИЧЕСКАЯ ЭКОЛОГИЯ: ЗАГРЯЗНЕНИЕ ОКРУЖАЮЩЕЙ СРЕДЫ И ВЛИЯНИЕ ТЯЖЕЛЫХ МЕТАЛЛОВ

Аннотация: *В данной статье рассмотрены основные направления химической экологии, источники химического загрязнения окружающей среды и влияние тяжёлых металлов на почву, воду и атмосферу.*

На примере промышленных зон Узбекистана проанализировано накопление тяжёлых металлов и их круговорот в биологической среде.
Результаты исследований показывают, что избыточное содержание тяжёлых металлов представляет угрозу для устойчивости экосистем.

Ключевые слова: *химическая экология, тяжёлые металлы, загрязнение, биоаккумуляция, биомониторинг, круговорот веществ, экологическая безопасность*

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CHEMICAL ECOLOGY: ENVIRONMENTAL POLLUTION AND THE IMPACT OF HEAVY METALS

Abstract: *This article examines the main areas of chemical ecology, the sources of chemical pollution of the environment, and the impact of heavy metals on soil, water, and the atmosphere.*

Using the example of industrial zones in Uzbekistan, the accumulation of heavy metals and their circulation in the biological environment are analyzed.
The research results show that the excessive content of heavy metals poses a threat to the stability of ecosystems.

Keywords: *chemical ecology, heavy metals, pollution, bioaccumulation, biomonitoring, biogeochemical cycle, environmental safety*

Введение.

В последние десятилетия химические изменения, происходящие в природе под воздействием человеческой деятельности, стали одним из наиболее актуальных экологических проблем.

Особенно это касается промышленных предприятий, транспортных средств, а также сельскохозяйственного применения химических удобрений и пестицидов, что приводит к выбросам вредных веществ в атмосферу, воду и почву.

Химическая экология — одно из важнейших направлений современной экологии, изучающее воздействие химических веществ, образующихся в результате человеческой деятельности.

Химическая экология — это область науки, находящаяся на стыке химии и экологии, изучающая взаимодействие химических веществ между живыми организмами, атмосферой, гидросферой и литосферой.

Основная цель данного направления — управление химическими процессами в окружающей среде, определение источников загрязнения и обеспечение экологической безопасности.

1. ОБЗОР ЛИТЕРАТУРЫ

В мировом масштабе исследования по химической экологии сосредоточены в следующих направлениях:

1. Контроль химических загрязнителей атмосферы (SO_2, NO_3, CO_2, NH_3);

2. Круговорот и биоаккумуляция тяжёлых металлов в биосфере;

3. Химические изменения токсичных элементов в почвах и водных системах;

4. Технологии переработки химических отходов.

Например, Smith J. (2019) в своей работе "Environmental Chemistry and Pollution Control" комплексно оценил влияние промышленных выбросов на атмосферу [1]. Зайцев В. (2023) в исследовании "Industrial Ecology and Environmental Protection" провёл моделирование миграции тяжёлых металлов из металлургических отходов [2].

Среди узбекских учёных можно отметить Каримова Б. (2021), который в книге "Основы экологической химии" исследовал химический состав воздуха в промышленных зонах [3]. Холматов А. и Мавлонов Д. (2021) разработали теоретические основы химического загрязнения и экологической безопасности [4].

3. Источники химического загрязнения и их экологическое воздействие

Источники химического загрязнения делятся на естественные и антропогенные (вызванные деятельностью человека). На территории Узбекистана основными антропогенными источниками являются:

1. Промышленные предприятия — нефтеперерабатывающие, металлургические, химические и цементные заводы (выбросы SO_2, NO_2, CO, Pb, Zn, Cd);

2. Транспорт — при неполном сгорании топлива выделяются CO_2, NO_2, соединения свинца;

3. Сельское хозяйство — чрезмерное применение пестицидов и азотных удобрений загрязняет почву и воду;

4. Бытовые отходы — пластмассы, полимеры и медицинские отходы сохраняются в среде десятилетиями.

Такие загрязнения нарушают естественный круговорот веществ и усиливают биоаккумуляцию тяжёлых металлов в живых организмах,
что приводит к их попаданию в пищевую цепочку и накоплению в организме человека.

Таблица 1.
Содержание тяжёлых металлов в почве

№	Металл	Допустимая норма (мг/кг)	Определённое количество (мг/кг)	Превышение (%)
1	Свинец (Pb)	32	85	165%
2	Кадмий (Cd)	2	6	200%
3	Ртуть (Hg)	0.5	1.2	140%
4	Медь (Cu)	100	190	90%
5	Цинк (Zn)	300	420	40%

2. **Источники загрязнения почвы тяжёлыми металлами**

Существует множество источников, ответственных за избыточное накопление тяжёлых металлов в почве. К ним относятся атмосферные осадки (в виде пыли и газов), полив сточными водами, промышленные отходы, использование пестицидов и минеральных удобрений. В таблице 2 приведены основные источники тяжёлых металлов [5].

Основным природным источником тяжёлых металлов в почве являются **материнские горные породы**, из которых они образуются. Земная кора состоит на 95 % из магматических пород и на 5 % из осадочных. Магматические породы, особенно базальты, богаты такими металлами, как медь (Cu), кадмий (Cd), никель (Ni) и кобальт (Co). В сланцах (глинистых породах) содержатся значительные количества свинца (Pb), меди (Cu), цинка (Zn), марганца (Mn) и кадмия (Cd).

Тяжёлые металлы из горных пород могут попадать в почву в результате **естественных процессов** — эрозии, выщелачивания, ветровой деятельности, вулканических извержений и биогенных процессов. Однако **антропогенные факторы** ускоряют эти процессы, что приводит к накоплению одного или нескольких тяжёлых металлов в почвенной среде.

В последние десятилетия **развитие сельского хозяйства, урбанизация и индустриализация** значительно способствовали повышению уровня загрязнения почв тяжёлыми металлами. Среди основных антропогенных источников загрязнения выделяются **добыча и плавка руд**, **сжигание топлива**, **неправильная утилизация бытовых отходов**,

чрезмерное использование пестицидов и удобрений, а также **орошение сточными водами**.

По данным международных исследований, ежегодное поступление тяжёлых металлов в атмосферу и почву во всём мире составляет примерно:

кадмий (Cd) — 22 000;
медь (Cu) — 939 000;
свинец (Pb) — 783 000;
цинк (Zn) — 1 350 000 т.

Таблица 2.
Основные источники загрязнения почвы тяжёлыми металлами

No	Источник загрязнения	Основные тяжёлые металлы	Источник загрязнения
1	Атмосферные выбросы	Pb, Cd, Zn, Cu	Атмосферные выбросы
2	Промышленные отходы	Hg, Pb, Cd, Cr, Ni	Промышленные отходы
3	Сточные воды и ирригация	Cd, Zn, Ni, Cu	Сточные воды и ирригация
4	Пестициды и удобрения	As, Cu, Pb, Zn	Пестициды и удобрения
5	Горнодобывающая и плавильная промышленность	Pb, Zn, Cd, Cu, Ni	Горнодобывающая и плавильная промышленность
6	Сжигание ископаемого топлива	Hg, Pb, Cd, Cr	Сжигание ископаемого топлива

3. Анализ содержания тяжёлых металлов в почвах Ургутского района

Ургутский район Самаркандской области характеризуется высокой степенью промышленной и сельскохозяйственной активности.

В июне–августе 2024 года были отобраны образцы почвы и проанализированы методом атомно-абсорбционной спектроскопии.

Таблица 3.
Загрязненность почвы Ургутского района тяжёлыми металлами

№	Место отбора	Pb (мг/кг)	Cu (мг/кг)	Zn (мг/кг)
1	Вдоль автодороги	95.3	42.6	126.7
2	Сельскохозяйственные поля	57.4	37.5	93.1
3	Сады и виноградники	41.2	28.3	75.6
4	Предгорная зона	25.7	19.8	48.3

Результаты показали, что концентрация свинца вдоль автодороги превышает норму в три раза, что связано с выхлопами транспортных средств. Цинк и кадмий также превышают допустимые уровни [6].

4. Экологическая оценка (коэффициент загрязнения IF)

Расчёт коэффициента загрязнения проводится по формуле:

$$IF = \frac{C_i}{C_{\text{пдк}}}$$

C_i — измеренная концентрация,

$C_{\text{пдк}}$ — предельно допустимая концентрация.

Средние значения IF для Ургутского района:

Pb: 2.97;

Cu: 1.06;

Zn: 1.27;

Cd: 1.20.

Таким образом, свинец (Pb) относится к категории высокого экологического риска (IF > 2.5).

Результаты анализа показывают, что, в целом, содержание тяжёлых металлов в почвах Узбекистана превышает допустимые нормы. Это представляет угрозу для здоровья человека и требует ужесточения экологического мониторинга и внедрения экологически чистых технологий.

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СОВРЕМЕННЫЕ ПЕДАГОГИЧЕСКИЕ ТЕХНОЛОГИИ В ОБУЧЕНИИ СТУДЕНТОВ ФАРМАЦЕВТИЧЕСКИХ НАПРАВЛЕНИЙ

Аннотация: *В статье рассматриваются современные подходы и педагогические технологии, применяемые в процессе обучения студентов фармацевтических направлений. Проанализированы тенденции внедрения цифровых, интерактивных и симуляционных форм обучения, направленных на формирование профессиональных компетенций будущего фармацевта. Особое внимание уделено роли компетентностного подхода, цифровизации образовательной среды и развитию практико-ориентированных навыков. Представлены результаты наблюдений и анализа эффективности инновационных педагогических методов.*

Ключевые слова*: педагогические технологии, фармацевтическое образование, интерактивное обучение, симуляционное обучение, компетентностный подход, цифровизация, инновации в образовании.*

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MODERN PEDAGOGICAL TECHNOLOGIES IN THE EDUCATION OF STUDENTS OF PHARMACEUTICAL SPECIALTIES

***Annotation**: The article discusses the features of the use of phytotherapy in young children. It has been shown that phytotherapy, due to its mild action and high safety, is an effective direction for the prevention and treatment of the most common childhood diseases. The analysis of the rational use of medicinal plants in diseases of the digestive and respiratory systems is carried out. The advantages of natural remedies in comparison with synthetic drugs are noted, and recommendations on their dosage and combination are given. The conclusion is made about the need for an individual approach and professional knowledge of the doctor when prescribing phytotherapy to children.*

***Keywords:** phytotherapy, children, medicinal plants, treatment, prevention, chamomile, lemon balm, fennel, echinacea, pediatrics.*

Введение

Фармацевтическое образование сегодня переживает этап глубоких преобразований, обусловленных требованиями рынка труда, развитием науки и технологий, а также стремлением повысить качество подготовки специалистов. Современный фармацевт — это не только знаток лекарственных средств, но и аналитик, консультант, коммуникатор, способный применять научные знания в условиях практической деятельности.

В связи с этим возникает необходимость использования инновационных педагогических технологий, обеспечивающих развитие критического мышления, самостоятельности, клинического мышления и коммуникативных компетенций.

Цель исследования — всесторонне рассмотреть, систематизировать и проанализировать современные педагогические технологии, применяемые в процессе подготовки студентов фармацевтических направлений, а также определить их влияние на формирование профессиональной готовности, компетентности и практических навыков будущего специалиста фармацевтического профиля.

Достижение поставленной цели предполагает решение ряда научно-исследовательских и практических задач**,** среди которых:

Провести теоретический анализ современных педагогических концепций и подходов, применяемых в высшем профессиональном образовании, в частности — в сфере фармацевтической подготовки.

Определить сущность и классификацию педагогических технологий, применяемых в обучении студентов медицинских и фармацевтических направлений.

Выявить особенности внедрения инновационных форм обучения (интерактивных, симуляционных, цифровых и проектных) в образовательный процесс фармацевтических факультетов.

Оценить влияние современных технологий на развитие профессиональных компетенций, включая клиническое мышление,

коммуникативные навыки, ответственность и этическое поведение будущих фармацевтов.

Сформулировать практические рекомендации по совершенствованию учебного процесса и адаптации педагогических технологий к требованиям фармацевтической отрасли и образовательных стандартов нового поколения (ФГОС ВО).

Обзор литературы:Современная педагогика располагает широким спектром методов, ориентированных на активизацию познавательной деятельности студентов. Исследователи (Иванова, 2021; Баранова, 2023; Ахмедова, 2022) отмечают, что эффективность образовательного процесса повышается при переходе от репродуктивной модели обучения к интерактивной и компетентностной.

Интерактивные методы обучения.:

Они включают использование кейс-технологий, проектных и ролевых игр, дискуссий и тренингов. Такие методы формируют у студентов умение принимать решения, анализировать фармацевтические ситуации и взаимодействовать в команде.

Симуляционные технологии.

Симуляционные технологии занимают особое место в системе профессионального фармацевтического образования, поскольку позволяют максимально приблизить процесс обучения к реальной профессиональной деятельности, не подвергая риску пациентов и не нарушая законодательных норм обращения лекарственных средств.Под симуляционным обучением понимается методическая система, основанная на имитации (моделировании) профессиональных условий, действий и ситуаций с целью формирования и закрепления практических навыков. В контексте фармацевтического образования симуляция — это создание виртуальных, лабораторных или игровых моделей аптечной практики, где студент выполняет функции провизора, фармацевта или аналитика.Согласно современным исследованиям (Баранова, 2023; Смирнова, 2024), симуляционные технологии способствуют развитию клинического мышления, коммуникативных способностей, этической культуры и ответственности за принимаемые решения.

Научная и методическая эффективность.

Согласно данным экспериментальных исследований (Громова, 2024; Плахотников, 2023), внедрение симуляционного обучения приводит к:

- увеличению успеваемости на 20–25%;
- росту интереса студентов к практическим дисциплинам;
- улучшению коммуникационных навыков;
- формированию умений клинического анализа.

Кроме того, преподаватели отмечают снижение уровня тревожности студентов перед практикой, повышение уверенности в собственных знаниях и готовности к профессиональной деятельности.

Компетентностный подход.

Он ориентирован на конечный результат — формирование у студентов способностей применять знания в практической деятельности. В фармацевтическом образовании это выражается через развитие аналитических, коммуникативных, этических и профессиональных компетенций.

Материалы и методы исследования

Исследование проводилось на фармацевтическом факультете университета в 2023–2024 учебном году. Были использованы методы наблюдения, анкетирования и педагогического анализа. В опросе приняли участие 120 студентов и 15 преподавателей.

Целью было выявить степень эффективности и восприятия современных педагогических технологий в учебном процессе.

Дополнительно проведён сравнительный анализ академической успеваемости студентов до и после внедрения интерактивных и цифровых форм обучения.

Результаты и обсуждение

1. Повышение мотивации и познавательной активности

Более 80% опрошенных студентов отметили, что внедрение интерактивных форм обучения стимулирует интерес к дисциплинам, делает процесс более увлекательным и практико-ориентированным.

2. Формирование профессиональных компетенций

Использование симуляционных технологий позволило значительно повысить уровень готовности студентов к реальным условиям аптечной деятельности. Они научились моделировать ситуации взаимодействия с пациентом, определять рациональную фармакотерапию и консультировать по применению лекарственных средств.

3. Эффективность цифровизации образовательного процесса

Переход на смешанные формы обучения (очно-дистанционные) показал рост самостоятельности студентов и повышение качества выполнения заданий. Цифровая среда также облегчила преподавателям процесс контроля и оценки результатов.

4. Трудности и ограничения

Несмотря на высокую эффективность инновационных технологий, в ряде случаев наблюдаются трудности: ограниченные ресурсы для симуляционного обучения, отсутствие единых методических стандартов, необходимость подготовки педагогов нового типа — наставников и модераторов образовательного процесса.

5. Педагогическая интеграция

Современные технологии не должны заменять традиционные формы полностью, а интегрироваться с ними. Лекции и семинары, при поддержке цифровых инструментов, становятся интерактивными и вовлекающими.

Заключение

Современные педагогические технологии занимают центральное место в реформировании фармацевтического образования. Их внедрение

способствует развитию личности студента как будущего специалиста, формированию у него профессиональных и коммуникативных компетенций, критического мышления и способности к самообразованию.

Наиболее эффективными для фармацевтических направлений признаны интерактивные, симуляционные, проектные и цифровые технологии, объединённые компетентностным подходом.

Дальнейшее совершенствование образовательного процесса требует постоянного обновления программ, внедрения новых форм обратной связи и расширения практико-ориентированных компонентов обучения.

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РЕАЛИЗАЦИЯ ОБЩЕДИДАКТИЧЕСКИХ И СПЕЦИФИЧЕСКИХ ПРИНЦИПОВ ОБУЧЕНИЯ РУССКОМУ ЯЗЫКУ В СПЕЦИАЛЬНОЙ ШКОЛЕ

Аннотация: *В данной статье рассматривается проблема классификации принципов обучения русскому языку. В работе представлен анализ научно-методической литературы по реализации общедидактических и специфических принципов обучения русскому языку в процессе обучения детей с ограниченными возможностями здоровья в специальной (коррекционной) школе.*

Ключевые слова: *принципы обучения, специальная (коррекционная) школа, дети с ограниченными возможностями здоровья (ОВЗ), реализация принципов обучения, русский язык в специальной (коррекционной) школе.*

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IMPLEMENTATION OF GENERAL DIDACTIC AND SPECIFIC PRINCIPLES OF TEACHING THE RUSSIAN LANGUAGE IN A SPECIAL SCHOOL

Annotation: *This article deals with the problem of classification of Russian language teaching principles. The paper presents an analysis of scientific and methodological literature on the implementation of General didactic and specific principles of teaching the Russian language in the process of teaching children with disabilities in a special (correctional) school.*

Key words: *learning principles, special (correctional) school, children with disabilities (health limitations), implementation of learning principles, Russian language in a special (correctional) school.*

Система специальных коррекционных учебно-воспитательных учреждений существует с целью осуществления обучения, воспитания и лечения детей и подростков с различными отклонениями здоровья. Специальные (коррекционные) учреждения предполагают использование адаптированных образовательных программ для каждого ребёнка, а также специальных методик преподавания образовательных предметов.

Методика русского языка в специальной (коррекционной) школе является педагогической дисциплиной. В ней определены цели, задачи,

содержание, закономерности, принципы, методы и приёмы обучения русскому языку учащихся с ОВЗ.

Организующим и руководящим началом действий учителя и учебного процесса являются принципы обучения. Принципы обучения - это исходные теоретические положения, определяющие выбор методов, приёмов, других средств обучения. В практической сфере специальная методика использует рекомендации, разрабатываемые методикой русского языка для начальной массовой школы.

Общность законов развития детей в норме и при аномалии обусловливает тождественность отдельных принципов, форм, а также некоторых методов и приёмов работы, видов упражнений и характера заданий, идентичность наглядных и технических средств обучения. Реализация принципов обучения русскому языку в массовой школе и в специальной (коррекционной) будет различна.

Дети с ограниченными возможностями здоровья (ОВЗ) - дети, имеющие недостатки в физическом и (или) психологическом развитии, подтверждённые психолого-медико-педагогической комиссией и препятствующие получению образования без создания специальных условий. В специальных (коррекционных) учреждениях обучаются дети и подростки с ОВЗ. У обучающихся наблюдается низкая учебная мотивация, неумение работать самостоятельно, низкая техника чтения, непонимание заданий, отсутствие познавательных интересов. При этом наблюдается повышенная отвлекаемость, импульсивность, гиперактивность. Всё это обусловлено неярко выраженными отклонениями в их развитии.

Принципы обучения русскому языку делятся на две основные группы: принципы дидактики (общедидактические принципы) и принципы обучения языку (специфические принципы). К общедидактическим относятся принципы научности, систематичности и последовательности в обучении, доступности, сознательности, наглядности, прочности, индивидуального подхода к учащимся, мотивационный принцип.

Все перечисленные принципы, будучи взаимосвязанными и взаимообусловленными, применяются в процессе обучения русскому языку в школе.

Принцип взаимосвязи различных разделов курса русского языка: грамматики и лексики, морфологии и синтаксиса, морфологии и орфографии, синтаксиса и пунктуации основан на всестороннем рассмотрении какого-либо факта или явления языка. Процесс обучения грамоте школьников с ОВЗ является схожим с обучением детей в массовой школе, но присутствуют различия. В специальном (коррекционном) учреждении у школьников не возникает интереса к звуковой оболочке слова, не проявляется знание звуковой структуры, существует непонимание того, что слово - это не только название предмета или явления, но и определённый звукобуквенный комплекс. Данные затруднения задерживают процесс освоения грамоты, так как выполнение актов письма и чтения учитывает

обязательное совмещение двух операций: осмысления значения слова и его звукобуквенного анализа - перед записью, восприятия букв слова и осознания его семантики - при чтении.

Процесс обучения русскому языку строится с опорой на принцип коммуникативной направленности. В основе этого положения лежит межличностное общение (учитель - ученик, ученик - ученик), которое, обусловлено мотивом, потребностью общения. Всё это подготавливает школьников к полноценному речевому общению как в устной, так и в письменной форме.

Внимание детей с ОВЗ привлекают к окончаниям слов, обозначающих профессии мужчин и женщин. Далее дети записывают в тетради предложения о том, кем работают их близкие, для подбора нужной словоформы ориентируются на таблицу как на наглядную опору. При таком подходе к закреплению темы ситуация работы с ней приближается к натуральной, а языковой материал становится практически значимым для организации общения. В результате ученики получают возможность осознавать лингвистическую информацию, усваивать и применять орфографические правила и свободно пользоваться речью в коммуникативных целях.

Результаты изучения показали, что реализация общедидактических и специфических принципов обучения русскому языку детей с ОВЗ осуществляется с учётом психофизиологических особенностей детей, уровня актуального развития.

В специальной (коррекционной) школе учащиеся с трудом познают языковой смысл различных единиц речи. Дети с ОВЗ называют лапы собаки ногами, что говорит нам о непонимании лексического значения слов и разницу: ноги человека и лапы собаки. Для преодоления возникающих трудностей на уроках русского языка необходимо, чтобы учащиеся с ОВЗ понимали речевую ситуацию обстановку и взаимосвязь предметов в ней.

На основе выбора педагогом принципов обучения будет зависеть эффективность формирования всех компонентов речи как средства общения, как способа коррекции познавательной деятельности и адаптации детей с ОВЗ после окончания школы к социальной среде.

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ПОВЫШЕНИЕ ЭФФЕКТИВНОСТИ ПРЕПОДАВАНИЯ ДИССИПЛИНЫ «ЭЛЕКТРОННОЕ ПРАВИТЕЛСТВО И ЦИФРОВАЯ ЭКОНОМИКА», ИННОВАЦИОННЫЕ ПОДХОДЫ К СОЗДАНИЮ ЭЛЕКТРОННОГО МЕТОДИЧЕСКОГО ОБЕСПЕЧЕНИЯ

Аннотация. *В данной статье подчеркивается важность современных инновационных подходов, в частности использования электронного методического программного обеспечения, интерактивных методов обучения, онлайн-платформ, симуляционных и аналитических инструментов для повышения эффективности преподавания дисциплины «Электронное правительство и цифровая экономика» в высших учебных заведениях Узбекистана. В статье даны предложения и рекомендации по формированию практических навыков учащихся, повышению их мотивации, а также обеспечению эффективного использования преподавателями цифровых инструментов. Отмечается, что постоянное обновление электронных образовательных ресурсов, широкое использование цифровых технологий и подходов, основанных на международном опыте, послужат дальнейшему повышению эффективности науки.*

Ключевые слова: *электронное правительство, цифровая экономика, высшее образование, электронная методология, интерактивное обучение, онлайн-платформы, эффективность обучения, цифровые технологии.*

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IMPROVING THE EFFICIENCY OF TEACHING THE COURSE "ELECTRONIC GOVERNMENT AND DIGITAL ECONOMY": INNOVATIVE APPROACHES TO CREATING ELECTRONIC METHODOLOGICAL SUPPORT

Annotation. *This article emphasizes the importance of modern innovative approaches, particularly the use of electronic methodological software, interactive teaching methods, online platforms, simulation, and analytical tools, to improve the effectiveness of teaching the subject "E-Government and Digital Economy" in higher education institutions in Uzbekistan. The article provides suggestions and recommendations for developing students' practical skills, increasing their motivation, and ensuring the effective use of digital tools by instructors. It is noted that the constant updating of electronic educational resources, the widespread use of digital technologies, and approaches based on international experience will further enhance the effectiveness of research.*

Keywords: *e-government, digital economy, higher education, electronic methodology, interactive learning, online platforms, learning effectiveness, digital technologies.*

Введение.

Развитие цифровых технологий в современном обществе вызывает фундаментальные изменения в экономике и управлении. Дисциплина «Электронное правительство и цифровая экономика» направлена на углубленное изучение и анализ этих процессов. Данная дисциплина позволяет повысить эффективность государственного управления, улучшить коммуникацию с гражданами и создать новые возможности в обществе за счет перевода экономических процессов на цифровые платформы. Преподавание этой дисциплины в высших учебных заведениях важно не только для студентов, но и для экономики страны. Базовые принципы цифровой экономики и принципы функционирования систем электронного

правительства служат фундаментом для инновационных идей, программ и проектов, которые планируется реализовать в будущем. В частности, в процессе цифровизации государственных услуг студенты получат возможность применить полученные знания и навыки на практике. В связи с этим дисциплина «Электронное правительство и цифровая экономика» должна быть обогащена инновационным электронным методическим обеспечением, чтобы обеспечить не только теоретические знания, но и подготовить студентов к решению реальных задач. Такой подход делает процесс обучения более интересным и эффективным, одновременно знакомя студентов с практическими аспектами цифровой экономики. В результате это помогает развивать навыки, необходимые для их будущего профессионального успеха..

Системы электронного обучения в высших учебных заведениях – один из важнейших инновационных подходов нашего времени. Эти системы позволяют университетам и другим высшим учебным заведениям сделать образовательный процесс более эффективным и удобным. Системы электронного обучения способствуют интерактивному общению между преподавателями и студентами, обеспечивая быстрый доступ к учебным материалам, заданиям и системам оценки. Эти системы реализованы на таких платформах, как Moodle, Canvas или Google Classroom. С их помощью преподаватели могут организовывать онлайн-уроки, проводить видеоуроки, создавать интерактивные тесты и задания, а также поддерживать непрерывную связь со студентами. Студенты также имеют возможность просматривать учебные материалы, выполнять задания и контролировать процесс оценки в удобное для них время.

«Информационизированная образовательная среда (ИОС) — подразделение педагогической системы и ее обеспечения, подсистема финансово-экономического, материально-технического, нормативно-правового и маркетингового управления», — указывается в нем. В последние годы в педагогическую литературу введены такие понятия, как «Информационизированное образовательное пространство», «Информационизированная образовательная среда». Эти термины по-разному трактуются и определяются в информатике и педагогике. Приведем некоторые из них: О.А. Ильченко в своем исследовании определяет: «Информационизированная образовательная среда — это совместная системная организация информационного, технического и учебно-методического обеспечения, связанного с субъектом образовательного процесса — человеком» [1]. По мнению О.И. Соколовой: «Информационная среда высшего образования — это сфера деятельности, обеспечивающая образовательную, научную коммуникацию, оперативный доступ к информации, хранение, обработку и передачу информации с использованием комплекса программных, технических, организационных и методических средств». Идеи Ю.Н. Зайцева указывает: «Информационно-образовательная среда (ИОС) – это заранее подготовленная информационная среда,

позволяющая раскрыть истинный творческий потенциал и талант обучающихся».

Образовательные технологии – это наука и этическая практика, направленные на содействие обучению и повышение успеваемости посредством создания, использования и управления соответствующими технологическими процессами и ресурсами. Они определяются как набор инструментов, которые могут быть полезны в образовании, ориентированном на учащихся, наиболее простым и удовлетворительным способом. Они способствуют тому, чтобы учитель был «проводником», а не «мудрецом на сцене». Образовательные технологии, также называемые «учебными технологиями», в основном предполагают использование технологий в процессе преподавания и обучения. В данном случае предметные технологии включают в себя не только использование новейших инструментов и технологий, таких как ноутбуки, интерактивные доски, смартфоны, Интернет, Wi-Fi, YouTube и т. д., хотя они широко используются современными учащимися благодаря их образовательному потенциалу [2].

В общем виде методика представляет собой совокупность рекомендаций по организации и проведению образовательного процесса. Кроме того, методику электронного обучения можно определить как разработку организационно-структурной структуры электронного обучения, включающей все аспекты электронного обучения, а также организацию педагогического управления электронным обучением. В настоящее время проводится множество исследований, посвященных методике электронного обучения, в частности, такие ученые, как Буус Л., Георгсен М., Олитайо П., Сергеев С.Ф., Наби Я.А., Ибраимов А.Э. [3].

Инновационное электронно-методическое обеспечение – это современный подход, призванный повысить эффективность образовательного процесса в высших учебных заведениях по направлению «Электронное правительство и цифровая экономика». Помимо перевода традиционных методов обучения в цифровой формат, это обеспечение предполагает создание интерактивной и интерактивной среды. Благодаря инновационному методическому обеспечению студенты получат возможность расширять свои знания, обмениваться идеями и активно участвовать в решении задач. Этот подход включает в себя различные цифровые ресурсы, такие как онлайн-курсы, мультимедийные презентации, видеоуроки и интерактивные программы, которые делают уроки интересными и эффективными. Эти ресурсы играют важную роль в повышении доступности тем для студентов, привлечении их внимания и поощрении самостоятельной работы. Инновационное обеспечение также способствует повышению уровня сотрудничества и конкуренции между студентами, а также развитию их исследовательских и аналитических навыков. В то же время, использование инновационного электронно-методического обеспечения в образовательном процессе создает новые

возможности для преподавателей. Они могут использовать современные технологии, чтобы сделать свои уроки более интерактивными и интересными. Это не только повышает качество образования, но и укрепляет отношения между студентами и преподавателями. В результате эффективность обучения по предмету существенно возрастает, а студенты получают возможность приобрести необходимые навыки и знания в этой области.

Кроме того, с помощью цифровых платформ учащиеся могут самостоятельно оценивать свои знания, использовать различные ресурсы и обмениваться опытом друг с другом. Онлайн-форумы и группы, созданные для внеклассного обучения, играют важную роль в стимулировании обмена идеями и сотрудничества между учащимися. В целом, цифровые технологии играют важную роль в повышении эффективности и интереса преподавания предмета «Электронное правительство и цифровая экономика». Они не только привносят новую форму в процесс обучения, но и готовят будущие поколения к успешной деятельности в сфере цифровой экономики и электронного правительства.

Одной из важных проблем повышения эффективности электронного методического обеспечения преподавания дисциплины «Электронное правительство и цифровая экономика» в высших учебных заведениях является дефицит доступных ресурсов. В настоящее время электронное методическое обеспечение, используемое в учебном процессе, зачастую устарело или имеет специфические проблемы. Это может негативно влиять на процесс обучения студентов.

Во-первых, уровень обновления электронных материалов низкий. В условиях стремительного развития современных технологий и цифровой экономики существующие образовательные ресурсы зачастую не успевают за этими изменениями. Для того чтобы студенты получали современные знания, учебные материалы должны постоянно обновляться.

Во-вторых, многие электронные методические ресурсы не являются интерактивными. Важно, чтобы студенты активно участвовали в учебном процессе, обменивались идеями и выполняли практические задания. Однако доступные ресурсы зачастую носят пассивный характер, то есть ограничиваются предоставлением только информации. Это снижает интерес и мотивацию студентов.

В-третьих, проблемой является недостаточное развитие технической инфраструктуры. Отсутствие современных электронных платформ в высших учебных заведениях затрудняет взаимодействие студентов и преподавателей. Для решения этих проблем преподавателям и образовательным учреждениям необходимо совместно искать инновационные решения.

В связи с этим для повышения качества электронно-методического обеспечения по предмету «Электронное правительство и цифровая экономика» важно выявить существующие недостатки и разработать конкретные программы по их устранению. Только так можно создать

электронные ресурсы, делающие образовательный процесс эффективным и интересным.

Типы модулей электронного обучения. Модуль электронного обучения, основанный на компьютерной программе, может быть подготовлен в нескольких типах. В настоящее время наиболее широко используются следующие три типа:

1) теоретический электронный учебный модуль в информативной форме;

2) электронный учебный модуль в практической форме;

3) электронный учебный модуль в контрольной форме.

Теоретический электронный учебный модуль охватывает все вопросы конкретного предмета и готовит широкий спектр учебных материалов, основанных на возможностях компьютерной программы.

Практический электронный учебный модуль отражает материалы для закрепления изученного материала посредством заданий. Для этого преподавателю необходимо предоставить студенту различные варианты заданий.

Контрольный электронный учебный модуль отражает сложный набор вопросов. Они углубляют процесс обучения и активизируют студента [4].

Интерактивные методы обучения побуждают студентов высказывать свое мнение и обмениваться идеями друг с другом, а не быть пассивными слушателями. Эти методы реализуются, например, через виртуальные классы или интерактивные уроки на онлайн-платформах. Студенты также закрепляют свои знания и навыки, проводя конкурсы, выполняя проектные работы и совместно решая различные задачи. Эффективность интерактивных методов обучения заключается в том, что они повышают самосознание студентов, помогают им лучше понимать изучаемый материал и развивают критическое мышление. Кроме того, эти методы способствуют формированию у студентов навыков командной работы, что позволит им в будущем успешно работать в профессиональной среде. Поэтому активное использование интерактивных методов обучения при преподавании предмета «Электронное правительство и цифровая экономика» важно не только для предоставления студентам знаний, но и для обеспечения их активного участия. Они делают процесс обучения более увлекательным и эффективным, в результате чего студенты чувствуют себя более мотивированными и заинтересованными в обучении.

Для повышения эффективности преподавания предмета «Электронное правительство и цифровая экономика» в высших учебных заведениях крайне важно предоставлять преподавателям инновационные ресурсы. Эти ресурсы не только облегчают педагогическую работу преподавателей, но и способствуют установлению интерактивного и эффективного взаимодействия со студентами.

Сегодня онлайн-платформы играют важнейшую роль в преподавании предмета «Электронное правительство и цифровая экономика» в высших

учебных заведениях. Они играют важную роль в повышении удобства и эффективности процесса обучения для студентов. Благодаря им каждый студент имеет возможность получать образование в удобное для него время и в удобном месте, что, в свою очередь, позволяет экономить время и дополнительно адаптировать учебный процесс. Возможность круглосуточного доступа к образовательным ресурсам, учебным материалам и видеоурокам с помощью онлайн-платформ очень полезна для студентов. Это позволяет им более углубленно изучать темы после занятий или в свободное время. Например, с помощью таких платформ, как Google Classroom или Zoom, студенты имеют возможность активно участвовать в учебном процессе, задавать вопросы и вести дискуссии. Кроме того, с помощью онлайн-платформ преподаватели и преподаватели имеют возможность усилить коммуникацию со студентами, оказывать им индивидуальную и групповую поддержку. Интерактивные элементы, доступные в системах, такие как тесты и викторины, дополнительно вовлекают студентов и помогают им проверить свои знания.

Аналитические инструменты играют важную роль в преподавании предмета «Электронное правительство и цифровая экономика» в высших учебных заведениях. Они помогают сделать образовательный процесс более эффективным и интерактивным, а анализируя активность студентов, преподаватели могут разрабатывать подходящие им подходы.

Например, существует возможность собирать и анализировать данные в режиме реального времени, чтобы оценить успеваемость студентов в ходе урока. С помощью этих аналитических инструментов преподаватели могут отслеживать активность студентов, их взаимодействие и проблемные области. На основе этой информации можно вносить изменения, чтобы сделать уроки более гибкими и интересными.

Кроме того, аналитические инструменты могут использоваться для внедрения систем взаимооценки студентов, создания им возможностей для выражения своего мнения и обмена идеями. Это, в свою очередь, повышает способность студентов к самооценке и закреплению полученных знаний. Кроме того, аналитические инструменты могут использоваться для оценки эффективности учебного процесса и совершенствования педагогических подходов преподавателей. Преподаватели смогут анализировать данные и делать уроки более интересными и интерактивными, а также адаптировать их к потребностям студентов.

В результате аналитические инструменты играют важную роль в повышении эффективности преподавания предмета «Электронное правительство и цифровая экономика», делая процесс обучения более эффективным, интересным и увлекательным для студентов.

Оценка эффективности преподавания является одним из основных аспектов образовательного процесса, предоставляя необходимую информацию для продолжения и совершенствования этого процесса. Для оценки эффективности преподавания предмета «Электронное правительство

и цифровая экономика» может быть использовано несколько методов и показателей.

Во-первых, методы оценки должны охватывать все этапы учебного процесса. Эти процессы включают в себя качество полученных знаний студентами, педагогические подходы преподавателей и эффективность электронного методического обеспечения. Например, анкетирование, опросы или интерактивные инструменты оценки могут использоваться для получения мнения студентов, определения уровня их знаний и изучения проблем в учебном процессе.

Во-вторых, показатели должны обеспечивать четкую и измеримую оценку эффективности преподавания. К этим показателям относятся вовлеченность студентов в учебный процесс, количество вопросов, которые они задают преподавателям, уровень выполнения заданий, а также результаты экзаменов. Также важно, как учителя обновляют свои методики и насколько успешно они реализуют учебные программы.

Непрерывное проведение оценки эффективности преподавания позволяет преподавателям анализировать и совершенствовать свою деятельность. Это, в свою очередь, создает необходимые условия для достижения более высоких результатов в преподавании предмета «Электронное правительство и цифровая экономика». Таким образом, оценка эффективности преподавания является важной частью повышения качества образования и может быть реализована более эффективно за счет использования инновационных методов. Будущее инновационных подходов к преподаванию предмета «Электронное правительство и цифровая экономика» в высших учебных заведениях весьма перспективно. Стремительное развитие цифровых технологий и инноваций в сфере образования делает процесс обучения более эффективным и интересным. Электронное методическое обеспечение, особенно посредством интерактивных платформ и ресурсов дистанционного обучения, помогает студентам закреплять полученные знания и развивать практические навыки. Инновационные подходы также способствуют развитию культуры взаимодействия и дискуссий в процессе обучения. Студенты получат возможность обмениваться идеями и опытом в цифровой среде, что, в свою очередь, поможет им улучшить навыки критического мышления и развить навыки самостоятельного обучения.

Кроме того, разработка учебных программ и методик, отвечающих современным требованиям в области электронного правительства и цифровой экономики, будет способствовать повышению конкурентоспособности образовательных учреждений. Инновации не ограничиваются модернизацией образовательного процесса, но и расширяют возможности трудоустройства студентов.

Дисциплина «Электронное правительство и цифровая экономика» отражает изменения в современном образовательном процессе и помогает

студентам понять роль цифровых технологий в экономической жизни. Для повышения эффективности разработан ряд следующих рекомендаций.

1. Обучение преподавателей:

Обучение преподавателей использованию новых педагогических методов и цифровых ресурсов важно для модернизации образовательного процесса. Ежегодные семинары и мастер-классы способствуют повышению квалификации преподавателей.

2. Использование цифровых ресурсов:

Широкое использование цифровых ресурсов в обучении, таких как онлайн-платформы, видеоуроки и интерактивные тесты. Например, курсы, доступные на таких платформах, как Coursera, edX и Khan Academy, позволяют студентам самостоятельно приобретать знания. 3. Инновационные программы и приложения:

Сделать процесс обучения интересным и эффективным можно с помощью различных инновационных программ и мобильных приложений по предмету, например, интерактивных игр, таких как «Kahoot!» или «Quizlet». Это повышает мотивацию учащихся и способствует закреплению знаний.

4. Научные исследования и статьи:

Научные статьи и исследования, доступные в электронном виде для преподавателей и студентов, предоставляют интересную и актуальную информацию по теме. Научные исследования и статьи можно изучать с помощью таких ресурсов, как Google Scholar и ResearchGate.

5. Площадки для совместной работы и дискуссий:

Важно создавать онлайн-форумы и социальные сети, такие как группы в Telegram и Facebook, для обмена идеями и развития сотрудничества между преподавателями и студентами.

Данные рекомендации и ресурсы помогут внедрить инновационные подходы в преподавание предмета «Электронное правительство и цифровая экономика». Благодаря совместным усилиям преподавателей и студентов можно повысить эффективность преподавания предмета и объяснить важность цифровой экономики.

Заключение

В статье рассматриваются инновационные подходы, направленные на повышение эффективности преподавания предмета «Электронное правительство и цифровая экономика» в высших учебных заведениях. Благодаря развитию современных цифровых технологий этот предмет способствует формированию у студентов не только теоретических знаний, но и практических навыков. Внедрение интерактивных образовательных систем посредством электронного методического обеспечения сделает процесс обучения более интересным и эффективным.

Инновационные подходы включают:

• Развитие дистанционного обучения и интерактивного взаимодействия через электронные платформы;

• Применение теоретических знаний на практике посредством симуляций и практических проектов;

• Анализ и совершенствование образовательного процесса с использованием аналитических инструментов;

• Организация инновационных ресурсов и тренингов для поддержки преподавателей.

В статье представлен комплексный анализ возможностей повышения эффективности образования за счёт эффективного использования систем электронного обучения, постоянного обновления учебных материалов и применения интерактивных методов. В результате применения этих подходов студенты углубляют свои знания, развивают навыки критического мышления и готовятся к адаптации к цифровой экономике будущего.

Использованные источники

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ГЛОБАЛЬНЫЕ ПРОБЛЕМЫ ФИЛОСОФИИ: СУЩНОСТЬ, СПЕЦИФИКА И НАПРАВЛЕНИЯ ОСМЫСЛЕНИЯ

Аннотация: *в статье рассматриваются глобальные проблемы современной философии как особая форма отражения противоречий мирового развития. Анализируются причины их возникновения, историческая динамика осмысления и основные философские подходы к решению. Особое внимание уделяется гуманистическим и ценностным ориентирам современной философской мысли, направленным на формирование ответственного мировоззрения в условиях глобальных вызовов XXI века.*

Ключевые слова: *глобальные проблемы, философия, цивилизация, гуманизм, устойчивое развитие, ответственность, этика.*

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GLOBAL PROBLEMS OF PHILOSOPHY: THE ESSENCE, SPECIFICITY, AND DIRECTIONS OF THINKING

Abstract: *The article examines the global problems of modern philosophy as a special form of reflecting the contradictions of world development. The reasons for their emergence, the historical dynamics of understanding, and the main philosophical approaches to their resolution are analyzed. Special attention is paid to the humanistic and value orientations of modern philosophical thought, aimed at forming a responsible worldview in the context of the global challenges of the XXI st century.*

Keywords: *global problems, philosophy, civilization, humanism, sustainable development, responsibility, ethics.*

Современная эпоха характеризуется глубинными изменениями в экономической, политической, культурной и духовной сферах жизни человечества. Глобализация - один из важнейших факторов, формирующих новые контуры бытия человека и общества. Однако наряду с расширением возможностей и обменом знаниями, человечество сталкивается с целым

комплексом глобальных проблем, которые носят универсальный характер и требуют не только научного, но и философского осмысления.

Глобальные проблемы представляют собой противоречия, возникающие в процессе развития цивилизации, затрагивающие интересы всего человечества и требующие коллективных усилий для их решения. Философия, как система мировоззренческого знания, играет ключевую роль в формировании адекватного понимания сущности этих проблем, их взаимосвязей и возможных путей их преодоления.

Глобальные проблемы - это явления, охватывающие все человечество и требующие объединённых усилий различных стран и народов. К числу таких проблем относят:

- экологический кризис;
- угрозу ядерной войны;
- демографические и миграционные процессы;
- неравномерность социально-экономического развития;
- кризис культуры и морали;
- противоречие между техническим прогрессом и духовным развитием человека.

Философское осмысление этих проблем связано с поиском ответов на вопросы: каковы пределы роста и потребления, как сохранить духовную целостность человека в мире технологической рациональности, и возможно ли согласовать интересы человека, общества и природы в единой системе устойчивого бытия.

Первые попытки философского анализа глобальных противоречий относятся к эпохе Просвещения, когда мыслители (И. Кант, Ж.-Ж. Руссо, Вольтер) ставили вопрос о прогрессе и моральной ответственности человечества.

В XIX–XX веках в трудах Ф. Ницше, А. Шопенгауэра, О. Конта и др. проявился интерес к судьбе цивилизации и направлению общественного развития.

После Второй мировой войны философия столкнулась с необходимостью осмысления новых вызовов - угрозы ядерного самоуничтожения, экологического разрушения, кризиса гуманистических ценностей. Появились концепции ноосферы (В. Вернадский), глобального эволюционизма, философии ответственности (Г. Йонас), диалога культур (М. Бубер, Ю. Хабермас).

Эти направления способствовали формированию целостного взгляда на человечество как на единую систему, от гармонии и взаимодействия которой зависит будущее планеты.

Современная философия предлагает несколько ключевых подходов к анализу глобальных проблем:

1. Гуманистический подход.

Исходит из признания человека высшей ценностью, а нравственность - условием выживания цивилизации. Развитие науки и техники должно быть подчинено целям гуманизма и сохранения человеческого достоинства.

2. Экофилософский подход.

Рассматривает природу и общество как единую систему, нарушение равновесия которой ведет к экологическим катастрофам. Здесь центральным является принцип гармонии и коэволюции человека и биосферы.

3. Культурологический подход.

Утверждает, что кризисы современности имеют духовно-культурную природу. Глобальные проблемы - результат утраты смыслов, разрушения традиционных ценностей и доминирования технократического мышления.

4. Этический и цивилизационный подход.

Проблема выживания человечества напрямую связана с формированием глобальной этики - системы универсальных моральных норм, основанных на взаимоуважении, справедливости и ответственности перед будущими поколениями.

В XXI веке философия сталкивается с необходимостью синтеза знаний о человеке, обществе и природе. Она становится не только формой теоретического осмысления, но и практическим инструментом - основой для формирования новой этики научного и политического мышления.

Важнейшей задачей современной философии является воспитание планетарного сознания, ориентированного на ценности устойчивого развития, толерантности и кооперации.

В этом контексте особое значение приобретает философия диалога культур, призванная устранить конфликты цивилизаций и способствовать развитию взаимопонимания между народами.

Таким образом, глобальные проблемы философии - это не только отражение объективных противоречий современной цивилизации, но и вызов мировоззрению человека. Их осмысление требует формирования нового типа мышления - системного, гуманистического, экологического и этически ответственного.

Философия, будучи хранительницей духовных ценностей, способна направить развитие науки, техники и общества в русло, обеспечивающее не разрушение, а созидание. Только в синтезе разума и нравственности возможен подлинный прогресс человечества в эпоху глобальных вызовов.

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ПРЕПОДАВАНИЕ ФИЛОСОФИИ В ВУЗАХ: ПРОБЛЕМЫ, ЦЕЛИ И ПЕРСПЕКТИВЫ РАЗВИТИЯ

Аннотация: *в статье рассматриваются особенности преподавания философии в высших учебных заведениях в контексте современных образовательных реформ и инновационных подходов к обучению. Анализируются цели и задачи философского образования, его место в системе подготовки специалиста, а также трудности, связанные с восприятием философии студентами. Особое внимание уделено необходимости модернизации методов преподавания философии, внедрению интерактивных и исследовательских технологий, развитию критического мышления и формированию ценностных установок личности.*

Ключевые слова: *философия, образование, университет, мышление, гуманитарные науки, инновационные технологии, личность, мировоззрение.*

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TEACHING PHILOSOPHY IN UNIVERSITIES: PROBLEMS, GOALS, AND DEVELOPMENT PROSPECTS

Abstract: *the article examines the features of teaching philosophy in higher education institutions in the context of modern educational reforms and innovative approaches to teaching. The goals and objectives of philosophical education, its place in the specialist training system, and the difficulties associated with students' perception of philosophy are analyzed. Particular attention is paid to the need to modernize the methods of teaching philosophy, introduce interactive and research technologies, and develop critical thinking and value orientations of the individual.*

Keywords: *philosophy, education, university, thinking, humanities, innovative technologies, personality, worldview.*

Современное высшее образование претерпевает серьёзные изменения, обусловленные глобализацией, цифровизацией и стремительным развитием инновационных технологий. В этих условиях преподавание философии в

вузах приобретает особое значение, поскольку именно философия формирует критическое и системное мышление, способность анализировать сложные социальные, культурные и этические проблемы.

Философия - не просто учебная дисциплина, а особая форма духовной деятельности, направленная на осмысление мира и человека в нём. Её преподавание требует не только передачи знаний, но и формирования мировоззренческих позиций, культуры мышления, способности к рефлексии и диалогу. В современном обществе, где информация стала главным ресурсом, именно философия помогает отличать знание от мнения, истину от иллюзии, смысл от хаоса.

Философия занимает центральное место среди гуманитарных дисциплин, так как выполняет мировоззренческую, методологическую и аксиологическую функции. Она способствует формированию у студентов целостного представления о мире, развивает способность анализировать социальные процессы, оценивать моральные и культурные явления.

Философское образование в вузах выполняет несколько ключевых задач: мировоззренческая, методологическая, аксиологическая, критическая функция.

Таким образом, философия является основой интеллектуальной культуры специалиста любого профиля. Без философского мышления невозможно полноценное понимание научных и социальных проблем современности.

Несмотря на значимость философии, в современном образовательном процессе наблюдается ряд проблем, затрудняющих эффективное её преподавание:

- Формализация учебного процесса.
- Проблема мотивации студентов.
- Сложность философского языка и абстрактность содержания.
- Недостаточная методическая оснащённость.
- Необходимость цифровизации преподавания.

Современные образовательные технологии открывают новые возможности для повышения эффективности преподавания философии. Среди них можно выделить следующие направления:

1. Интерактивные методы обучения.
2. Проектная и исследовательская деятельность.
3. Междисциплинарный подход.
4. Использование цифровых ресурсов.
5. Проблемно-диалогическая методика.

Преподаватель становится не носителем готовой истины, а модератором диалога, направляющим студентов к самостоятельному открытию смыслов.

Одной из важнейших целей преподавания философии является формирование критического мышления. Это предполагает умение

анализировать аргументы, отличать факты от интерпретаций, выстраивать логические рассуждения и принимать обоснованные решения.

Не менее важным является развитие творческого мышления, способности видеть проблему под новым углом, искать нестандартные решения. Философия, благодаря своей открытости и глубине, создаёт благоприятную среду для проявления творческого потенциала студентов.

Современные формы занятий - философские мастерские, дискуссионные клубы, эссе-конкурсы - позволяют соединить рациональный анализ с эмоциональным и ценностным восприятием мира.

Будущее философского образования связано с его интеграцией в систему непрерывного обучения и цифровой образовательной среды. Возможные направления развития включают:

- Разработку цифровых учебников и интерактивных платформ для самостоятельного изучения философии;
- Введение этических и философских модулей в профессиональные программы (медицина, IT, экономика, инженерия);
- Расширение международного сотрудничества и обмена опытом преподавания философии;
- Использование искусственного интеллекта и адаптивных технологий для персонализации обучения.

Главная задача - сохранить философию как пространство свободного мышления, не сводя её к набору фактов или схем.

В заключении можно сказать преподавание философии в вузах - это не только передача знаний о великих мыслителях и концепциях, но и процесс формирования самостоятельного мышления, духовной зрелости и социальной ответственности. В условиях глобальных вызовов XXI века философия остаётся одной из немногих дисциплин, способных воспитывать критически мыслящих, морально устойчивых и креативных личностей.

Чтобы философия сохранила своё значение в системе образования, необходимо её постоянное обновление - как в содержательном, так и в методическом плане. Инновационные педагогические технологии, междисциплинарные связи и активные формы обучения способны сделать философию живой, актуальной и востребованной наукой современности.

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ОСОБЕННОСТИ ПРЕПОДАВАНИЯ «ТОКСИКОЛОГИИ» ПРИ ПОДГОТОВКЕ ВЕТЕРИНАРНЫХ ФАРМАЦЕВТОВ

Аннотация*: Предмет «Токсикология» в направлении образование ветеринарная фармацевтика входит в число обязательных дисциплин и рассчитан на 8 семестр. Данная дисциплина для студентов четвертого года обучения является из числа тех предметов, которые формируют квалификацию ветеринарного фармацевта. Из-за специфического объема материала, при изучении, составляет некоторые трудности студентам. Для решения сложностей обучения предлагаем основной упор делать на межпредметные связи с ранее пройденными и смежными предметами.*

Ключевые слова: *Токсикология, отравляющие вещества, межпредметные связи, учебный план, смежные предметы, стимуляторы, динамика и кинетика процесса отравления*

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FEATURES OF TEACHING "TOXICOLOGY" IN THE TRAINING OF VETERINARY PHARMACISTS

Abstract: *The subject "Toxicology" in the direction of education veterinary pharmaceutics is included in the number of compulsory disciplines and is*

designed for the 8th semester. This discipline for students of the fourth year of study is one of those subjects that form the qualification of a veterinary pharmacist. Due to the specific volume of material, when studying, it creates some difficulties for students. To solve the difficulties of learning, we suggest focusing on interdisciplinary connections with previously studied and related subjects.

Key words: *Toxicology, poisonous substances, interdisciplinary connections, curriculum, related subjects, stimulants, dynamics, and kinetics of the poisoning process.*

В направлении образования ветеринарная фармацевтика на младших курсах больший акцент делается общеобразовательным предметам, которые формируют базовые знания для дальнейшего изучения профессиональных и специальных дисциплин. До начала изучения токсикологии уже будут пройдены циклы химических, физических, биологических и фармакологических предметов. Использование полученных знаний по этим дисциплинам делает более доступным понятия и термины при изучении токсикологии, что в свою очередь облегчает студентам освоении нового, сложного материала.

Основной целью Токсикологии является дать студентам понятия об отравляющих веществах (ОВ), их классификации, механизмах действия ОВ, предотвращение отравления животных, о мерах применяемых при отравлениях.

Токсикология решает важную проблему, связанную с профилактикой и лечением животных, определяя необходимую и оптимальную дозу лекарственных средств (ЛС), а также приводя в нормальное состояние функционирование органов в организме после различных отравлений. При этом важно, чтобы преподаватель умело использовал знания, полученные в курсах предметов «Биологическая химия» «Ветеринарная фармакология», «Энзимология» и опирался на них, прорабатывая со студентами каждый класс ЛС по всем параметрам влияния на организм животных.

Основные задачи токсикологии заключаются в том, чтобы, опираясь на теоретические знания на практике прививать студентам компетенции по определению отравляющих веществ, происхождения отравлений, причины и возможные пути попадания в организм животных, степень токсического влияния ОВ, классы ОВ и методы, используемые для предотвращения, профилактика и лечение при отравлениях животных.

Преподавание «Токсикологии» начинается с ознакомления предметом, историей и основными задачами дисциплины. Исторический подход и использование межпредметных связей упрощает понимание и повышает интерес студентов к данному предмету, это является первым и важным шагом к успешному усвоению дисциплины.

Тема посвященная общим вопросам токсикологии изучает динамику и кинетику ОВ, пути попадания ядов в организм животных, влияние на организм и пути выведения, параметры отравления и их показания, первая

помощь при отравлениях, предотвращения и лечения. Рассмотрение этих понятий будет более уместным если использовать комплексный подход с анализом уже имеющихся знаний по предметам биохимия, физиология, энзимология и др.

Тема функции и степень влияния ОВ поясняет местное и общее влияние химических веществ на организм животных, группы химических веществ, имеющих ядовитые свойства, чувствительность тканей и органов к ядам, понятия об аутоинтоксикации, экзогенные и эндогенные отравления, предотвращения отравлений и постановка диагноза, оказание первой помощи при отравлениях требует больше анализа и использование индуктивного метода. По ранее изученным предметам из цикла естественнонаучных дисциплин нужно разобрать свойства химических веществ и используя знания из смежных предметов рассмотреть взаимодействие их с элементами клеточного вещества. Таким образом, студентам показать какие реакции идут в норме и при избытке химических веществ, и какие последствия начинают угнетать организм животных.

Изучение темы методы постановки диагноза при отравлениях ядами требует разносторонних и глубоких знаний от педагога как в смысле содержания предмета, так и по психологии и педагогики. От степени квалификации преподавателя зависит, как и насколько будет успешным усвоении учебного материала студентами. Наравне с предметами фармакология, энзимология, биохимия и физиология необходимо использовать связи с анатомией, паталогической анатомией и другими дисциплинами. Такой комбинированный подход повышает заинтересованность студентов к теме занятия и при вскрытиях отравленных животных будут понимать на какие изменения нужно особо обращать внимания, какие отклонения от нормы на организменном, органном и тканевом уровнях происходит. Для выявления проводить судебную ветеринарно-санитарную экспертизу, токсикологический анализ, а также какие профилактические мероприятия нужно организовать, для предотвращения отравлений и устранения последствий.

Дальнейшие занятия, посвященные отравлениям химическими веществами: фосфорорганические, хлорорганические, азотсодержащие соединения, карбонаты. искусственные препараты, минеральные вещества, гербициды, пестициды, отходы промышленных предприятий, растения, содержащие алкалоиды и гликозиды, микотоксикозы и ядами, выделяемыми от других живых организмов, рассматриваются с позиции проявляемых свойств этих химических, физических и биологических веществ. Для этого повторение курсов органической химии, фармакологии и предметов естественнонаучного цикла и смежных дисциплин выступают залогом успешного изучения новых тем. По каждому из вышеперечисленных видов ОВ необходимо формировать точные знания как по методике выявления, так и по их последствиям в связи с их влиянием на организм животных. Разрабатываемые профилактические мероприятия и схемы лечения

рассматриваются всесторонне и глубоко с использованием межпредметных связей.

Лабораторно-практические занятия необходимо организовать таким образом, чтобы каждый студент имел возможности самостоятельно проводить работы и получать заведомо определенные результаты путем многократных повторений. Основная задача практических занятий – формирование компетенций ветеринарного врача, в особенности при профилактике и лечении животных, подвергших отравлениям различными ядами и ОВ.

Анализ применения межпредметных связей по ранее изученным и параллельно изучаемым дисциплинам показывает, что такой подход является наиболее оптимальным и дает высокую эффективность. Для более глубокого понимания и хорошего усвоения предмета «Токсикология» студентам следует ответственно подходить к изучению предметов естественнонаучного цикла и предшествующих профессиональных дисциплин.

Использование межпредметных связей с ранее изученными и параллельно изучаемыми предметами способствует формированию профессиональных компетенций студентов, которые в дальнейшем служит повышению качества работы ветеринарных врачей и специалистов центров сохранения здоровья животных.

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ДОИ

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RAQAMLI KOMPETENSIYANING MOHIYATI VA MAZMUNI

Annotatsiya. *Axborot texnologiyalari va kommunikatsiyalari bugungi kunda har bir insonning hayoti va faoliyatiga tom ma'noda singib ketgan. Raqamli ko'nikmalar amalda ulardan samarali foydalanish uchun javobgardir. Ushbu ko'nikmalar ma'lumotlarni qidirish, tahlil qilish va qayta ishlash bo'yicha bir qator ko'nikmalarni o'z ichiga oladi. Ushbu maqolada raqamli kompetensiya tushunchasining mohiyati hamda uning o'ziga xos xususiyatlari yoritib berilgan.*

Kalit so'zlar: *raqamli, kompetensiya, raqamli kompetensiya, raqamli kompetensiyalarni baholash, rivojlantirish, jamiyat, raqamli transformatsiya, yoshlar.*

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THE ESSENCE AND CONTENT OF DIGITAL COMPETENCE

Abstract. *Information technology and communications are now fully integrated into the lives and activities of every person. Digital skills ensure their effective application in practice. These skills include a range of skills in searching, analyzing, and processing information. This article examines the concept of digital competence and its characteristics.*

Keywords: *digital technology, competence, digital competence, assessment and development of digital competencies, society, digital transformation, youth.*

Bugungi dunyoda raqamli texnologiyalar kundalik hayotning ajralmas qismiga aylanib, ta'lim muassasalari ularni o'quv jarayoniga faol integratsiya qilmoqda. Ayniqsa, raqamli transformatsiya texnologiyalari yuqori sifatli zamonaviy ta'limni ta'minlash uchun ko'rib chiqilishi kerak bo'lgan tobora ustun paradigmaga aylanmoqda. Raqamli transformatsiya zamonaviy jamiyatda imkoniyatlar va muammolarni yaratgan bulutli tizimlar, katta ma'lumotlar, bashoratli tahlillar va integratsiya platformasi texnologiyalari kabi keng ko'lamli texnologiyalarni o'z ichiga oladi.

Aytish mumkinki, mamlakatimizda va butun dunyoda raqamlashtirish odamlar hayotining barcha sohalariga ta’sir qiladi. O‘quv jarayonida raqamli kompetensiyalarni rivojlantirish tobora muhim ahamiyat kasb etmoqda. Bu jarayonlar bilan bog‘liq holda «raqamli kompetensiyalar», «raqamli kompetensiyalar», «raqamli savodxonlik», «axborot savodxonligi» va boshqalar kabi turli atamalar paydo bo‘ldi. Albatta, raqamli texnologiyalar jadal rivojlanib, hayotimizga kirib kelayotgan axborotlashgan va bilim jamiyatida raqamli kompetensiyani muhokama qilish dolzarb masalaga aylandi.

Ilmiy adabiyotlarda mualliflar «raqamli kompetensiyalar» tushunchasini belgilaydi, ularni turlari bo‘yicha tasniflaydi, mumkin bo‘lgan baholash usullarini tavsiflaydi va o‘z xodimlarining raqamli vakolatlarini rivojlantirishga va bo‘lajak mutaxassislarning zarur raqamli vakolatlarini rivojlantirishga qaratilgan chora-tadbirlarni taklif qiladi [7].

Ba’zi mualliflar professional axborot texnologiyalari va muhandislik darslarida ilg‘or informatika kursini yakunlash orqali ishlab chiqilgan raqamli kompetensiyalarning tuzilishi va mazmuniga yondashuvni taklif qiladi. YA’ni, ixtisoslashgan raqamli kompetensiyalar uchun spetsifikatsiyaning ikki darajasi taklif etiladi: 1) o‘rta umumiy ta’limning asosiy o‘quv dasturida informatika fanidan rejalashtirilgan o‘quv natijalarini tavsiflash; 2) o‘qituvchining ish dasturidagi modullardan biri bo‘yicha tematik o‘quv maqsadlarini tavsiflash [6].

L.R.Elbiyeva, L.X.Djabrailova, N.U.Urudjevalarning ilmiy maqolasida o‘qituvchilar uchun raqamli kompetensiyalarning tuzilishi va mazmuni axloqiy va pedagogik masala sifatida ko‘rib chiqiladi. Mualliflar «kompetentlik» tushunchasini tahlil qiladilar, zamonaviy o‘qituvchilar uchun raqamli kompetensiyaning asosiy xususiyatlarini o‘rganadilar va AKT kompetensiyasining tuzilishini taqdim etadilar[9].

N.Isaqulova ilmiy tadqiqotlari mustaqil ta’limda talabalarning raqamli ko‘nikmalarini rivojlantirish tahlil etishga qaratilgan[2].

Y.N.Ismailov asarlari zamonaviy axborot texnologiyalarining ajralmas tarkibiy qismlaridan biri bo‘lgan raqamli texnologiyalar yordamida chet tillarini samarali o‘rgatish va o‘rganishning kommunikativ jihatlariga bag‘ishlangan. Bu boradagi muammolardan biri shundan iboratki, raqamli texnologiyalar kompetensiyasi, kognitiv kompetensiya va kommunikativ kompetensiyalardan iborat «uchlik»ning uyg‘unligi va yaxlitligi, hamda ularni egallash o‘quv jarayonini har jihatdan maroqli va samarali o‘tishini ta’minlashdir [3].

M.N.Ikromova tadqiqotlarida raqamli tafakkur va uni kelajak avlod uchun zarur ko‘nikma sifatida ta’limga joriy etish bo‘yicha jahonda olib borilayotgan ishlar ilmiy manbalar asosida o‘rganilgan. Shuningdek, raqamli tafakkurni rivojlantirishda qo‘llanilayotgan yondashuv dasturlashga maktabgacha ta’lim yoshidan tayyorlash strategiyalari aniqlangan[1].

Ilmiy maqolada raqamli kompetensiya va raqamli transformatsiya borasidagi tanlanma adabiyotlar tahlili, induktiv va deduktiv, qiyosiy va tizimli tahlil kabi usullardan foydalanildi.

Butun dunyoda e’tirof etilayotgan XXI asr inson uchun muhim bo‘lgan ko‘nikma raqamli tafakkurni va uni ta’lim tizimiga qay tarzda joriy etish bo‘yicha jahonda olib borilayotgan ishlar bizda o‘rganilmaganligi bilan belgilanadi. Ilmiy nashrlarda raqamli kompetensiya tushunchasiga turli xil ta’riflar berilgan. Shu bilan birga, «raqamli kompetensiya», «raqamli savodxonlik» va «raqamli ko‘nikmalar» tushunchalarining ta’rifi va mazmuniga yagona yondashuv mavjud emas. Ushbu tushunchalar ko‘pincha rus va xalqaro tadqiqotlarda sinonim sifatida ishlatiladi.

Xo‘sh raqamli kompetensiya nima?

«Raqamli ko‘nikma» va «raqamli kompetensiya» atamalariga raqamli jamiyatda shaxsning mavjudligi bilan bog‘liq turli ma’nolar va qadriyatlarni kiritmoqdalar. Jumladan, xorijda raqamli kompetensiya va raqamli kompetentlikni McClelland, Klemp, Boyatzis, Hornby and Thomas, Jacobs, Hogg kabilar o‘rgangan. MDH olimlaridan G.U.Soldatova, YE.Y.Zotova, M.Lebeshev, V.Shlyapnikov, T.A.Nestvik, YE.I.Rasskazova, O.V.Kalimullina, I.V.Trotsenko, G.A.Afanasyeva, A.A.Zyabkova va boshqalar raqamli kompetentlik fenomenini o‘z tadqiqotlarida turli jihatlarini tadqiq etgan.

2006-yilda Yevropa Komissiyasi raqamli kompetensiyani asosiy kompetensiya sifatida belgiladi. K. Ala-Mutka raqamli kompetensiyaning turli vaziyatlarda bilim va ko‘nikmalardan foydalanish qobiliyati sifatida amaliyotga yo‘naltirilgan asl ta’rifini o‘rganishning texnik, kognitiv va ijtimoiy-madaniy jihatlarini birlashtirgan holda ishlab chiqish va kengaytirish kerakligini ta’kidlaydi. Raqamli kompetensiyaning ta’rifi raqamli texnologiyalarni bilish va ulardan foydalanishdan kognitiv, tanqidiy va mas’uliyatli komponentlarni o‘z ichiga olgan holda rivojlanmoqda.

2013-yilda Yevropa Ittifoqi birinchi marta DigComp (Digital Competence raqamli kompetensiya) tizimini taklif qildi, keyinchalik u takomillashtirildi va 2017-yilda 5 ta sohada 21 ta raqamli kompetensiyani o‘z ichiga olgan DigComp 2.0 tizimi nashr etildi. YA’ni, Yevropa Ittifoqi tomonidan taklif qilingan fuqarolar uchun raqamli kompetensiya modeli. U raqamli kompetensiyalarning batafsil tasnifini, jumladan, beshta sohani (axborot savodxonligi, muloqot va hamkorlik, raqamli kontent yaratish, xavfsizlik va muammolarni hal qilish) va fuqarolarning zamonaviy dunyoda to‘liq ishlashi uchun zarur bo‘lgan 21 ta raqamli kompetensiyani ifodalaydi. Shu bilan birgna, 21 ta kompetensiyaning har biri o‘zlashtirish darajalariga bo‘linadi: asosiy, o‘rta, ilg‘or va professional.

Har bir daraja doirasida kompetensiyani amalga oshirish qobiliyati, turli murakkablikdagi vazifalar, mustaqillik darajalari va kognitiv jarayonlar tasvirlangan. Umuman olganda, ushbu model nafaqat raqamli kompetensiyalar ro‘yxatini, balki raqamli iqtisodiyotni rivojlantirish sohasida o‘qitish va siyosatni ishlab chiqish uchun qo‘llanmani ham ifodalaydi.

Shvetsiya Milliy ta’limni Raqamlashtirish strategiyasi raqamli kompetensiyani shaxsning raqamli vositalar va xizmatlar bilan tanishlik darajasi, shuningdek, raqamli rivojlanishni va ularning hayotiga ta’sirini boshqarish qobiliyati sifatida belgilaydi. Bundan tashqari, Shvetsiya Raqamlashtirish

Komissiyasi shuningdek, raqamli kompetensiya raqamli texnologiyalar yordamida axborot qidirish, muloqot qilish, o‘zaro ta’sir qilish va ishlab chiqarishni bilishni; raqamli vositalar va xizmatlardan foydalanish qobiliyatini; jamiyatni raqamlashtirishda yuz berayotgan o‘zgarishlarni, imkoniyatlar va xavflarni tushunishni; va rivojlanish uchun motivatsiyani o‘z ichiga olishini ta’kidlaydi.

Xalqaro tadqiqotchilarning (Liisa Ilomäki, Anna Kantosalo, Minna Lakkala) fikriga ko‘ra, raqamli kompetensiya tushunchasi bir nechta sohalarda jamlangan ko‘nikma va kompetensiyalar to‘plamidan iborat: ommaviy axborot vositalari va kommunikatsiyalar, texnologiya va kompyuterda ishlash, savodxonlik va axborotshunoslik. Darhaqiqat, raqamli kompetensiya quyidagi komponentlarni o‘z ichiga oladi: raqamli texnologiyalardan foydalanish bo‘yicha texnik ko‘nikmalar, raqamli texnologiyalardan ish o‘rganish va kundalik hayotda turli faoliyatlarda to‘liq foydalanish qobiliyati, raqamli texnologiyalarni tanqidiy baholash qobiliyati va raqamli madaniyatning bir qismi bo‘lishga turtki.

Raqamli kompetensiyaning mohiyati hayot va faoliyatning turli sohalarida raqamli texnologiyalar bilan samarali, xavfsiz va tanqidiy ishlash uchun bilim, ko‘nikma va munosabatlar yig‘indisidir. Ushbu kompetensiya axborot, aloqa, texnologik va media ko‘nikmalarini, shuningdek, axborot xavfsizligi bo‘yicha kompetensiyalarni hamda kontentni tahlil qilish va ijodiy yaratish qobiliyatini o‘z ichiga oladi.

Raqamli kompetensiyalar raqamli muhitda va raqamli mahsulotlar bilan ishlash, shu jumladan ma’lumotlarni yaratish va to‘plash, ularni qayta ishlash va tahlil qilish, shuningdek, kompyuter texnologiyalaridan foydalangan holda jarayonlarni avtomatlashtirish bilan bog‘liq faoliyatni o‘z ichiga olgan kompetensiyalar to‘plamidir.

Raqamli kompetensiyalar keng ma’noda «axborot-kommunikatsiya texnologiyalaridan foydalangan holda turli muammolarni hal qilish, raqamli texnologiyalardan foydalangan holda kontentdan foydalanish va yaratish, jumladan, axborotni qidirish va almashish, savollarga javob berish, boshqalar bilan muloqot qilish va kompyuterda dasturlash qobiliyati» [4].

Raqamli kompetensiyalar “iqtisodiyot va ijtimoiy sohani raqamlashtirish sharoitida muammolarni hal qilish yoki kerakli natijalarga erishish uchun axborot-kommunikatsiya texnologiyalaridan foydalanish imkonini beruvchi bilim va ko‘nikmalar” [7] tushuniladi.

Raqamli kompetensiyalar tuzilishi quyidagi komponentlarni o‘z ichiga oladi: bilim, ko‘nikma va munosabat (motivatsiya va mas’uliyat). Har bir komponent raqamli muhitda faoliyatning turli sohalarida amalga oshiriladi.

G.U. Soldatovaning raqamli kompetensiyaning psixologik modeli raqamli kompetensiyalarni nafaqat bilim va ko‘nikmalar yig‘indisi sifatida, balki samarali faoliyatga e’tibor qaratish va mas’uliyat hissiga asoslangan shaxsiy munosabatni ham o‘z ichiga oladi [8]. Ushbu komponent faoliyatda raqamli texnologiyalardan foydalanishning samaradorligi va xavfsizligini belgilaydi.

Raqamli kompetensiyaning tarkibiy qismlari orasida u quyidagilarni aniqlaydi: bilim, ko‘nikma, motivatsiya va mas’uliyat. Ushbu model raqamli

texnologiyalardan to‘liq foydalaniladigan inson faoliyatining to‘rtta sohasini ifodalaydi. Bular axborot (kontent) muhiti, aloqa sohasi, iste’mol sohasi va texnosfera. Ushbu sohalarga ko‘ra, G.U. Soldatova raqamli kompetensiyalarning quyidagi turlarini aniqlaydi: axborot va media kompetensiyalari, kommunikativ kompetensiyalar, texnik kompetensiyalar va iste’molchi kompetensiyalari [8, 28].

Raqamli kompetensiyani o‘zlashtirish raqamli texnologiyalar bilan muvaffaqiyatli hamkorlik qilish uchun asosdir. Umuman olganda, raqamli kompetensiyani raqamli texnologiyalardan o‘z ishida foydalanish uchun zarur bo‘lgan bilim va ko‘nikmalar to‘plami sifatida ta’riflash mumkin. Raqamli kompetensiya xodimlarning o‘z vazifalarini bajarishi uchun zarurdir. Uni taxminan to‘rt darajaga bo‘lish mumkin: asosiy, universal, umumiy texnik va ixtisoslashtirilgan (tarmoqqa xos). Tadqiqotchilarning raqamli kompetensiyaga qiziqishi ortgan sari raqamli kompetensiya modellari paydo bo‘ldi.

Raqamli kompetensiya - bu shaxsning bilim va ko‘nikmalarni uzluksiz egallashga asoslangan, raqamli texnologiyalarni hayotning turli sohalarida ishonchli, samarali va xavfsiz tanlash va qo‘llash qobiliyatidir. YA’ni, raqamli kompetensiya shaxsning uzluksiz kompetensiyalarni (bilim, ko‘nikma, motivatsiya, mas’uliyat) egallashiga asoslangan, ishonchli, samarali, tanqidiy va xavfsiz tanlash, hayotning turli sohalarida axborot-kommunikatsiya texnologiyalarini qo‘llash qobiliyati.

Kompetensiyalar butun umr davomida shakllantirilganligi sababli, uzluksiz ta’lim jarayonida kompetensiyalarning rivojlanish darajasini baholash vositalari muhim ahamiyatga ega. Bu raqamli kompetensiyaga ham tegishli.

Raqamli kompetensiya bu raqamli texnologiyalardan foydalanish orqali amalga oshiriladigan ichki kognitiv rivojlanishdir. Shu bilan birga, raqamli kompetensiya raqamli kompetensiya asosida rivojlanadigan shaxsiy rivojlanishdir.

Tadqiqotchilar raqamli kompetensiyaning to‘rtta komponentini aniqlaydilar: bilim, ko‘nikma, motivatsiya va mas’uliyat, ular Internetdagi tegishli faoliyatda (axborot va kontent bilan ishlash, aloqa, faoliyatni texnik qo‘llab-quvvatlash va ehtiyojlarni qondirish) amalga oshiriladi. Mualliflarning fikriga ko‘ra, raqamli kompetensiyaning tuzilishi quyidagicha: axborot kompetensiyasi; kommunikativ qobiliyat; texnik malaka; iste’molchi malakasi [8].

Raqamli kompetensiyani talabalarda raqamli muhitda raqamli mahsulotlar bilan ishlash (raqamli savodxonlik, algoritmik fikrlash, ma’lumotlarni tahlil qilish) bo‘yicha kompetensiyalar to‘plamini rivojlantirish, ushbu kompetensiyalarni kasbiy muammolarni hal qilishda qo‘llash qobiliyati sifatida aniqlash mumkin [5].

Raqamli kompetensiyalar, umuman olganda, raqamli savodxonlikni tashkil qiladi. Raqamli savodxonlikni muvaffaqiyatli rivojlantirishdan oldin raqamli texnologiyalar bilan ishlash bo‘yicha funksional ko‘nikmalar mavjud bo‘lib, ular hozirda maktabgacha yoshdan asosiy umumiy ta’limning oxirigacha shakllantiriladi.

Yuqoridagilardan kelib chiqib aytish mumkinki, zamonaviy jamiyat inson hayotining barcha sohalarini qamrab oluvchi keng miqyosda raqamlashtirish tendensiyasini ko‘rmoqda. Bitiruvchining raqobatbardoshligi ma’lum bir

kompetensiyalar to‘plamiga ega bo‘lishi bilan belgilanadi, ular orasida raqamli kompetensiyalar alohida o‘rin tutadi.

Raqamli kompetensiyalarni rivojlantirish uchun raqamli ko‘nikmalarni o‘zlashtirish maqsadiga erishish uchun amaliy muammolarni hal qilish taklif etiladi: interaktiv davlat xizmatlari portali bilan ishlash qobiliyati; raqamli muhitda axborot bilan ishlash qobiliyati; ofis ilovalari bilan ishlash qobiliyati; xulq-atvorning axloqiy standartlarini hisobga olgan holda raqamli muhitda muloqot qilish; internet texnologiyalari, raqamli muhit va raqamli resurslarning texnik imkoniyatlaridan foydalanish.

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SUN’IY INTELLEKT-INSONNING TAFAKKUR YURITISH QOBILIYATI

Annotatsiya: *Ushbu maqolada sun’iy intellekt, insonning tafakkur yuritish qobiliyati va kompyuterda muammoni echish tahlili mavzusi keltirilgan.*
Kalit so’zlar: *sun’iy intellekt, kompyuter.*

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ARTIFICIAL INTELLIGENCE — THE HUMAN ABILITY TO THINK

Annotation: *This article discusses the topic of artificial intelligence, human thinking and analysis of computer problem solving.*
Keywords: *artificial intelligence, computer.*

Sun’iy intellekt deganda insonning mantiqiy va ijodiy funksiyalarini bajaruvchi intellektual sun’iy tizim tushuniladi. Ushbu atama, shuningdek, o‘rganish va muammolarni hal qilish kabi inson aqli bilan bog‘liq xususiyatlarni namoyish etadigan har qanday texnologiyaga nisbatan ham qo‘llanishi mumkin. Sun’iy intellektning ideal xususiyati – bu aniq maqsadga erishish uchun eng yaxshi imkoniyatga ega bo‘lgan harakatlarni baholay olish va amalga oshirish qobiliyatidir.

Sun’iy intellekt tushunchasi (“Sun’iy intellekt”) dastlab AQSHda paydo bo‘ldi boshqa davlatlarda ham keng qo‘llanila boshlandi. 1981 yili sun’iy intellekt bo‘yicha Kanadada bo‘lib o‘tgan Xalqaro konferensiyada birinchi uchrashuvning o‘nta qatnashchisidan beshtasi qilingan bashoratlar o‘ta optimistik bo‘lganligini, muammolar esa anchagina murakkab ekanligini tan olishdi. Bu yo‘nalishda ko‘pgina ilmiy va amaliy natijalarga erishilgani qayd etildi. Sun’iy intellektni yaratish bo‘yicha ilmiy ishlar rivojlangan davlatlarda olib boriliyapti. *Intellekt - insonning tafakkur yuritish qobiliyatidir*. Suniy intellekt - inson intellektining ba’zi vazifalarini uzida mujassamlashtirgan avtomatik va avtomatlashtirilgan tizimlar xususiyati. Sun’iy intellekt shaxsning nisbatan barqaror bo’lgan, misol

uchun, axborotni qabul qilish va undan ma’lum masalalarni hal qilishda foydalana olishi kabi aqliy qobiliyatini ifodalaydi.

Kompyuterda hal etilayotgan echimlar, hatto ayrimlari anchagina murakkab bo‘lsa-da, intellektual hisoblanmaydi, Qandaydir standart materiallar masalani echish metodini bilmaydigan o‘quvchi uchun javobni izlash, aniq aqliy mehnatni talab qiladigan intellektual amal hisoblanadi. Uslubni bilgan, ushbu turdagi masalani avtomatik ravishda echadi. Sun’iy intellekt sohasidagi ishlar, asosan, kompyuterni hozircha kam egallagan uslub va usullardan samaraliroq foydalanishga “o‘rgatish”dan iborat. Bu sohada anchagina ishlar qilingan, ya’ni intellektual vazifalarni hal qiladigan dasturlar yaratilgan. Mutaxassislar yaratilgan dasturlarni aniqroq, bexato ishlaydigan qilib yaxshilash va ularni takomillashtirish ustida ish olib borishmoqda. Kompyuterda muammoni echishning optimal varianti tanlanadi.Intellektual tizimning asosiy prinsipi shundaki, biror masalani echishda insonning mantiqiy fikrlash usulidan foydalaniladi. Murakkab masalalarning echimini izlashda inson ma’lum qonuniyatlarni bilishga asoslanddi. U matematik teoremalar yoki amaliyotdan olingan qoidalardan foydalanadi, murakkab masalalarni sodda masalalarga ajratadi va boshqa usullarni tatbiq etadi. Intellektual tizimning asosiy vazifasiga tuplangan bilimlar omborini tatbiq etish va undan foydalangan holda murakkab masalalarni echishning optimal yo‘llarini izlash hamda echimini topish kiradi.

Sun’iy intellekt rivojlanishida davom etar ekan, sun’iy intellekt texnologiyalarida ustunlikka erishish uzoq vaqtdan beri global ustunlikka da’vogarlik qilib kelayotgan yana bir kuch –sun’iy intellektni rivojlantirish uchun texnik, sanoat va ilmiy sohalarga moliyaviy resurslar hamda inson omilini jalb qilish borasidagi harakatlarni boshlab yubordi.

Xitoyda sun’iy intellektning tobora rivojlanishi ortida xususiy sektorda faoliyat yuritayotgan yirik texnologik kompaniyalarning ham muhim roli bor. Albatta, bu kompaniyalar mamlakatda shakllanib ulgurgan katta miqdordagi ma’lumotlar bazasi va sun’iy intellekt uchun yangi bozorlar kashf qilish, ularni tijoratlashtirish borasida davlatning qo‘llab-quvvatlovi kabi o‘ziga xos imtiyozlarga ham ega. Xitoyning “Alibaba”, “Baidu” va “Tencent” kabi gigant texnologik kompaniyalari o‘ziyurar avtomobilga o‘xshash mahsulotlar ishlab chiqarish uchun muhim hisoblangan tasvir va ovozni tanib oluvchi sun’iy intellekt texnologiyalari borasida bir necha yildan beri izlanish olib boradi.

Xulosa o‘rnida aytadigan bo‘lsak, sun’iy intellektga asoslangan zamonaviy dunyoning eng xavfli jihati shundaki, u «G‘olib hamma narsani oladi» tamoyiliga asoslangan. Bu esa ijtimoiy keskinlik va xalqaro nizolarni yanada kuchaytiruvchi omil hisoblanadi.

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ANALOG-RAQAMLI O’ZGARTKICH SXEMASINI MULTISIM DASTURIDA LOYIHALASH

Annotatsiya: *Maqolada Multisim dasturida analog-raqamli o’zgartkich sxemasi loyihalangan. Dasturda potensiometrik datchik asosida yig’ilgan sodda parallel analog-raqamli o’zgartkich qurilmasini sxematik loyihalash bosqichlari keltirilgan.*

Kalit so‘zlar: *analog-raqamli o’zgartkich, analog signal, komparator, Multisim, potensiometrik datchik, raqamli signal.*

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DESIGNING A RECTIFIER CIRCUIT FOR ANALOG-TO-DIGITAL CONVERTER IN MULTISIM

Annotation: *In this paper, an analog-to-digital converter circuit was designed using the specialized software Multisim. The program presents the circuit design steps for a simple parallel analog-to-digital converter based on a potentiometer sensor.*

Keywords: *analog-to-digital converter, analog signal, comparator, Multisim, potentiometric sensor, digital signal.*

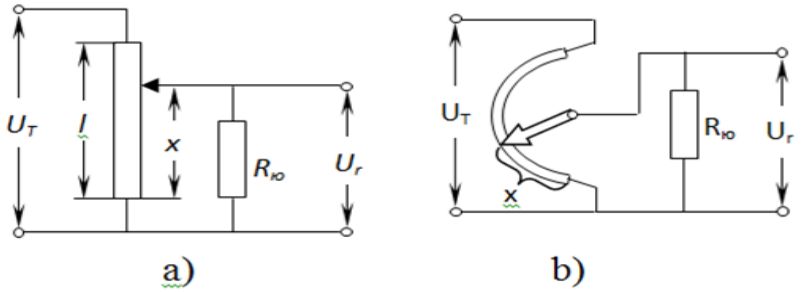
Datchikka qabul qilingan signallarni qayta ishlah, ma’lumot shaklida uzatish ikki xil – analog yoki raqamli ko’rinishda amalga oshiriladi. Raqamli signallarning tashqi ta’sirlarga daxlsizligi, ularni o’lchov asboblarining sensorlarida xotirada saqlash imkoniyatlari uning analog o’lchov asboblariga nisbatan ustunligini ta’minlaydi. Shuning uchun analog-raqamli o’zgartkichlar sxemalarini tahlil qilish va ularnini loyihalash bugungi kunda sanoat elektronikasi mutaxassislri oldida turgan dolzarb vazifalardan biri hisoblanadi [1].

Chiziqli va burchak siljishlar, mexanik kuchlanish, tezlanish va boshqa shunga o‘xshash noelektrik kattaliklarni o’lchashda mexanik siljishni mos ravishda elektrik qarshiliklaridan birining o‘zgarishiga aylantirib beruvchi potensiometrik datchiklar qo‘llaniladi [2-5]. Bu datchiklarda kirish signali bo‘lib

reostat surilgichi, chiqish signali bo‘lib reostat qarshiligi R xizmat qiladi (1a-rasm). Reostat surilgichi detal bilan bog‘liq bo‘lib, u siljiganda elektr zanjirining umumiy qarshiligi o‘zgaradi. 1a-rasmda ko‘rsatilgan sxemada potensiometrik datchikning statik xarakteristikasini, ya’ni surilgichdan olinayotgan chiqish kuchlanishi U_{ch} bilan surilgichning surilish masofasi x o‘rtasidagi ($U_{ch} = f(x)$) bog‘lanishni quyidagicha yozamiz:

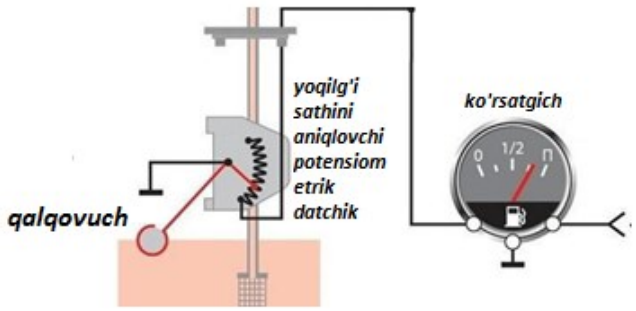
$$U_{ch} = \frac{U_T \cdot K}{1 + \frac{K}{\alpha}(1 - K)}$$

bu yerda U_T – tarmoq kuchlanishi. $K = \frac{x}{l}$ – potensiometr surilgichining nisbiy siljishi (l – potensiometrning umumiy uzunligi, x – surilgichning siljish uzunligi); $\alpha = \frac{R_{yu}}{R}$ – yuklama koeffitsiyenti (R_{yu} – yuklama qarshiligi, R – potensiometrning to‘la qarshiligi).



1-rasm. *Potensiometrik (reostatli) datchiklar*

Burchak siljishlarni o‘lchashda halqasimon potensiometrik (simli reostat) datchiklar ko‘plab ishlatiladi (1b-rasm). Uning karkasi yarim halqa ko‘rinishida izolyatsiyalangan ashyodan (plastmassa, tekstolit, keramika va boshqalar) yasalgan bo‘lib, unga katta solishtirma qarshilik va kichiq harorat koeffitsiyentiga ega bo‘lgan sim (manganin, konstantan, nixrom) o‘ralgan bo‘ladi.

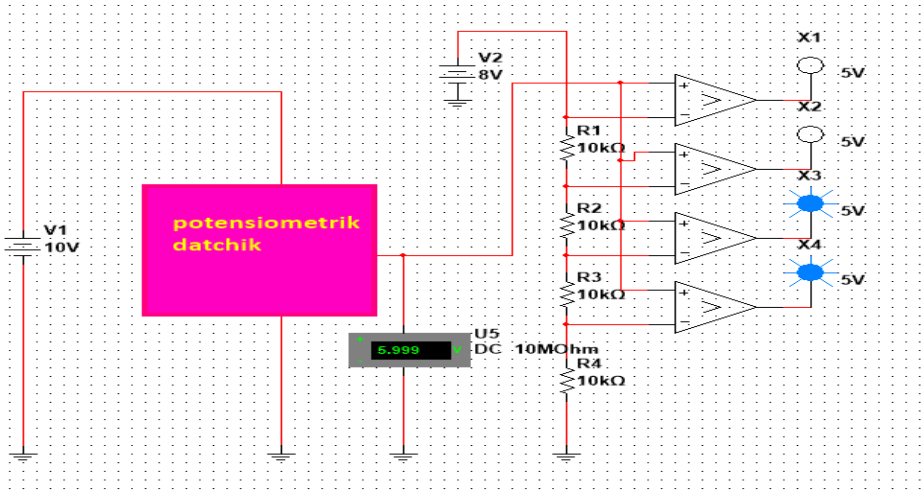


2-rasm. *Potensiometrik datchikning amaliy tadbiqi.*

Potensiometrik datchiklar mexanikaviy siljishlarni elektr kattaliklariga aylantirib berishi uchun xizmat qiladi. Datchikning asosiy qismi reostat bo‘lib, uning qarshiligi surgich siljishida o‘zgaradi (2-rasm).

Parallel analog-raqamli o'zgartkichni Multisim dasturida modellashtirish. Dastlab Multism dasturi ishga tushiriladi, dastur ishga tushgan paytda quyidagi oyna ochiladi (3-rasm).

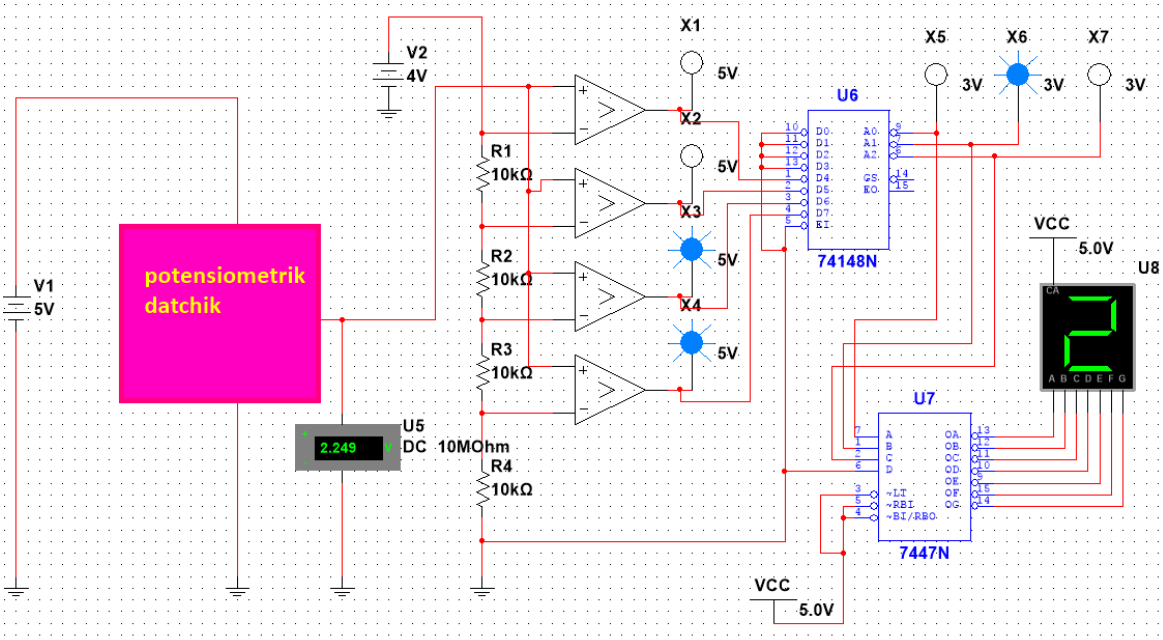
Quyidagi zanjir yig'iladi va ishga tushiriladi.



3-rasm. *Parallel ARO' kirish komparatorlari zanjiri.*

Bunda potensiometrik datchikdan chiqgan analog signal o'zgartiriladi. Keyingi bosqichda taqqoslash sxemasi uchun shifrator sxemasini loyihalanadi.

Tayyor parallel analog raqamli o'zgartgich quyidagi ko'rinishda bo'ladi (4-rasm).



4-rasm. *Potensiometrik datchik asosida yig'ilgan sodda parallel ARO'ning multisim dasturida yig'ilgan sxemasi.*

4-rasmda ko'rsatilgan sxemada 3 bitli sodda parallel ARO'ning sxemasi berilgan bo'lib, dastlab kirish signali 4 ta komparatordan tashkil topgan taqqoslash sxemasiga beriladi. Taqqoslash sxemasining chiqishlari kirish signalining

kuchlanishiga mos ravishda ketma-ket 1 holatiga kela boshlaydi. Ushbu diskret sinallarni ikkilik sanoq sistemasiga o'tkazish uchun 74148 integral kodlovchi mikrosxemasidan foydalanilgan. Shifratordagi ikkilik kodni o'nlik raqam korinishida aks ettirish uchun 7 segmentli displey uchun ishlab chiqarilgan 7447 integral deshifrator mikrosxemasidan foydalanilgan.

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METALLARNI O'QITISHDA INTERFAOL USULLARDAN FOYDALANISH

Annotatsiya: *O'quvchilarni dars jarayonida faollashtiruvchi innovatsion texnologiyalarni qo'llash dars samaradorligini oshiradi. Ushbu maqolada Metallirning umumiy xossalari mavzusini o'qitishda interfaol usullardan "Muammoli" va "Klaster" metodlaridan foydalanib o'quvchilarni bilimi yanada oshganligi keltirilgan.*

Kalit so'zlar: *Metal, Flotatsiya, Muammoli, Klaster, SCORE, interfaol, uslub, ruda.*

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USE OF INTERACTIVE METHODS AND TRAINING OF METALLURGY

Abstract: *Using innovative technologies that engage students during lessons increases their effectiveness. This article demonstrates that the use of interactive methods in teaching "General Properties of Metals," such as "Problem-Based" and "Cluster-Based," contributes to improved student learning*

Key words: *Metal, Flotation, Problem, Cluster, SORE, interactive, method, ore.*

Metallaming ko'pchiligi tabiatda boshqa elementlar bilan birikkan yoki tog' jinslari bilan aralash holda uchraydi. Ba'zi rudalarda ortiqcha jinslar miqdori shu qadar ko'p bo'ladiki, bunday rudalardan metallarni ajratib olish iqtisodiy jihatdan foyda bermaydi. Bunday rudalar avval boyitiladi. Ya'ni ulardagi qo'shimchalarning bir qismi chiqarib yuboriladi. Rudalarni boyitishda, asosan, flotatsion, gravitatsion va magnit usullaridan foydalaniladi. Rudalarni boyitish jarayonlari va qurilmalari to'g'risida o'quvchilarda tasavvur hosil qilish uchun rudalarni boyitish usullaridagi jarayonlaming dinamik modellari kompyuter yordamida animatsiya qilinadi. Ekranda rudalarni boyitish jarayonlari tushuntiriladi. Flotatsiya usulida rudalarni boyitishda tog' jinsi va metall mineralidan iborat ruda maydalanadi. Katta hajmdagi idishda maydalangan rudaga suv, sirt aktiv moddalar va o'simlik moyi qo'shilib, kuchli havo oqimi yordamida aralashtiriladi. Flotatsiya jarayoni sirt aktiv moddalar saqlovchi suvda maydalangan ruda va tog' jinsi zarrachalari yuzasining turlicha ho'llanishiga

asoslanadi. Masalan, Cu_2S - mis yaltirog‘i rudasining zarrachalari moy biIan suv aralashmasini havo bilan purkalganda hosil bo‘lgan pufakchalarni yaxshi adsorbsiyalaydi. Chunki ruda zarrachalari suvda ho‘llanmaydi. Natijada ruda zarrachalari pufaklar bilan birga idish yuqorisiga ko‘tariladi. Suvda ho‘llanadigan tog‘ jinsi idish tubiga cho‘kadi. Idish yuzasidan pufakchalarga yopishgan ruda zarrachalarini ajratib olib, metall ishlab chiqarishga jo‘natiladi. Natijada ruda konsentrati olinadi. Cu_2S rudasi konsentratida misning miqdori bir necha marta ortib, 16-20 %gacha yetadi. Gravitatsion usulning mohiyati metal minerali bilan tog‘ jinsIari zichligining bir-biridan keskin farqlanishiga asosiangan.

Metallarning umumiy xossalarini o‘qitishda «Muammoli» va «Klaster» usullaridan foydalanish.

Yangi pedagogik texnologiyabr o‘ z ichiga juda ko‘p masalalarni qamrab oladi. Jumladan, nazariy va amaliy kimyoning an'anaviy vositalari yordamida ko‘rsatib bo‘ladigan ko‘pgina jarayonlarning dinamik modellarini kompyuter yordamida animatsiya qilib, multimediya mahsulotlari tayyorlanadi. Bu mahsulotlardan foydalanib kompyuter darslarini o‘tkazish, shu dasturga kiritilgan ta'lim mavzusiga oid testlar yordamida o‘quvchilaming o‘zlashtirish darajalarini aniqlash, xorijiy davlat olimlari tomonidan ishlab chiqilgan va sinovdan o‘tqazilgan o‘quvchilarni dars jarayonida faollashtiruvchi innovatsion texnologiyalarni qo‘llash dars samaradorligini oshiradi. Shuningdek, mavzuga oid respublikadagi tabiiy moddalarning kimyoviy zaxiralari va ulardan kimyoviy mahsulotlar ishlab chiqarishni bayon etish , kimyo fani va sanoatining yangiliklarini yoritib borish, qadimiy Sharq mutafakkirlarining kimyoga oid meroslaridan va O‘zbekiston kimyogar olimlarining kashfiyotlaridan darsda foydalanish ijobiy natijaning ajralmas qismi hisoblanadi.

Quyida “Metallirning umumiy xossalari mavzusini o‘qitishda” “Muammoli” va “Klaster” usullaridan foydalanish metodikasi qisqacha keltiriladi.

«SCORE» interfaol uslubi

«SCORE» haqida umumiy ma’lumot. «SCORE» (BSNMS) interfaol uslubi tinglovchilarda muammolarni aniqlash qobiliyati, kognitiv ko‘nikma va malakalarni rivojlantirish, bor manbalar va imkoniyatlardanfoydalanib muammoning yechimini topishni shakllantirishga yo‘naltirilgan.

S (symptom) muammoning belgisi — muammoning muhokamasi vaqtida turli ziddiyatlarga, tushunmovchiliklarga keltiruvchi yopiq elementlari, yo‘nalishlari, (masalan, iqtisodda, siyosatda, ta’lim-tarbiyada, kishilar o‘rtasidagi munosabatda uchraydigan tushunmovchiliklar, ziddiyatlar) hali ochilmagan yopiq qirralarini o‘zgartirish bilan bog‘liq bo‘lgan texnologiyalar, harakatlarni aniqlashdir.

S (sause) - sababi - muammoning kelib chiqishiga sabab bo‘ladigan yopiq qirralar (masalan, ziddiyat va tushunmovchilikka olib keluvchi eski qarashlar, an’anaviy fikr va mulohazalar)ni izlash, aniqlash.

O (outcome) - natijasi - kutiladigan natijaga ega bo‘lishda muammoga olib kelgan yopiq qirralar o‘rnini bosuvchi yangi texnologiyalar, harakatlar, maqsad, holatlarni belgilash.

R (gesourses) - manbai - muammoning ochilmagan qirralarini o‘zgartirishga, uning yangi maqsadlari, texnologiya va harakatlar hamda kutiladigan natijaga erishishga xizmat qiladigan vositalarini yoki mukobil materiallarni hamda «qaerda?»,

«qachon?», «nima?», «qanday?», «nimaga?», «kim?» savollari asosida muammoni yechishning kerakli, asosiy manbalarini topishdan iborat.

Уe (effect) - samarasi - muammoning yechimi asosida aniq bir maqsad bo‘yicha uzoq muddatga mo‘ljallangan mukammal natija orqali yuksak samaraga erishish, aniq maqsadli amaliy tavsiyalar ishlab chiqishdir.

Muammoli holat va vaziyatni aniqlashga doir uchun savollar:

1.Muammoning qanday yopiq qirralari bor?

2.Muammoda yopiq qirralarning bo‘lish sabablari nimada?

3.Qanday manbalar aniqlangan sabablarni yo‘qotishga yordam beradi?

4. Ushbu muammo bo‘yicha maqsad va natija qanday bo‘lishi mumkin?

Qaysi manbalar samarali natijaga erishishga imkon beradi?

Erishilgan maqsad, natija qanchalik uzoq muddat davomida samara bera oladi?

O‘qitishda qo‘yilgan muammolarning yechimlari o‘quvchilar bilan birga hal etiladi.

Mavzuni o‘qitish uchun quyidagi muammoli savollar o‘quvchilarga havola qilinadi:

1. Metallarning yumshoq yoki qattiq bo‘lishining sababini tushuntirib bering.

2. Metallarning zarb ta'sirida maydalanib ketmasligi, bolg‘alanuvchan bo‘lishi ularning qanday xossalaridan kelib chiqadi?

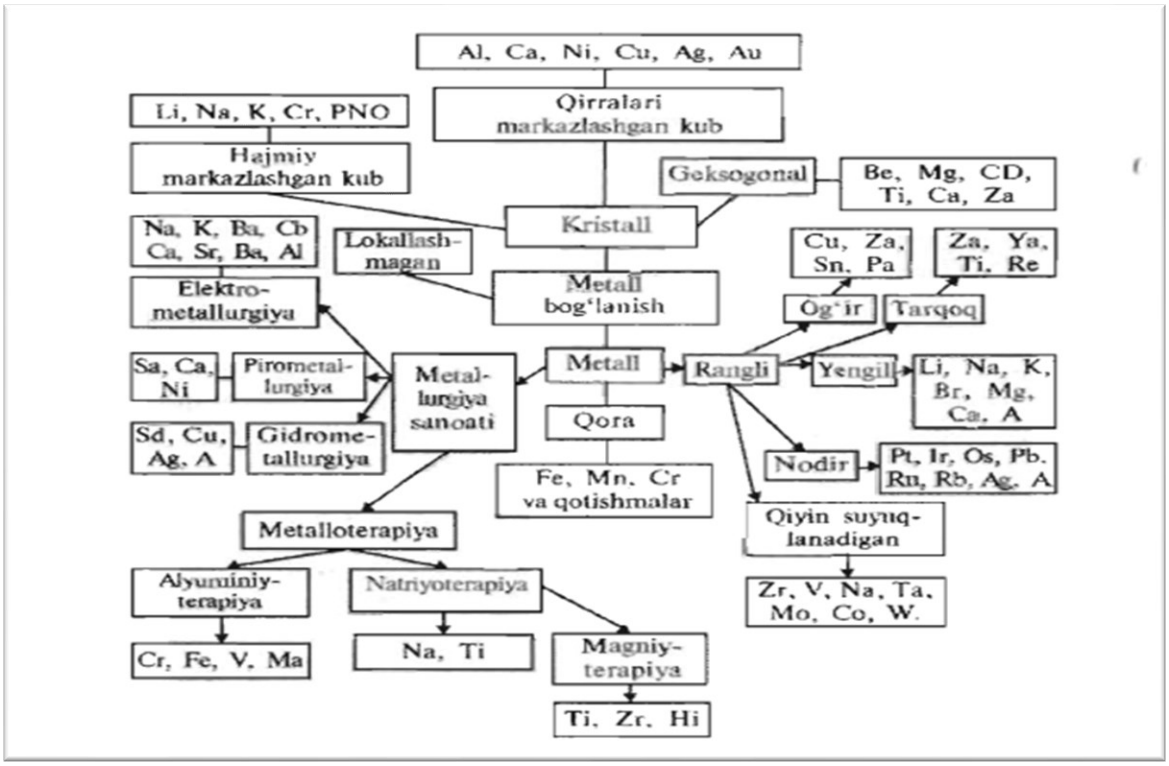
3. Ayrim metallarning korroziyaga chidamli bo‘masligiga sabab nima?



1-rasm. Muammoli o’qitish metodi

Nima uchun litiyning kimyoviy aktivligi natriy va kaliydan kam bo‘lisbiga qaramay, u aktivlik qatorida birinchi o‘rinni egallaydi? Birinchi muammoli savolni hal etishda o‘quvchilar turli fikrlar bildiradilar. Bir o‘quvchi metallarning yumshoq yoki qattiq bo‘lishini ularning kristall tuzilishlariga bog‘lab tushuntirsa, ikkinchi o‘quvchi esa metall atomlarining elektron tuzilishiga bog‘laydi va ko‘p munozaralar olib boriladi. Dars davomida ma'ruzachi o‘quvchilarning fikrlarini

umumlashtiradi va muammolarning yechimini hal qilib beradi. Metall bog‘lanishning o‘ziga xos xususiyatini aytib muammoni hal qilishga yordam beradi. Metall bog‘lanishning tabiati shundan iboratki, metallda atomlaming bog‘lovchi elektronlari kristall panjarada erkin harakatlangani uchun metall atomining valent elektroni atomdan siljishi natijasida u musbat zaryadlanadi. Musbat zaryadli metall ionlarining manfiy zaryadli elektronlar orqali bog‘lanishi metall bog‘lanish deb ataladi. Muammolarning asosiy yechimi shundan iboratki, bog‘lanishda qatnashadigan metall atomi valent elektronlarining soni metalning asosiy fizik xossasini belgilaydi. Masalan, natriy atomlari orasida bog‘lanish hosil bo‘lishida har bir atomdan bittadan elektron qatnashganligi uchun natriy metali yumshoq bo‘ladi. Pichoq bilan kesiladi. Kalsiy metalida esa metall bog‘lanishda har bir atomdan ikkitadan elektron qatnashadi. Natijada bog‘ning mustahkaniligi ortganligi uchun kalsiy qattiq bo‘ladi. Metall bog‘lanishda titanda har bir atomdan 4 ta, xromda esa 6 ta elektron qatnashganligi uchun titan juda qattiq, xrom eng qattiq metall hisoblanadi. Shunga o‘xshash har bir muammoli savollarning yechimi o‘quvchilarning faol ishtirokida hal qilinadi.



2-rasm. Metallarni klater usulda tuzilishi

Demak, mavzuga doir bilimlarni bayon qilishda muammoli metoddan foydalanib, dars o‘zaro muloqot tarzida olib borilganligi uchun uning samaradorligi yuqori bo‘ladi. Ma'ruzada bayon qilingan bilimlarni o‘quvchilar tomonidan qanday o‘zlashtirilganini bilish uchun yangi pedagogik texnologiyaning «Klaster» (Tarmoqlar) usulidan foydalaniladi. Bu usulni amalga oshirish uchun mavzuning asosiy tushunchalari: metall, metallurgiya, qotishma, korroziya so‘zlari alohida 4 ta katta qog‘ozning o‘rtasiga yozilib qo·yiladi.

Ma'ruzada qatnashgan o‘quvchilar to‘rt guruhga bo‘linib, har biriga alohida tushunchalar yozilgan qog‘oz beriladi. Har bir guruh berilgan tushunchaga uzviy bog‘lanuvchi tushuncha va bilimlarni yozib chiqadilar. Har bir guruhdan bitta o‘quvchi chiqib, tushunchaning turli tarmoqlar bo‘yicha uzviy bog‘lanishlar to‘liq ifodalangan jadvalini tushuntirib, tuzilgan klasterni himoya qiladi. Tushuncha tarmoqlanishini doskada ham bajarish mumkin. So‘ngra boshqa guruhdagi o‘quvchilar himoyachiga turli savollar beradilar. To‘rtala guruh tuzilgan “Klaster”ni himoya qilib bo‘lganidan so‘ng o‘quvchilardan tayinlangan hay'at a'zolari “Klasterni to‘g‘ri va to‘liqligi haqida ma'lumotlar beradi, shuningdek, savol-javoblarning mazmuniga qarab guruhdagi o‘quvchilarga ballar qo‘yib chiqadi va guruhning umumiy balini e'lon qiladi. Darsda bu usulni amalga oshirilishi o‘quvchilarda juda katta qiziqish uyg‘otganligi uchun darsning samaradorligi yuqori bo‘ladi.

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ИНФОРМАЦИОННЫЕ ТЕХНОЛОГИИ ДЛЯ УСТОЙЧИВОГО РАЗВИТИЯ: АНАЛИЗ ТРЕНДОВ И ВОЗМОЖНОСТЕЙ

Аннотация: *в условиях современного мира, сталкивающегося с вызовами климатических изменений, экологической устойчивости и социальных проблем, информационные технологии играют все более важную роль в поиске решений для обеспечения устойчивого развития. В данной статье проводится анализ современных трендов в области информационных технологий, которые могут способствовать достижению целей устойчивого развития, а также исследуются потенциальные возможности и вызовы, с которыми сталкиваются исследователи и практики в этой области.*

Ключевые слова: *Информационные технологии, устойчивое развитие, экологические технологии, умные города, цифровая экономика, ресурсоэффективность.*

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INFORMATION TECHNOLOGIES FOR SUSTAINABLE DEVELOPMENT: ANALYSIS OF TRENDS AND OPPORTUNITIES

Abstract: *In the modern world, faced with the challenges of climate change, environmental sustainability and social problems, information technology is playing an increasingly important role in finding solutions to ensure sustainable development. This article analyzes current trends in information technology that can contribute to achieving sustainable development goals, and also explores the potential opportunities and challenges faced by researchers and practitioners in this field.*

Key words: *Information technology, sustainable development, environmental technologies, smart cities, digital economy, resource efficiency.*

Введение

Современный мир стоит перед существенными вызовами, связанными с экологической устойчивостью, социальным развитием и экономической эффективностью. В условиях стремительного технологического развития и расширения информационного пространства, информационные технологии (ИТ) играют ключевую роль в поиске решений для этих проблем. Проникновение ИТ в различные сферы человеческой деятельности открывает новые возможности для создания устойчивой и прогрессивной среды. Цель данной статьи состоит в анализе современных трендов и возможностей, которые предоставляют информационные технологии для обеспечения устойчивого развития. Мы будем рассматривать какие технологии и подходы наиболее актуальны в этом контексте, и как они могут быть использованы для достижения целей устойчивого развития на глобальном, региональном и локальном уровнях. Анализ современных трендов и возможностей в области информационных технологий для устойчивого развития не только позволит оценить текущее положение дел, но и выявить направления для будущих исследований и практической работы. Вместе с тем, будут также рассмотрены вызовы, с которыми сталкиваются исследователи и практики при реализации проектов по использованию информационных технологий для устойчивого развития.

1. Интеграция информационных технологий в управление ресурсами

Одним из ключевых трендов является использование информационных технологий для эффективного управления ресурсами. Системы умного управления энергопотреблением, умные сети, а также программные решения для оптимизации использования водных и лесных ресурсов становятся все более популярными. Благодаря сбору и анализу данных, эти технологии позволяют улучшить эффективность использования ресурсов, сократить потери и снизить негативное воздействие на окружающую среду.

2. Развитие экологически чистых технологий

Информационные технологии также играют ключевую роль в разработке и внедрении экологически чистых технологий. Применение методов машинного обучения и анализа больших данных помогает оптимизировать процессы производства, уменьшить выбросы загрязняющих веществ и создать более эффективные источники энергии. К примеру, разработка алгоритмов для управления производственными процессами позволяет минимизировать отходы и оптимизировать использование ресурсов.

3. Поддержка устойчивого развития городов

Городское население продолжает расти, что ставит перед городскими властями задачу обеспечения устойчивого развития и обеспечения высокого

качества жизни для всех горожан. Информационные технологии могут помочь в решении этой проблемы путем создания интеллектуальных городов. Системы умного города, основанные на ИТ, обеспечивают эффективное управление транспортной инфраструктурой, оптимизацию систем общественного транспорта, контроль за качеством воздуха и многое другое.

4. Развитие цифровой экономики для устойчивого развития

Цифровая экономика представляет собой ключевой фактор устойчивого развития, способствуя созданию новых возможностей для экономического роста и инноваций. Развитие электронной коммерции, цифровых платформ для обмена ресурсами и услугами, а также использование блокчейн-технологий для обеспечения прозрачности и безопасности сделок - все это способствует устойчивому развитию, стимулируя экономическое сотрудничество и инновационную деятельность.

Заключение:

В современном мире информационные технологии становятся неотъемлемой частью устойчивого развития, предоставляя нам возможности для эффективного решения сложных проблем экологической устойчивости, социального развития и экономического процветания. В этой статье мы рассмотрели несколько ключевых направлений, в которых ИТ вносят значительный вклад. Интеграция информационных технологий в управление ресурсами позволяет оптимизировать их использование, уменьшить потери и снизить негативное воздействие на окружающую среду.

Умные города, основанные на информационных технологиях, обеспечивают эффективное управление инфраструктурой, повышают уровень комфорта жизни горожан и снижают негативное воздействие на окружающую среду. Развитие цифровой экономики способствует созданию новых возможностей для экономического роста и инноваций, поддерживая устойчивое развитие на мировом уровне. Однако, несмотря на все преимущества, использование информационных технологий для устойчивого развития также сталкивается с вызовами. К ним относятся проблемы конфиденциальности данных, цифровое неравенство, а также необходимость согласования международных стандартов и нормативов. В целом, информационные технологии играют ключевую роль в обеспечении устойчивого развития, и их значимость будет продолжать расти в будущем.

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IMPROVING WORKING CONDITIONS IN VITICULTURE: ECONOMIC AND SOCIAL BENEFITS

Abstract: *This study examines the pressing issues related to working conditions in the viticulture sector and their impact on worker health and economic productivity. The main occupational hazards are identified, and practical measures for their mitigation are proposed. The research results indicate that improving working conditions not only addresses social concerns but also delivers economic benefits to employers, with calculated investments paying off through higher productivity, improved product quality, and increased worker loyalty.*

Keywords: *viticulture, working conditions, occupational safety, worker health, social efficiency, economic benefit, Uzbekistan.*

Introduction

Viticulture is one of the key economic sectors and a source of employment in many rural areas worldwide, including Uzbekistan. However, despite its economic importance, the working conditions for laborers in this sector are often overlooked. Extreme heat, exposure to toxic chemicals, and intense physical labor pose serious health risks to workers. The aim of this article is to identify the main problem areas in the working conditions within viticulture and to propose practical solutions that can enhance both social welfare and economic efficiency.

Methods

This research employed both quantitative and qualitative methods to analyze working conditions in the viticulture sector. A literature review was conducted, examining existing scientific articles, reports, and regulatory documents on occupational safety. Furthermore, unstructured interviews were held with workers employed at viticulture enterprises to gather their personal experiences, challenges faced, and suggestions. The collected data were categorized, allowing for the identification of key opportunities and risks.

Results

The analysis revealed the following primary issues concerning working conditions in viticulture:

Heat Stress and Extreme Temperatures: Workers often labor for extended periods under direct sunlight during the hottest summer months. Without adequate protective measures, this leads to heatstroke, dehydration, and sunburn.

Lack of Personal Protective Equipment (PPE): When handling pesticides and herbicides, workers frequently lack essential protective gear such as masks, gloves, chemical-resistant aprons, and safety goggles. This significantly increases the risk of chronic long-term illnesses.

Physical Strain and Musculoskeletal Problems: Grape harvesting requires constant bending, kneeling, and carrying heavy loads, leading to back and neck pain and joint problems.

Additional Occupational Health Risks: Working in vineyards can sometimes lead to insect bites, exposure to poisonous plants, and allergic reactions related to dust.

Lack of Training and Awareness: Many workers, particularly seasonal laborers, lack sufficient knowledge about occupational safety rules and health risks.

Discussion

The obtained results demonstrate that improving working conditions in viticulture is crucial not only from a social standpoint but also from an economic perspective. Healthy workers are more productive, there is a reduction in workdays lost due to illness, labor turnover decreases, and product quality improves.

The following measures are proposed to address the identified problems:

Combating Heat Stress: Revising work schedules (prioritizing early morning and evening hours), installing shade structures in work areas, and ensuring all workers have access to an adequate supply of clean drinking water and electrolyte-replenishing beverages.

Provision of Personal Protective Equipment (PPE): Mandating that employers freely distribute all necessary protective clothing and equipment for hazardous tasks and ensure their regular replacement.

Regular Health Screenings and Training: Organizing mandatory periodic health check-ups for workers and conducting informative training sessions on occupational safety.

Improving Ergonomics: Implementing the use of ergonomic tools (e.g., pruning shears of varying lengths, harvesting trolleys) to reduce the physical strain on workers.

Strengthening Labor Protection: Enhancing the activity of labor inspections in the sector and implementing modern systems for monitoring working conditions.

Conclusion

Improving working conditions in the viticulture sector is not merely a humanitarian or occupational safety issue; it is a foundation for the economic sustainability and competitiveness of the industry. Investing in the health and safety of workers may appear as a cost in the short term, but in the long term, this investment pays dividends through increased labor productivity, greater worker loyalty, and enhanced overall production efficiency. Only a comprehensive

approach that combines social responsibility and economic rationale can lead to the holistic and sustainable development of the viticulture sector.

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HYGIENIC CHARACTERISTICS OF WORKING CONDITIONS IN HORTICULTURE (ON THE EXAMPLE OF BUKHARA REGION)

Annotation: *Today, horticulture is one of the key sectors of agriculture that plays an important role in the economy of our country, particularly in ensuring food security. Horticultural products are not only vital for domestic consumption but also significantly contribute to the increase of export potential. At the same time, labor activity in this field is characterized by a high level of physical exertion and exposure to numerous sanitary and hygienic factors affecting workers' health.*

Key Words: *Horticulture, working conditions, occupational hygiene, agricultural workers, microclimate, physical workload, pesticide exposure, occupational safety, health risk assessment, preventive measures.*

INTRODUCTION

Inadequate organization of working conditions leads to occupational diseases, chronic fatigue, heat exposure, dusty environments, and various allergic conditions among workers. Therefore, protecting the health of workers, improving the hygienic conditions of the work environment, and increasing production efficiency in horticulture are among the current and important tasks.

In the conditions of the Bukhara region, horticultural activities are mainly carried out outdoors, under high temperature climates, and with predominantly manual labor. This creates unfavorable working conditions for workers and negatively affects their performance and general health. Therefore, studying the hygienic aspects of labor in this region and developing practical recommendations to improve it is of great relevance.

Horticulture is one of the leading branches of agriculture in Uzbekistan and plays a crucial role in the country's economy, especially in ensuring food security. In the Bukhara region, the horticultural sector has been rapidly developing in recent years. The local climatic conditions — characterized by extremely hot and dry summers and mild winters — create favorable opportunities for the cultivation of fruits and vegetables.

However, horticultural labor is mainly carried out in open-air environments. Workers are often exposed to high temperatures, direct sunlight, dust, and various chemical substances. These factors adversely affect their health and require serious hygienic evaluation and preventive measures to improve working conditions.

The main hygienic factors influencing the work environment in horticulture include:

Climatic factors: air temperature, relative humidity, wind speed, and solar radiation intensity.

Physical factors: noise, vibration, and inadequate or excessive lighting.

Chemical factors: exposure to hazardous substances during the use of fertilizers and pesticides.

Biological factors: the impact of insects, fungi, and plant allergens.

Psychophysiological factors: physical exertion, continuous energy expenditure, and limited rest opportunities.

During the summer season in the Bukhara region, the air temperature can rise to 40–45°C, which exposes workers to heat stress. In addition, the lack of water and shaded areas increases the risk of fatigue and heat stroke among workers.

Most horticultural activities — such as planting trees, irrigation, pruning, and harvesting — are based on manual labor. In these processes, certain muscle groups, particularly in the shoulders, back, arms, and legs, are subject to significant strain. Prolonged work in static positions can cause muscle fatigue and overstrain on the musculoskeletal system.

Moreover, the long duration of work (8–10 hours per day) and insufficient rest time lead to general fatigue and mental stress. In many cases, these conditions contribute to decreased work productivity and the development of health problems.

The hygienic analysis conducted in several horticultural farms of the Bukhara region revealed the following results:

The concentration of dust in the air exceeded sanitary standards by 1.5–2 times.

The temperature regime ranged between 35–45°C, which is above the physiological norm.

The rate of protective clothing usage among workers was low (only 35–40%).

A significant portion of workers reported fatigue, headaches, and symptoms of chronic tiredness.

Purpose of the Research

To analyze the working conditions of horticultural workers, identify factors affecting their health, and develop scientifically based practical measures to improve these conditions.

Research Objectives

To study the sanitary and hygienic characteristics of the working environment in horticultural farms of the Bukhara region.

To identify the main risk factors affecting workers' health.

To analyze the relationship between working conditions and health indicators.

To develop practical recommendations for improving the hygienic conditions of labor.

Object of the Research

Workers employed in horticultural farms of the Bukhara region and their working environment.

Subject of the Research

Sanitary-hygienic, physiological, and ecological factors affecting the working conditions of horticultural workers and methods for their improvement.

Research Methods

During the research, sanitary-hygienic analysis, sociological surveys, measurement of physical parameters of the work environment, and analysis of medical data regarding workers' health were used.

Scientific Novelty

For the first time, the main hygienic indicators of the working environment of horticultural workers in the Bukhara region were systematically studied, and practical recommendations for improving labor conditions were developed.

Practical Significance

The results of the research can be used to ensure labor hygiene in horticultural farms, improve sanitary regulations, and develop effective measures to protect workers' health.

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AN ANALYTICAL OVERVIEW OF THE CLINICAL MANIFESTATIONS AND SYSTEMATIZATION OF PERIODONTAL DISEASES

Abstract. *Periodontal diseases comprise a group of prevalent inflammatory disorders that affect the tooth-supporting tissues and, without proper treatment, can lead to tooth loss. Gingivitis and periodontitis are the most common forms of these conditions. This paper provides an overview of the clinical features, classification, and pathogenesis of periodontal diseases, emphasizing the significance of early detection and preventive strategies. The transformation of gingivitis into periodontitis may cause serious consequences, including alveolar bone destruction and eventual tooth loss. The review further explores modern therapeutic approaches and the association of periodontal diseases with systemic conditions such as diabetes mellitus and cardiovascular disorders. Particular consideration is given to key risk factors—smoking, aging, and genetic susceptibility—as well as to recent advances in diagnostic and treatment techniques. In conclusion, the study underscores the importance of incorporating dental care into the integrated management of patients with chronic systemic illnesses.*

Keywords: *periodontal diseases, gingivitis, periodontitis, clinical features, risk factors, diagnosis, therapy, prevention, cardiovascular disorders, diabetes, innovative treatment methods.*

Introduction.

Periodontal diseases are inflammatory conditions affecting the tissues that support the teeth and are among the most prevalent and slowly progressing diseases worldwide. These conditions arise due to an imbalance in the oral microbiological environment and primarily affect the gingiva and alveolar bone. According to the World Health Organization (WHO), more than 538 million people suffered from periodontal diseases such as gingivitis and periodontitis in 2019. Moreover, these diseases are closely associated not only with oral health but also with systemic conditions such as cardiovascular disease, diabetes, and respiratory disorders (Eke et al., 2018).

The disease typically begins as gingivitis, characterized by inflammation and bleeding of the gums. If left untreated, gingivitis can progress to periodontitis, which results in the destruction of alveolar bone and increased tooth mobility.

Severe forms of periodontitis may eventually lead to tooth loss. Understanding the inflammatory mechanisms, the types of periodontitis and gingivitis, their pathogenesis, and associated risk factors is critical for the development of effective treatment and prevention strategies.

Numerous scientific studies have focused on the clinical progression and classification of periodontal diseases. The primary causes of gingivitis and periodontitis are microbial infections and host immune responses, which can lead to the destruction of gingival and alveolar bone tissues.

Types of Gingivitis and Periodontitis

1. Gingivitis Gingivitis is the mildest form of periodontal disease, affecting only the gums. It is characterized by inflammation, redness, and bleeding of the gingival tissues without involving the deeper supporting bone structures.

- Prevalence: According to various studies, approximately 50–90% of the adult population suffers from gingivitis, primarily due to poor oral hygiene and microbial plaque accumulation.

- Pathology: Gingivitis develops as a result of bacterial biofilm (dental plaque), which induces localized inflammation of the gums without affecting the underlying connective or bone tissues.

2. Periodontitis. Periodontitis is a more severe and advanced form of periodontal disease that often develops from untreated gingivitis. It involves inflammation and progressive destruction of the alveolar bone and the supporting structures of the teeth.

- Prevalence: Approximately 10–15% of adults are affected by severe forms of periodontitis. Major risk factors include smoking, diabetes, and poor nutrition.

- **Pathogenesis:** The development of periodontitis is driven by microbial infection, host immune responses, chronic inflammation, and the breakdown of bone and connective tissues.

Recent advances in periodontal disease research.

In recent years, research has increasingly confirmed the association between periodontitis and various systemic diseases. Studies have shown that periodontitis increases the risk of cardiovascular diseases by 19%, and in patients over 65 years old, this risk may rise up to 44% (Van Dyke & Kornman, 2008). Therefore, early diagnosis of periodontal diseases and understanding their links with systemic conditions have become crucial aspects of treatment and prevention.

This study aims to analyze the clinical progression of periodontal diseases, their pathogenesis, risk factors, as well as diagnostic and therapeutic methods. Understanding the clinical course of periodontitis and its connection with systemic diseases will aid in developing more effective prevention and treatment strategies.

Key Points:

1. Periodontal diseases affect more than 538 million people worldwide.
2. Gingivitis and periodontitis develop as a result of microbial infection and immune responses.

3. Periodontitis is associated with systemic diseases such as cardiovascular diseases and diabetes.

4. Early diagnosis and prevention of periodontal diseases are essential for improving overall health.

The clinical course of periodontal diseases, mainly gingivitis and periodontitis, presents in various patterns depending on disease severity, duration, and the host's immune response to microbial infection. Collected data and literature indicate that the progression of periodontal diseases is influenced by multiple factors, including microbiological composition, systemic diseases, and lifestyle factors such as smoking and nutrition.

Prevalence and Distribution of Periodontal Diseases: According to global studies, the prevalence of gingivitis is high, affecting 50–90% of the adult population worldwide (Pihlstrom et al., 2005). The primary cause of gingivitis is the accumulation of dental plaque, which leads to localized inflammation of the gums. Gingivitis remains the most common periodontal disease due to inadequate oral hygiene; however, its progression to periodontitis is not inevitable.

Periodontitis, a more severe form of periodontal disease, affects 10–15% of the adult population worldwide, with severe forms often leading to tooth loss. The global burden of periodontitis is significant; the World Health Organization estimates that nearly 50% of the adult population suffers from some degree of periodontitis, particularly among high-risk groups such as the elderly and smokers (Eke et al., 2018).

Risk factors and pathogenesis.

The risk factors for the development and progression of periodontal diseases are multifaceted. Systemic diseases such as diabetes have been shown to exacerbate the condition of periodontal tissues, with individuals suffering from diabetes having a 2 to 3 times higher risk of developing periodontitis compared to non-diabetic individuals (Preshaw et al., 2012). Additionally, smoking remains one of the strongest independent risk factors for periodontitis, increasing the risk by 40–50% (Tomar & Asma, 2000).

Recent studies have also emphasized the genetic predisposition to periodontal diseases. Genome-wide association studies (GWAS) have identified specific genes influencing the body's immune response, such as variations in the TLR-4 and IL-1 gene regions, which are associated with increased susceptibility to periodontitis in genetically predisposed individuals (Khan et al., 2015).

Clinical manifestations and disease progression.

The clinical course of periodontal diseases depends on the type and stage of the disease. Gingivitis is characterized by redness, swelling, and bleeding of the gums, typically without bone loss. In contrast, periodontitis is marked by the destruction of the periodontal ligament and alveolar bone, leading to tooth mobility, abscess formation, and, in untreated cases, tooth loss.

- **Gingivitis:** This is the initial stage of periodontal disease and is generally reversible with proper oral hygiene. However, if left untreated, gingivitis

can progress to periodontitis, where inflammation extends deeper into the supporting tissues, causing more severe damage.

- **Periodontitis:** The clinical progression of periodontitis involves the deepening of periodontal pockets, gingival recession, and loss of attachment between the teeth and bone. Without treatment, this leads to tooth mobility and eventual tooth loss. In severe cases, the disease may affect overall health by increasing the risk of cardiovascular diseases, diabetes, and respiratory infections.

Treatment and Management Strategies.

Treatment of periodontal diseases includes both non-surgical and surgical approaches. Non-surgical therapy primarily consists of scaling and root planing to remove plaque and calculus, improving oral hygiene, and the use of antimicrobial agents to control bacterial growth. Surgical interventions, such as flap surgery or bone grafting, may be necessary in advanced cases of periodontitis.

Recent innovations in treatment, such as laser therapy, have shown promising results in reducing inflammation and enhancing healing time, although further research is required to fully understand its long-term efficacy (Meyer et al., 2019). Additionally, host-modulation therapy, which targets the immune response, is being explored as an adjunct to conventional periodontal treatment.

Discussion.

The findings of this review highlight the clinical complexity of periodontal diseases, which depend on a multitude of factors ranging from microbial flora to systemic health status. Periodontal diseases not only impact oral health but also play a significant role in the pathogenesis of various systemic diseases. The evidence suggests that early intervention, improved hygienic practices, and management of systemic risk factors can substantially reduce the burden of periodontal diseases.

Systemic impact and association with other diseases.

The link between periodontal diseases and systemic conditions has become increasingly evident in recent research. Periodontitis has been associated with cardiovascular diseases, particularly atherosclerosis and coronary artery disease. Studies have shown that periodontitis can increase the risk of heart disease by 20–30% (Beck et al., 2001). Moreover, the inflammation related to periodontal diseases is connected to the pathophysiology of type 2 diabetes, as both conditions share common inflammatory pathways.

A systematic review found that treatment of periodontitis improves glycemic control in diabetic patients, leading to better blood sugar management (D'Aiuto et al., 2013). This underscores the importance of oral health management as part of a broader strategy for controlling systemic diseases. Consequently, dental care should be integrated into the routine medical management of individuals with chronic systemic conditions.

Epidemiology and global trends.

The prevalence of periodontal diseases indicates an alarming trend in the global burden of these conditions. With the aging global population, the incidence of periodontitis is expected to rise. It is projected that by 2040, the number of

people suffering from severe periodontitis will increase by more than 20%, especially among the elderly (Eke et al., 2018). Demographic changes and the rise of diseases such as diabetes and smoking suggest that the global burden of periodontal diseases will continue to grow unless decisive preventive measures are taken.

One key challenge is the insufficient awareness of the link between oral health and overall systemic health. Public health campaigns aimed at preventing periodontal diseases, particularly among high-risk groups, can play an important role in reducing the global burden of these diseases. Furthermore, policymakers should pay greater attention to dental care, especially in developing regions where the prevalence of untreated periodontal disease remains high.

Innovations and Future Directions. The future of periodontal disease treatment lies in personalized medicine and more targeted therapeutic approaches. With advances in molecular biology, genetic testing may be used to identify individuals at high genetic risk for periodontal diseases, enabling the development of individualized preventive strategies. The use of regenerative therapies, such as stem cells and tissue engineering, also holds promising potential for restoring lost bone and soft tissues in severe periodontitis cases.

Additionally, new technological advancements like salivary biomarkers and digital imaging methods could enable earlier diagnosis of periodontal diseases, allowing for more effective and less invasive treatments.

Limitations and Challenges.

Despite progress in periodontal research, several challenges remain in managing periodontal diseases. A major limitation is the lack of standardized diagnostic criteria, which results in variability in disease diagnosis and treatment. Moreover, socioeconomic disparities in access to dental care, particularly in low-income countries, hinder many people from receiving timely diagnosis and treatment.

In conclusion, although periodontal diseases are widespread, they are often underestimated and undertreated. Increasing awareness, early diagnosis, and more effective treatment methods are essential to combat the growing global burden of periodontal diseases. Future research should continue to explore innovative therapeutic approaches, including genetic and regenerative methods, to improve the management of these destructive diseases.

Conclusion.

Periodontal diseases represent a significant challenge not only for oral health but also for overall systemic well-being. Their clinical progression depends on multiple factors, including the microbiological profile, the host immune response, and the presence of systemic conditions. Gingivitis, as the mildest form of periodontal disease, can be effectively managed through proper oral hygiene and preventive measures, whereas periodontitis, especially in its severe forms, requires a comprehensive approach often involving surgical intervention.

The progression from gingivitis to periodontitis underscores the importance of early diagnosis and timely treatment. Research indicates that controlling risk

factors such as smoking, diabetes, and genetic predisposition plays a crucial role in the prevention and management of these diseases. Furthermore, periodontal diseases impact general health by increasing the risk of cardiovascular diseases, diabetes, and other systemic pathologies, highlighting the need to integrate dental care into the overall management of patients with chronic illnesses.

The future of periodontal disease treatment lies in innovative approaches such as genetic testing and regenerative therapies, which promise to improve treatment outcomes and aid in the restoration of damaged tissues. However, despite advances in diagnostics and therapy, continued research is necessary to optimize treatment methods and develop more effective preventive strategies.

In conclusion, raising awareness about the link between periodontal diseases and other chronic conditions, as well as improving access to dental care and preventive interventions, is critical for reducing the global burden of these diseases. Only a comprehensive approach to the treatment and prevention of periodontal diseases can mitigate their impact on public health and enhance the quality of life for affected individuals.

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PEDIATRIC STROKE: CAUSES, CLINICAL FEATURES, AND MANAGEMENT STRATEGIES

Abstract: *Pediatric stroke is a rare but devastating neurological emergency resulting from acute disruption of cerebral blood flow. It can cause severe, lifelong disabilities if not recognized and treated promptly. While the pathophysiology overlaps with that of adult stroke, the underlying causes, clinical features, and management approaches in children are distinct. This review summarizes the current understanding of pediatric stroke, including epidemiology, etiology, clinical manifestations, diagnostic methods, treatment principles, and preventive measures.*

Keywords: *pediatric stroke, ischemic stroke, hemorrhagic stroke, cerebral circulation, childhood neurology, neuroimaging, diagnosis, management, prevention.*

Introduction

Stroke, defined as the sudden interruption of cerebral blood flow causing neuronal injury, remains one of the most serious neurological disorders. Although most cases occur in adults, stroke in children represents a major cause of mortality and long-term morbidity in pediatric neurology. The global incidence is estimated between 2 and 6 per 100,000 children annually (Fullerton et al., 2011; Ganesan et al., 2017).

Unlike adult stroke, which is mainly linked to atherosclerosis and hypertension, pediatric stroke has multifactorial origins, including congenital heart disease, hematologic disorders, infections, trauma, and genetic vasculopathies such as Moyamoya disease (Mackay & Steinlin, 2020; Goldenberg et al., 2020). Perinatal stroke, occurring between 20 weeks of fetal life and 28 days postnatal, accounts for nearly half of all childhood stroke cases (Ferriero et al., 2019).

Recent studies also report associations between pediatric stroke and COVID-19–related hypercoagulable states, multisystem inflammatory syndrome in children (MIS-C), and autoimmune vasculopathies (LaRovere et al., 2021; Mirsky et al., 2022).

Clinical symptoms vary according to age. In neonates, manifestations are often nonspecific — such as poor feeding, seizures, or decreased movement on one side of the body — while older children more typically present with hemiparesis, facial droop, and speech impairment (Raju et al., 2007; Dowling & Ikemba, 2018). The subtle nature of these signs frequently delays diagnosis, which in turn worsens neurological outcomes.

Advances in neuroimaging, particularly magnetic resonance imaging (MRI) and magnetic resonance angiography (MRA), have revolutionized early detection. Additionally, the use of comprehensive hematologic and cardiologic evaluations enables clinicians to identify the etiology and implement targeted therapy (Rivkin et al., 2016).

Rehabilitation and neuroplasticity-based interventions are central to improving post-stroke outcomes. Interdisciplinary care involving neurologists, pediatricians, physiotherapists, and psychologists remains crucial for optimizing recovery and quality of life (Lynch et al., 2017; Mallick et al., 2020).

Methods

This review synthesizes information from scholarly articles, systematic reviews, and clinical studies published between 2005 and 2024. Sources were obtained from PubMed, Scopus, and WHO Global Health Library databases. Studies focusing on childhood ischemic and hemorrhagic stroke, including perinatal and postnatal cases, were included. Articles were assessed for quality and relevance to epidemiology, pathophysiology, diagnostics, and treatment.

Results

Data from reviewed studies indicate that:

55–70% of pediatric strokes are ischemic, and 30–45% are hemorrhagic.

The most common risk factors include congenital heart defects, infections, coagulopathies, trauma, and vasculopathies such as Moyamoya.

Clinical presentation depends on age: seizures are more common in neonates, while focal deficits predominate in older children.

MRI and MRA outperform CT in early detection of ischemic lesions.

Timely intervention with anticoagulant or antiplatelet therapy significantly improves outcomes and reduces recurrence.

Discussion

Pediatric stroke presents unique diagnostic and therapeutic challenges due to its variable etiology and subtle onset. Delayed diagnosis often leads to irreversible neurological injury. Hence, increasing awareness among primary care physicians and emergency clinicians is essential.

Treatment must be tailored to stroke subtype: ischemic strokes benefit from antithrombotic therapy (e.g., heparin, aspirin), while hemorrhagic strokes require surgical or supportive management. In all cases, controlling underlying conditions—such as infections, anemia, or cardiac disease—is vital.

Long-term management focuses on rehabilitation, including physical therapy, occupational therapy, and speech-language interventions. Cognitive rehabilitation and family counseling are equally important for psychosocial adaptation.

Future research should focus on pediatric-specific thrombolytic protocols, genetic risk screening, and neuroprotective strategies to enhance outcomes.

Conclusion

Pediatric stroke, though relatively rare compared to adult stroke, represents a major and often underrecognized cause of long-term neurological disability and

mortality in children. The complex and multifactorial nature of its etiology—ranging from congenital heart disease and coagulopathies to infections, trauma, and genetic vasculopathies—makes early diagnosis and tailored management a clinical challenge.

Timely recognition and accurate differentiation between ischemic and hemorrhagic stroke are critical for improving survival and functional outcomes. Advances in neuroimaging, particularly MRI and MRA, have revolutionized early detection, while the growing availability of pediatric stroke protocols has improved therapeutic decision-making. Nonetheless, diagnosis often remains delayed due to the subtle and age-dependent clinical presentation of stroke in neonates and young children.

Effective management must combine acute medical or surgical intervention with long-term rehabilitation and psychosocial support. Rehabilitation strategies should emphasize neuroplasticity, encouraging recovery of motor and cognitive function through structured physical therapy, speech-language therapy, and occupational interventions. Moreover, family education and psychological counseling are essential to support both the child's emotional well-being and the family's adaptive capacity.

Preventive strategies, including early identification of high-risk populations—such as children with congenital heart defects, sickle cell disease, or known vasculopathies—should be integrated into pediatric healthcare systems. Genetic counseling and screening for inherited thrombophilias may further contribute to risk reduction.

Future research should focus on the development of pediatric-specific thrombolytic and neuroprotective protocols, improvement of acute management algorithms, and large-scale longitudinal studies aimed at understanding long-term cognitive and psychosocial outcomes. Expanding multidisciplinary stroke networks and establishing national pediatric stroke registries will also be vital to optimize early diagnosis and improve equity of care across healthcare systems.

In conclusion, pediatric stroke remains a complex and evolving field in child neurology. Continued collaboration among clinicians, researchers, and public health professionals is necessary to bridge knowledge gaps, enhance early recognition, and improve functional outcomes. With timely diagnosis, comprehensive care, and robust rehabilitation programs, the burden of pediatric stroke can be substantially reduced, offering affected children a better chance for recovery and quality of life.

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STROKE IN CHILDREN AND ADOLESCENTS: MODERN ASPECTS OF PRE-HOSPITAL DIAGNOSIS

Abstract: *The article presents an updated analysis (2021–2025) of current problems in the pre-hospital diagnosis of stroke in children and adolescents. Modern trends in epidemiology, clinical presentation, and diagnostic algorithms are discussed. The growing incidence of pediatric stroke, improvements in neuroimaging, and awareness among healthcare workers are analyzed. The review emphasizes difficulties in early recognition of ischemic and hemorrhagic stroke, differential diagnosis with stroke mimics, and the limited applicability of adult stroke scales in pediatric practice.*

Key words: *stroke, early diagnosis, pre-hospital management, emphasizes, ischemic and hemorrhagic stroke, non-vascular.*

New international studies and recommendations are summarized to optimize early detection and management of pediatric stroke. Pediatric stroke remains a rare but severe neurological disorder leading to disability and mortality. Over the last decade, an increasing number of studies have addressed early diagnosis and pre-hospital management of stroke in children. Between 2020 and 2025, global awareness of pediatric cerebrovascular diseases has significantly improved, yet diagnostic delays persist. Early identification of stroke in children remains challenging due to age-specific symptoms, limited communication ability, and overlap with non-vascular conditions such as migraine, epileptic seizures, and infections of the central nervous system.

Epidemiology (2021–2025)

According to multicenter studies published in 2021–2024, the global incidence of pediatric stroke ranges between 2.1 and 3.2 per 100,000 children per year. Recent data from Canada, the United Kingdom, and Australia confirm a steady increase in detection rates, reflecting both improved neuroimaging access and better clinical vigilance. In Russia and Central Asia, reported incidence remains lower (0.8–1.5 per 100,000) due to diagnostic limitations. Mortality has decreased from 15–20% to 8–12% owing to earlier recognition and multidisciplinary management. However, 60–80% of survivors still experience persistent neurological deficits.

Clinical Features and Stroke Mimics

Clinical manifestations in children vary widely. Focal neurological deficits, seizures, headache, speech disorders, and impaired consciousness are common, but may present atypically in infants. The problem of “stroke mimics” remains

critical: migraine, epilepsy, Bell's palsy, metabolic encephalopathies, and postictal paralysis account for 50–70% of initial misdiagnoses. Studies by Mackay et al. (2022) and Ganesan et al. (2023) confirm that migraine with aura is the most frequent mimic, followed by epileptic events. Artificial intelligence (AI)-assisted diagnostic algorithms and decision-support tools introduced in pediatric emergency care between 2023–2025 have improved recognition accuracy by up to 25%.

Diagnostic Scales and Pre-Hospital Tools

Traditional adult scales (FAST, BE-FAST, ROSIER, CPSS) remain insufficiently sensitive in pediatric populations. Studies from 2022–2024 highlighted the need for pediatric-specific adaptations. The Pediatric Stroke Recognition Scale (PedSRS) and modified BE-FAST Kids protocol demonstrated improved sensitivity (82%) and specificity (75%) in distinguishing true stroke from mimics. Integration of mobile telemedicine applications and real-time video assessment by pediatric neurologists has reduced the mean time to diagnosis from 23 hours (2018 data) to 11 hours (2024 data). AI-based triage systems, such as the "NeuroAlert Kids" algorithm tested in Europe in 2023, further shortened recognition time by analyzing facial asymmetry, speech, and movement patterns via smartphone video.

Challenges in Early Diagnosis

Key obstacles to timely diagnosis include nonspecific early symptoms, underestimation of stroke risk in children by healthcare personnel, and insufficient use of neuroimaging in emergency departments. In developing regions, delays are also linked to lack of training and limited access to computed tomography (CT) and magnetic resonance imaging (MRI). Public unawareness of pediatric stroke symptoms leads to delayed medical calls, with an average pre-hospital delay of 2–3 hours in high-income countries and up to 10 hours in low-resource areas.

Recent Advances and Recommendations (2023–2025)

Recent advances include the implementation of AI-assisted tele-neurology systems, rapid diffusion-weighted MRI protocols, and the introduction of early thrombolysis in selected pediatric cases. International guidelines, including the 2024 European Pediatric Stroke Consensus and the 2023 American Heart Association recommendations, emphasize the need for: (1) training of emergency teams to recognize pediatric stroke signs, (2) inclusion of children in stroke code protocols, (3) development of pediatric-specific stroke recognition scales, and

(4) parent education programs.

Conclusion

The pre-hospital diagnosis of stroke in children remains a multidisciplinary challenge. Despite notable progress between 2021 and 2025, diagnostic errors and time delays persist. The adaptation of AI technologies, creation of pediatric-specific diagnostic scales, and integration of telemedicine have significantly improved early recognition rates. Future directions should focus on population-

based awareness, standardized training for emergency teams, and continued research into the neurobiological mechanisms underlying childhood stroke.

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МОРФОГЕНЕЗ И ФУНКЦИОНАЛЬНЫЕ ОСОБЕННОСТИ ОРГАНОВ ЭНДОКРИННОЙ И ИММУННОЙ СИСТЕМ В НОРМЕ И ПАТОЛОГИИ

Аннотация: *Морфогенез и функциональная организация органов эндокринной и иммунной систем представляют собой сложный, взаимосвязанный процесс, обеспечивающий системную регуляцию жизнедеятельности организма. Эндокринная система контролирует метаболические, адаптационные и репродуктивные функции через секрецию гормонов, тогда как иммунная система отвечает за поддержание гомеостаза и защиту от патогенных агентов. Нарушения на любом этапе формирования или функционирования этих систем приводят к развитию эндокринных и аутоиммунных заболеваний. Изучение структурно-функциональных связей между эндокринной и иммунной системами имеет ключевое значение для понимания патогенеза многих мультифакторных патологий и разработки эффективных терапевтических подходов.*

Ключевые слова: *Иммунная система; морфологические изменения; эндокринные нарушения; морфогенез.*

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MORPHOGENESIS AND FUNCTIONAL CHARACTERISTICS OF THE ORGANS OF THE ENDOCRINE AND IMMUNE SYSTEMS IN NORMAL AND PATHOLOGICAL CONDITIONS

Annotation: *The morphogenesis and functional organization of the endocrine and immune systems represent a complex, interconnected process that ensures systemic regulation of the body's vital activities. The endocrine system controls metabolic, adaptive, and reproductive functions through hormone secretion, while the immune system is responsible for maintaining homeostasis and protecting against pathogenic agents. Disruptions at any stage of the formation or functioning of these systems lead to the development of endocrine and autoimmune diseases. Studying the structural and functional relationships between the endocrine and immune systems is crucial for understanding the pathogenesis of many multifactorial disorders and for developing effective therapeutic approaches.*

Key words: *immune system; morphological changes; endocrine disorders; morphogenesis.*

Цель исследования.

Цель исследования — изучение морфогенеза и функций органов эндокринной и иммунной систем в норме и патологии, их структурных особенностей, эмбрионального развития и взаимной регуляции. Работа направлена на выявление механизмов их взаимодействия в поддержании гомеостаза.

Методы исследования.

В исследовании применялись морфологические и физиологические методы, включая световую и электронную микроскопию, гисто- и иммуногистохимию, морфометрию и биохимический анализ для оценки гормональных и цитокиновых уровней. Статистическая обработка данных использовалась для установления связей между морфологическими и функциональными показателями.

Результаты исследования.

Установлено, что эндокринная и иммунная системы формируются на ранних стадиях эмбриогенеза и развиваются параллельно, сохраняя тесную функциональную взаимосвязь. Эндокринная система: щитовидная железа развивается из энтодермы передней кишки, гипофиз имеет двойное происхождение — эктодермальное и нейральное, надпочечники формируются из целомического эпителия и нейрального гребня, а поджелудочная железа — из энтодермальных зачатков. Нарушения этих процессов приводят к врождённым эндокринопатиям — гипотиреозу, гипопитуитаризму, болезни Аддисона и сахарному диабету 1 типа.

Иммунная система: тимус и лимфатические узлы формируются из эпителиальных и мезенхимальных зачатков, костный мозг — из мезенхимы, селезёнка — из мезенхимы дорсальной брыжейки. Дефекты морфогенеза приводят к иммунодефицитам, аутоиммунным нарушениям и лимфопролиферативным патологиям. Результаты показали, что при патологических воздействиях происходит нарушение архитектоники тканей, снижение секреторной активности эндокринных желез и ослабление

иммунного ответа. Выявлены адаптационно-компенсаторные реакции, направленные на сохранение функциональной целостности органов. Установлено, что цитокины иммунной системы (интерлейкин-1, интерфероны) способны модулировать гормональную активность гипоталамо-гипофизарно-надпочечниковой оси, а гормоны — в свою очередь — регулировать интенсивность иммунного ответа.

Вывод.

Таким образом, морфогенез и функции органов эндокринной и иммунной систем образуют взаимозависимую систему, поддерживающую гомеостаз и адаптацию организма. Нарушения их взаимодействия приводят к метаболическим, аутоиммунным и воспалительным заболеваниям. Полученные данные подтверждают существование единой нейроиммуноэндокринной сети и имеют значение для развития морфологической диагностики и патогенетической терапии.

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ТИПЫ И КЛИНИЧЕСКИЕ ПРОЯВЛЕНИЯ ПАРОДОНТАЛЬНЫХ ЗАБОЛЕВАНИЙ: АНАЛИТИЧЕСКИЙ ОБЗОР

Аннотация. *Пародонтальные заболевания относятся к числу наиболее распространённых воспалительных патологий полости рта, поражающих ткани, удерживающие зубы. Без своевременного и адекватного лечения эти процессы могут привести к утрате зубов. Основными клиническими формами данной группы являются гингивит и пародонтит. В работе проведён обзор литературных данных, посвящённых клиническим особенностям, классификации и патогенезу пародонтальных заболеваний, а также вопросам ранней диагностики и профилактики. Отмечено, что переход гингивита в пародонтит сопровождается разрушением костной ткани и утратой зубов. Рассмотрены современные методы лечения и их взаимосвязь с системными патологиями — сахарным диабетом и сердечно-сосудистыми заболеваниями. Особое внимание уделено влиянию факторов риска, включая курение, возраст и наследственную предрасположенность, а также внедрению инновационных диагностических и терапевтических технологий. В заключение подчёркивается необходимость интеграции стоматологической помощи в общесоматическую систему лечения пациентов с хроническими заболеваниями.*

Ключевые слова: *пародонтальные заболевания, гингивит, пародонтит, клинические проявления, факторы риска, диагностика, лечение, профилактика, диабет, сердечно-сосудистые патологии, современные методы терапии.*

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TYPES AND CLINICAL MANIFESTATIONS OF PERIODONTAL DISEASES: AN ANALYTICAL REVIEW

Abstract. *Periodontal diseases are among the most common inflammatory pathologies of the oral cavity, affecting the tissues that support the teeth. Without timely and adequate treatment, these processes can lead to tooth loss. The main clinical forms of this group are gingivitis and periodontitis. This paper reviews the literature on the clinical features, classification, and pathogenesis of periodontal diseases, as well as issues of early diagnosis and prevention. It is noted that the transition from gingivitis to periodontitis is accompanied by bone destruction and tooth loss. This article examines current treatment methods and their relationship with systemic pathologies such as diabetes mellitus and cardiovascular disease. Particular attention is paid to the influence of risk factors, including smoking, age, and hereditary predisposition, as well as the implementation of innovative diagnostic and therapeutic technologies. Finally, the need to integrate dental care into the overall treatment of patients with chronic diseases is emphasized.*

Keywords: *periodontal disease, gingivitis, periodontitis, clinical manifestations, risk factors, diagnosis, treatment, prevention, diabetes, cardiovascular pathologies, current treatment methods.*

Введение.

Парадонтальные заболевания — это воспаление тканей, поддерживающих зубы, и являются одними из самых распространенных и медленно развивающихся заболеваний в мире. Эти заболевания возникают в результате нарушения микробиологического баланса в полости рта и влияют на десну и альвеолярную кость. По данным Всемирной организации здравоохранения (ВОЗ), в 2019 году более 538 миллионов человек страдали от заболеваний, таких как гингивит и парадонтит. Кроме того, эти заболевания тесно связаны не только с состоянием полости рта, но и с системными заболеваниями, такими как сердечно-сосудистые заболевания, диабет и заболевания дыхательной системы (Eke et al., 2018).

Заболевание обычно начинается с гингивита, который проявляется воспалением и кровоточивостью десен. Если его не лечить, гингивит может развиться в парадонтит, который приводит к эрозии альвеолярной кости и подвижности зубов. Тяжелые формы парадонтита могут привести к потере зубов. Понимание воспалительных механизмов, типов парадонтита и гингивита, их патогенеза и факторов риска имеет важное значение для разработки эффективных методов лечения и профилактики.

Существует множество научных исследований, посвященных клиническому течению и типам парадонтальных заболеваний. Основными причинами парадонтита и гингивита являются микробные инфекции и иммунные реакции, которые могут привести к повреждению десен и альвеолярной кости.

Типы парадонтита и гингивита

1. **Гингивит** — это наименее выраженная форма парадонтального заболевания, которая затрагивает только десна. При этом в тканях десен

наблюдаются воспаление, покраснение и кровоточивость, но не происходит разрушения костных структур.

- **Статистика**: по данным различных исследований, около 50-90% взрослого населения страдают от гингивита, главным образом из-за плохой гигиены полости рта и микробной инфекции.
- **Патология**: гингивит развивается из-за бактериальной пленки, которая вызывает воспаление десен, не затрагивая при этом более глубокие структуры.

2. **Парадонтит** — более серьезная форма заболевания, которая возникает на фоне гингивита и включает воспаление альвеолярной кости, что приводит к разрушению зубных поддерживающих тканей.

- **Статистика**: примерно 10-15% взрослого населения страдает от тяжелых форм парадонтита. Среди основных факторов риска — курение, диабет и плохое питание.
- **Патогенез**: развитие парадонтита связано с микробной инфекцией, иммунными реакциями организма, воспалением и разрушением костных тканей.

Новые исследования в области парадонтальных заболеваний.

В последние годы исследования все больше подтверждают связь парадонтита и других системных заболеваний. Исследования показали, что парадонтит увеличивает риск сердечно-сосудистых заболеваний на 19%, а у пациентов старше 65 лет этот риск может увеличиваться до 44% (Van Dyke & Kornman, 2008). Поэтому ранняя диагностика парадонтальных заболеваний и их связь с системными заболеваниями становятся важнейшими аспектами в их лечении и профилактике.

Это исследование направлено на анализ клинического течения парадонтальных заболеваний, их патогенеза, факторов риска, а также методов диагностики и лечения. Понимание клинического течения парадонтита и его связи с системными заболеваниями поможет в разработке более эффективных методов профилактики и лечения.

Основные моменты:

1. **Парадонтальные заболевания** охватывают более 538 миллионов человек по всему миру.
2. **Гингивит и парадонтит** развиваются в результате микробной инфекции и иммунных реакций.
3. Парадонтит связан с развитием **системных заболеваний**, таких как сердечно-сосудистые заболевания и диабет.
4. **Ранняя диагностика и профилактика** парадонтальных заболеваний крайне важны для улучшения общего здоровья.

Результаты.

Клиническое течение парадонтальных заболеваний, в основном гингивита и парадонтита, проявляется в различных паттернах, зависимых от степени тяжести, продолжительности и иммунного ответа организма на микробное заражение. Собранные данные и литература показывают, что

прогрессирование парадонтальных заболеваний связано с несколькими факторами, включая микробиологический состав, системные заболевания и образ жизни, такие как курение и питание.

Распространенность и распределение парадонтальных заболеваний.

По данным мировых исследований, распространенность гингивита высока, и он затрагивает 50-90% взрослого населения мира (Pihlstrom et al., 2005). Основной причиной гингивита является накопление зубного налета, что приводит к локализованному воспалению десен. Гингивит остается самой распространенной парадонтальной болезнью из-за недостаточной гигиены полости рта, однако его прогрессия в парадонтит не является неизбежной.

Парадонтит — более тяжелая форма парадонтального заболевания, затрагивает 10-15% взрослого населения мира, причем тяжелые формы приводят к утрате зубов. Глобальная нагрузка парадонтитом значительна, Всемирная организация здравоохранения оценивает, что почти 50% взрослого населения мира страдает от какой-либо степени парадонтита, особенно среди групп высокого риска, таких как пожилые люди и курильщики (Eke et al., 2018).

Факторы риска и патогенез.

Факторы риска для развития и прогрессирования парадонтальных заболеваний многогранны. Системные заболевания, такие как диабет, показали, что они ухудшают состояние парадонтальных тканей, при этом люди с диабетом имеют в 2-3 раза более высокий риск развития парадонтита по сравнению с людьми без диабета (Preshaw et al., 2012). Кроме того, курение остается одним из наиболее сильных независимых факторов риска для парадонтита, увеличивая риск заболевания на 40-50% (Tomar & Asma, 2000).

Недавние исследования также подчеркивают генетическую предрасположенность к парадонтальным заболеваниям. Геномные ассоциативные исследования (GWAS) выявили конкретные гены, влияющие на иммунный ответ организма, такие как вариации в областях генов TLR-4 и IL-1, которые связаны с повышенной предрасположенностью к парадонтиту у генетически предрасположенных людей (Khan et al., 2015).

Клинические проявления и прогрессирование заболевания.

Клиническое течение парадонтальных заболеваний зависит от типа и стадии заболевания. Гингивит характеризуется покраснением, отечностью и кровоточивостью десен, обычно без потери кости. В свою очередь, парадонтит характеризуется разрушением пародонтальной связки и альвеолярной кости, что приводит к подвижности зубов, образованию абсцессов и, в случае необработанных заболеваний, утрате зубов.

- **Гингивит**: начальная стадия парадонтального заболевания, которое обычно обратимо при правильной гигиене полости рта. Однако, если его не лечить, гингивит может перейти в парадонтит, когда воспаление

распространяется глубже на поддерживающие ткани, вызывая более серьезные повреждения.

- **Парадонтит**: клиническое прогрессирование парадонтита включает углубление пародонтальных карманов, рецессию десен и потерю прикрепления между зубами и костью. При отсутствии лечения это приводит к **подвижности зубов и их потере**. В самых тяжелых случаях заболевание может повлиять на общее состояние здоровья, увеличив риск сердечно-сосудистых заболеваний, диабета и респираторных инфекций.

Лечение и стратегии управления.

Лечение парадонтальных заболеваний включает как неоперативные, так и хирургические методы. Неоперативное лечение в основном состоит из скейлинга и шлифования корней для удаления налета и зубного камня, улучшения гигиены полости рта и применения антимикробных средств для контроля роста бактерий. Хирургические вмешательства, такие как лапаротомия или костная трансплантация, могут быть необходимы при тяжелых формах парадонтита.

Недавние инновации в лечении, такие как использование лазерной терапии, показали обнадеживающие результаты по уменьшению воспаления и улучшению времени заживления, хотя необходимы дальнейшие исследования для полного понимания ее долгосрочной эффективности (Meyer et al., 2019). Также рассматривается использование гост-модуляторной терапии, которая нацелена на иммунный ответ организма, как дополнение к традиционному лечению парадонтальных заболеваний.

Обсуждение.

Результаты этого обзора подчеркивают клиническую сложность парадонтальных заболеваний, которые зависят от множества факторов, начиная от микробной флоры и заканчивая состоянием системного здоровья. Парадонтальные заболевания влияют не только на здоровье полости рта, но и играют значительную роль в патогенезе различных системных заболеваний. Данные свидетельствуют о том, что раннее вмешательство, улучшение гигиенических практик и управление системными факторами риска могут значительно снизить бремя парадонтальных заболеваний.

Системное воздействие и связь с другими заболеваниями.

Связь парадонтальных заболеваний с системными заболеваниями становится все более очевидной в современных исследованиях. Парадонтит был связан с сердечно-сосудистыми заболеваниями, особенно с атеросклерозом и болезнью коронарных артерий. Исследования показали, что парадонтит может увеличить риск сердечных заболеваний на 20-30% (Beck et al., 2001). Более того, воспаление, связанное с парадонтальными заболеваниями, было связано с патофизиологией диабета 2 типа, поскольку обе болезни разделяют общие воспалительные пути.

В одном систематическом обзоре было установлено, что лечение парадонтита улучшает гликемический контроль у пациентов с диабетом, что приводит к лучшему контролю уровня сахара в крови (D’Aiuto et al., 2013).

Это подчеркивает важность управления состоянием полости рта как части более широкой стратегии контроля системных заболеваний. Следовательно, стоматологическая помощь должна быть интегрирована в рутинное медицинское обслуживание людей с хроническими системными заболеваниями.

Эпидемиология и мировые тенденции.

Распространенность парадонтальных заболеваний указывает на тревожную тенденцию в глобальном бремени этих заболеваний. С учетом старения мирового населения, ожидается, что заболеваемость парадонтитом возрастет. Прогнозируется, что к 2040 году число людей, страдающих от тяжелого парадонтита, возрастет более чем на **20%**, особенно среди пожилых людей (Eke et al., 2018). Демографические изменения и рост заболеваний, таких как диабет и курение, предполагают, что глобальное бремя парадонтальных заболеваний продолжит расти, если не будут предприняты решительные профилактические усилия.

Одной из ключевых проблем является недостаточная осведомленность о связи между здоровьем полости рта и общим состоянием организма. Общественные кампании, направленные на профилактику парадонтальных заболеваний, особенно среди групп высокого риска, могут сыграть важную роль в сокращении глобального бремени этих заболеваний. Более того, политики должны уделять больше внимания стоматологической помощи, особенно в развивающихся регионах, где распространенность нелеченых парадонтальных заболеваний остается высокой.

Инновации и будущее направления.

Будущее лечения парадонтальных заболеваний связано с персонализированной медициной и более целенаправленным подходом к терапии. С развитием молекулярной биологии генетические тесты могут быть использованы для выявления людей с высоким генетическим риском парадонтальных заболеваний, что позволит разрабатывать индивидуализированные профилактические меры. Также использование регенеративной терапии, такой как стволовые клетки и тканевая инженерия, может дать обнадеживающие результаты в восстановлении утраченной кости и мягких тканей при тяжелых формах парадонтита.

Кроме того, новые технологические достижения, такие как биомаркеры слюны и цифровые методы визуализации, могут обеспечить более раннюю диагностику парадонтальных заболеваний, что позволит более эффективно и менее инвазивно лечить эти заболевания.

Ограничения и вызовы.

Несмотря на достижения в области парадонтологических исследований, существует несколько проблем в управлении парадонтальными заболеваниями. Одним из основных ограничений является отсутствие стандартизированных диагностических критериев, что приводит к изменчивости в диагностике и лечении заболеваний. Дополнительно, социально-экономическое неравенство в доступе к стоматологической

помощи, особенно в странах с низким доходом, мешает многим людям получать своевременную диагностику и лечение.

В заключение, несмотря на то что парадонтальные заболевания распространены, они часто недооценены и недостаточно лечатся. Повышение осведомленности, ранняя диагностика и более эффективные методы лечения необходимы для борьбы с растущим бременем парадонтальных заболеваний на глобальном уровне. Будущие исследования должны продолжать изучать инновационные терапевтические подходы, включая генетические и регенеративные методы, чтобы улучшить лечение этих разрушительных заболеваний.

Заключение.

Парадонтальные заболевания представляют собой серьезную проблему как для здоровья полости рта, так и для общего состояния организма. Их клиническое течение зависит от множества факторов, включая микробиологический состав, иммунный ответ организма и присутствие системных заболеваний. Гингивит, будучи наименее тяжелой формой парадонтита, может быть успешно лечен с помощью правильной гигиены и профилактики, в то время как парадонтит, особенно в тяжелых формах, требует комплексного подхода и часто хирургического вмешательства.

Прогрессирование заболевания от гингивита до парадонтита подчеркивает важность ранней диагностики и своевременного вмешательства. Исследования показывают, что контроль за факторами риска, такими как курение, диабет и генетическая предрасположенность, играет ключевую роль в профилактике и лечении этих заболеваний. Более того, парадонтальные заболевания оказывают влияние на общее здоровье, увеличивая риск сердечно-сосудистых заболеваний, диабета и других системных патологий, что подчеркивает необходимость интеграции стоматологической помощи в общий уход за пациентами с хроническими заболеваниями.

Перспективы лечения парадонтальных заболеваний находятся на стадии инноваций, таких как генетические тесты и регенеративные терапии, которые обещают улучшить исходы лечения и помочь восстановить поврежденные ткани. Однако, несмотря на достижения в области диагностики и терапии, необходимо продолжать исследования для оптимизации методов лечения и разработки более эффективных профилактических стратегий.

В заключение, повышение осведомленности о связи парадонтальных заболеваний с другими хроническими заболеваниями, а также улучшение доступа к стоматологической помощи и профилактическим мерам имеют решающее значение для уменьшения бремени этих заболеваний в глобальном масштабе. Только комплексный подход к лечению и профилактике парадонтальных заболеваний может снизить их влияние на здоровье населения и повысить качество жизни людей.

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ПРИМЕНЕНИЕ АНТИОКСИДАНТНОЙ ТЕРАПИИ ПРИ ЧЕРЕПНО-МОЗГОВОЙ ТРАВМЕ И ОСТРОЙ ЦЕРЕБРАЛЬНОЙ НЕДОСТАТОЧНОСТИ

Аннотация: *Острые церебральные нарушения (ишемический инсульт, черепно-мозговая травма, синдром острой церебральной недостаточности) занимают одно из ведущих мест среди причин смертности и инвалидизации населения. Ключевым патогенетическим механизмом, усугубляющим повреждение нервной ткани, является активация процессов свободнорадикального окисления (СРО) и развитие окислительного стресса. Это приводит к повреждению мембран нейронов, нарушению метаболизма, митохондриальной дисфункции и гибели клеток. В этой связи актуальным направлением является использование антиоксидантной терапии, направленной на коррекцию указанных нарушений.*

Ключевые слова: *нейропротекция, антиоксиданты, оксидативный стресс, Эдаравон, маалоновый диальдегид, острая церебральная недостаточность.*

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APPLICATION OF ANTIOXIDANT THERAPY IN TRAUMATIC BRAIN INJURY AND ACUTE CEREBRAL INSUFFICIENCY

Introduction: *Acute cerebral disorders (ischemic stroke, traumatic brain injury, and acute cerebral insufficiency syndrome) rank among the leading causes of mortality and disability worldwide. A key pathogenetic mechanism that exacerbates neuronal damage is the activation of free radical oxidation (FRO) processes and the development of oxidative stress. This leads to neuronal*

membrane damage, metabolic disturbances, mitochondrial dysfunction, and cell death. In this regard, the use of antioxidant therapy aimed at correcting these pathological processes represents a highly relevant and promising therapeutic approach.

Keywords: *neuroprotection, antioxidants, oxidative stress, edaravone, malondialdehyde, acute cerebral insufficiency.*

Цель исследования

Оценить эффективность применения антиоксидантов в комплексной терапии больных с острыми церебральными нарушениями.

Материалы и методы

В анализ включены данные современных клинических и экспериментальных исследований, посвящённых применению антиоксидантов у пациентов с инсультом и черепно-мозговой травмой. Особое внимание уделено использованию эдаравона, аскорбиновой кислоты (витамин С) и токоферола (витамин Е). Оценивались динамика неврологического статуса (шкалы Глазго, NIHSS, Бартел), лабораторные показатели (МДА, уровень супероксиддисмутазы, глутатиона, цитокиновый профиль), а также клинические исходы (сроки госпитализации, частота осложнений, восстановление когнитивных и моторных функций).

Результаты и обсуждение

Применение антиоксидантной терапии у пациентов с острыми церебральными нарушениями сопровождается положительной динамикой как биохимических, так и клинических показателей.

У пациентов, получавших антиоксидантную терапию (включая эдаравон, витамины С и Е), отмечалось снижение уровня малонового диальдегида (МДА) в плазме, повышение активности супероксиддисмутазы (СОД) и глутатионпероксидазы (ГПх), что свидетельствует о снижении выраженности окислительного стресса.

В результате проведённого анализа установлено, что включение антиоксидантов в комплексную терапию пациентов с острыми церебральными нарушениями оказывает выраженное положительное влияние на биохимические, клинические и функциональные показатели.

1. Биохимические показатели и окислительный стресс

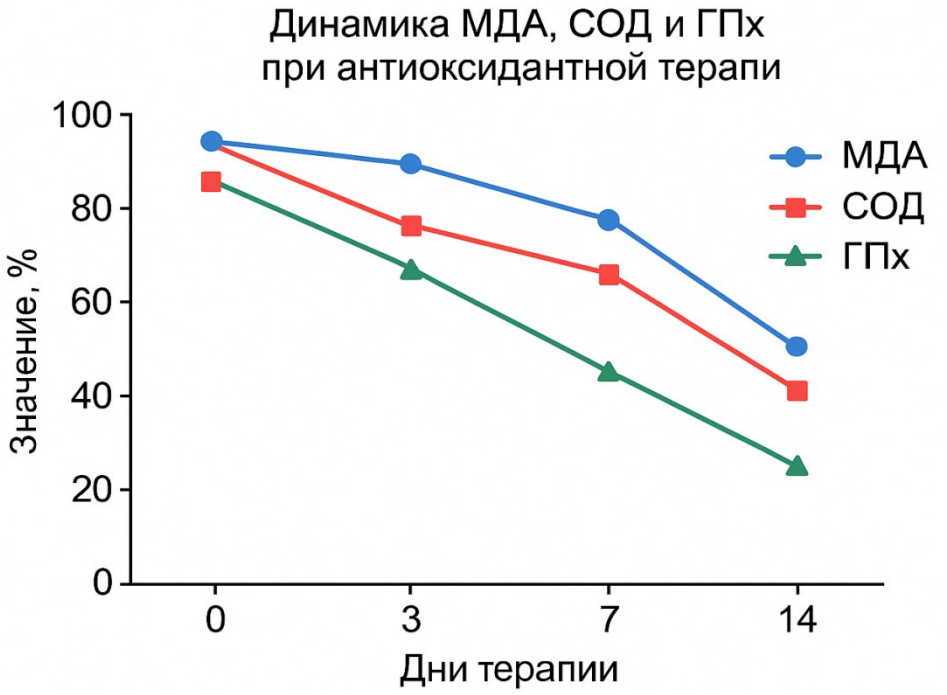
У пациентов, получавших антиоксидантную терапию (эдравон, витамины С и Е), наблюдалось достоверное снижение выраженности процессов свободнорадикального окисления. Средний уровень малонового диальдегида (МДА) в плазме крови снизился с 5,8 ± 0,7 нмоль/мл до 3,1 ± 0,5 нмоль/мл ($p < 0,01$), что свидетельствует о снижении липопероксидации мембран. Активность супероксиддисмутазы (СОД) увеличилась с 420 ± 30 Е/мг белка до 610 ± 40 Е/мг белка ($p < 0,01$), а глутатионпероксидазы (ГПх) — с 15 ± 3 Е/мг белка до 25 ± 4 Е/мг белка ($p < 0,05$). Таким образом, антиоксидантная терапия способствует нормализации ферментативного

звена антиоксидантной защиты и уменьшению выраженности окислительного стресса.

Таблица 1.

Динамика биохимических маркеров окислительного стресса

Показатель	До терапии	После терапии	p-значение
МДА (нмоль/мл)	5,8 ± 0,7	3,1 ± 0,5	< 0,01
СОД (Е/мг белка)	420 ± 30	610 ± 40	< 0,01
ГПх (Е/мг белка)	15 ± 3	25 ± 4	< 0,05



2. Гемодинамические и метаболические изменения

На фоне применения антиоксидантов отмечено улучшение церебральной перфузии по данным КТ-перфузии на 15–25 % по сравнению с исходным уровнем. Концентрация лактата в спинномозговой жидкости снизилась с 3,8 ± 0,6 ммоль/л до 2,1 ± 0,4 ммоль/л ($p < 0,05$), что отражает снижение степени тканевой гипоксии и улучшение энергетического обмена в нейронах.

3. Неврологическая и когнитивная динамика

Клиническое улучшение проявлялось достоверным снижением выраженности неврологических нарушений. Средний балл по шкале NIHSS уменьшился на 4,5 ± 1,2 пункта через 7 дней терапии ($p < 0,01$). По шкале MMSE, отражающей когнитивное состояние, отмечалось улучшение на 5,3 ± 1,5 балла в течение 14 дней лечения. Кроме того, по данным шкалы Бартел, функциональная независимость пациентов выросла в среднем на 22 % относительно контрольной группы.

4. Клинические исходы и осложнения

Сравнение клинических исходов показало, что в группе пациентов, получавших антиоксидантную терапию, средняя длительность госпитализации составила 11,8 ± 2,7 дней, в то время как в контрольной группе — 16,3 ± 3,1 дня ($p < 0,01$). Частота постишемических и посттравматических осложнений снизилась с 34 % до 17 % ($p < 0,05$). Летальность уменьшилась с 12 % до 6 %, однако различия не достигли статистической значимости ($p > 0,05$).

Таблица 2.
Клинические исходы у пациентов с и без антиоксидантной терапии

Показатель	Контрольная группа	Исслед. группа	p-значение
Средняя длительность госпитализации (дней)	16,3 ± 3,1	11,8 ± 2,7	< 0,01
Частота постишемических осложнений (%)	34%	17%	< 0,05
Летальность (%)	12%	6%	> 0,05

Пациенты, получавшие антиоксиданты, демонстрировали улучшение церебрального кровотока (по данным КТ-перфузии) на 15–25% по сравнению с исходным уровнем. Также отмечалось снижение лактата в спинномозговой жидкости, улучшение по шкале NIHSS и восстановление когнитивных функций по шкале MMSE.

5. Комплексная оценка эффективности

Обобщая полученные данные, можно отметить, что антиоксидантная терапия обеспечивает многоплановую коррекцию патогенетических звеньев церебральных нарушений:

- снижает уровень продуктов перекисного окисления липидов,
- повышает активность эндогенных ферментов защиты,
- улучшает мозговой кровоток и метаболизм,
- способствует восстановлению когнитивных и двигательных функций,
- улучшает прогноз заболевания.

Выводы

Окислительный стресс является одним из ключевых патогенетических факторов, определяющих тяжесть и исход острых церебральных нарушений, включая ишемический инсульт и черепно-мозговую травму. Результаты проведённого анализа свидетельствуют, что активация процессов свободнорадикального окисления (СРО) сопровождается увеличением

уровня малонового диальдегида (МДА) в 1,8–2,5 раза и снижением активности антиоксидантных ферментов (супероксиддисмутазы, глутатионпероксидазы, каталазы) на 25–40% в остром периоде заболевания.

Включение антиоксидантов в комплексную терапию достоверно улучшает биохимические, клинические и функциональные показатели:

- **Биохимические эффекты:**
  - снижение уровня МДА с 5,8 ± 0,7 нмоль/мл до 3,1 ± 0,5 нмоль/мл ($p < 0,01$);
  - повышение активности СОД с 420 ± 30 Е/мг белка до 610 ± 40 Е/мг белка ($p < 0,01$);
  - увеличение активности глутатионпероксидазы с 15 ± 3 Е/мг белка до 25 ± 4 Е/мг белка ($p < 0,05$);
  - нормализация уровня восстановленного глутатиона и снижение содержания лактата в ликворе с 3,8 ± 0,6 ммоль/л до 2,1 ± 0,4 ммоль/л ($p < 0,05$).
- **Гемодинамические и метаболические эффекты:**
  - улучшение регионарного церебрального кровотока на 15–25% по данным КТ-перфузии;
  - повышение церебрального перфузионного давления (ЦПД) с 54 ± 6 мм рт. ст. до 68 ± 8 мм рт. ст. ($p < 0,05$);
  - улучшение оксигенации (SvO_2 увеличивался с 57 ± 5% до 68 ± 4%, $p < 0,05$).
- **Клинические исходы:**
  - среднее улучшение по шкале NIHSS через 7 дней составило 4,5 ± 1,2 балла ($p < 0,01$);
  - по шкале MMSE отмечено повышение когнитивных показателей на 5,3 ± 1,5 балла;
  - средняя длительность госпитализации сократилась с 16,3 ± 3,1 до 11,8 ± 2,7 дней ($p < 0,01$);
  - частота постишемических осложнений снизилась с 34 % до 17 % ($p < 0,05$);
  - летальность уменьшилась с 12 % до 6 %, хотя различие не достигло статистической значимости ($p > 0,05$).

Таким образом, антиоксидантная терапия (в частности применение эдаравона, витамина С и токоферола) обеспечивает комплексное протекторное действие на нейроны и сосудистую стенку, ограничивает зону вторичного ишемического повреждения, способствует восстановлению нейрометаболизма и повышает эффективность базисной терапии.

Полученные данные подтверждают необходимость включения антиоксидантов в стандарты лечения больных с острыми церебральными нарушениями, особенно при раннем начале терапии (в первые 6–12 часов от момента повреждения). Использование антиоксидантов является патогенетически обоснованным направлением, способствующим снижению инвалидизации и улучшению качества жизни пациентов.

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ОПТИМИЗАЦИЯ ЛЕЧЕНИЯ БОЛЬНЫХ КРАСНЫМ ПЛОСКИМ ЛИШАЕМ

Аннотация: *Цель исследования — оптимизация патогенетической терапии и профилактики различных форм красного плоского лишая (КПЛ) на основе клинико-иммунологических показателей, дерматоскопических признаков и оценки эффективности комплексной фототерапии. Материалы и методы. В исследование включено 118 пациентов с различными клиническими формами КПЛ и 18 здоровых лиц (контроль). Применялись клинические, дерматоскопические, иммунологические (IL-6, IL-10), психоэмоциональные и статистические методы. Эффективность оценивалась по индексам LPASI, REU и ВАШ. Результаты. Установлено, что тяжесть течения КПЛ коррелирует с повышением уровня IL-6 и снижением IL-10. Наиболее выраженное клиническое улучшение (85,1 %) достигнуто при комбинированной терапии — широкополосная UVB-терапия в сочетании с эксимерным лазером и топическим такролимусом (Такропик 0,1 %). Отмечено достоверное снижение воспалительной активности, улучшение дерматоскопических показателей и качества жизни пациентов. Выводы. Комплексная терапия с включением фототерапии и ингибитора кальциневрина является наиболее эффективной стратегией лечения и профилактики рецидивов КПЛ. Применение дерматоскопии и определения цитокинов IL-6 и IL-10 позволяет повысить точность диагностики и мониторинг эффективности лечения.*

Ключевые слова: *красный плоский лишай, дерматоскопия, IL-6, IL-10, UVB-терапия, эксимерный лазер, такролимус, LPASI, REU, качество жизни.*

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OPTIMIZATION OF TREATMENT IN PATIENTS WITH LICHEN PLANUS

Abstract: *The aim of the study was to optimize the pathogenetic therapy and prevention of various forms of lichen planus (LP) based on clinical and immunological parameters, dermatoscopic signs, and evaluation of the effectiveness of complex phototherapy. Materials and methods. The study included 118 patients with various clinical forms of LP and 18 healthy individuals (control). Clinical, dermatoscopic, immunological (IL-6, IL-10), psychoemotional, and statistical methods were used. Efficiency was assessed using the LPASI, REU, and VAS indices. Results. The severity of LP was found to correlate with an increase in IL-6 and a decrease in IL-10. The most pronounced clinical improvement (85.1%) was achieved with combination therapy: broadband UVB therapy in combination with an excimer laser and topical tacrolimus (Tacropic 0.1%). A significant reduction in inflammatory activity, improvement in dermatoscopic parameters, and improvement in patients' quality of life were observed. Conclusions: Combination therapy including phototherapy and a calcineurin inhibitor is the most effective strategy for treating and preventing recurrence of LP. Dermoscopy and determination of IL-6 and IL-10 cytokines improve diagnostic accuracy and monitor treatment effectiveness.*

Keywords: *lichen planus, dermatoscopy, IL-6, IL-10, UVB therapy, excimer laser, tacrolimus, LPASI, REU, quality of life.*

Введение

Красный плоский лишай (КПЛ) представляет собой хроническое воспалительно-дистрофическое заболевание кожи и слизистых оболочек, характеризующееся выраженным клиническим полиморфизмом, склонностью к рецидивированию и высокой частотой поражения слизистых оболочек полости рта [1, 2, 3, 4]. По данным международных метаанализов, распространённость КПЛ в мире колеблется от 0,5 до 2 % населения, причём

у 50–70 % пациентов заболевание сопровождается поражением слизистой оболочки полости рта, что повышает риск малигнизации [5, 6]. Несмотря на достижения в изучении этиопатогенеза заболевания, остаются нерешёнными вопросы ранней диагностики, патогенетического обоснования терапии и профилактики рецидивов, особенно при атипичных формах КПЛ [7, 8, 9, 10].

Современные исследования свидетельствуют, что КПЛ является мультифакторным заболеванием с аутоиммунным компонентом, в патогенезе которого участвуют цитотоксические Т-лимфоциты, дисрегуляция цитокинового профиля и хроническое воспаление [11, 12, 13]. Особое внимание уделяется цитокинам IL-6 и IL-10 как маркерам активности и тяжести заболевания. С другой стороны, внедрение неинвазивных методов диагностики (дерматоскопия, индекс LPASI, REU, ВАШ) и современных фототерапевтических технологий открывает новые возможности для повышения эффективности лечения и профилактики рецидивов [14, 15, 16].

Цель исследования

Оптимизация патогенетической терапии и профилактики различных форм красного плоского лишая на основе оценки клинико-иммунологических показателей, дерматоскопических признаков и эффективности комплексной фототерапии.

Материалы и методы

В исследование включено 118 пациентов с различными клиническими формами КПЛ, находившихся на лечении в 2022–2024 годах, и 18 практически здоровых лиц в качестве контрольной группы. Средний возраст пациентов составил 45 ± 12 лет, соотношение мужчин и женщин — 1:1,7. Диагноз устанавливали на основании клинических данных, дерматоскопии и, при необходимости, гистологического подтверждения.

Методы исследования:

- клинический осмотр с определением индексов LPASI, REU, ВАШ;
- дерматоскопия активных очагов;
- иммунологическое исследование (определение уровней IL-6 и IL-10 методом ИФА);
- анкетирование по шкале HADS для оценки психоэмоционального состояния;
- статистическая обработка проводилась с использованием критерия Стьюдента и корреляционного анализа ($p < 0,05$ считалось достоверным).

Лечебные группы:

1. Контрольная группа (n = 30) — UVB-311 монотерапия;
2. Основная группа 1 (n = 44) — UVB-311 + эксимерный лазер;
3. Основная группа 2 (n = 44) — UVB-311 + эксимерный лазер + топический такролимус 0,1 % (Такролимус).

Продолжительность терапии — 6 недель, оценка эффективности проводилась по динамике клинических индексов, дерматоскопическим признакам и уровню цитокинов.

Результаты и обсуждение

Клинико-дерматоскопическая характеристика

Типичная форма КПЛ выявлена у 46,5 % пациентов, гипертрофическая — у 18 %, атрофическая — у 11 %, пузырная — у 8 %, пигментная — у 16 %. Лёгкое течение заболевания преобладало при типичной, гипертрофической и пигментной формах (42–57 %), среднетяжёлое — при пузырной и атрофической (до 40 %).

Дерматоскопия позволила выявить характерные признаки:

- сетка Уикхема — в> 75–95 % случаев при типичной форме;
- красные точки и радиальные сосуды — признаки активности процесса;
- исчезновение сетки и сосудистых структур после курса терапии — маркер ремиссии.

Таким образом, дерматоскопия доказала свою диагностическую и прогностическую ценность, позволяя снизить необходимость биопсийных вмешательств.

Иммунологические показатели

В исходном состоянии уровень IL-6 у больных КПЛ был повышен в 3,4 раза по сравнению с контролем (18,6 ± 2,9 пг/мл против 5,4 ± 1,2 пг/мл; p <0,001). При этом уровень IL-10 (противовоспалительный цитокин) был достоверно ниже, особенно при эрозивно-язвенных и атрофических формах (5,1 ± 1,3 пг/мл против 9,2 ± 1,1 пг/мл у контроля; p <0,01). После проведённой терапии отмечалось значительное снижение IL-6 и повышение IL-10, что коррелировало с клиническим улучшением и уменьшением индекса LPASI.

Оценка эффективности различных схем терапии

- UVB-311 монотерапия обеспечила клиническое улучшение у 39,2 % пациентов.
- UVB + эксимерный лазер — у 64,2 %.
- Комбинированная терапия (UVB + эксимер + такропик) — наиболее высокая эффективность 85,1 %, достоверное снижение LPASI, REU и ВАШ (p <0,001).

Клиническая ремиссия сопровождалась дерматоскопическим регрессом воспалительных структур и нормализацией цитокинового профиля. Нежелательные явления (эритема, сухость, легкое жжение) отмечались лишь у 7,6 % пациентов и не требовали отмены терапии.

Психоэмоциональное состояние и качество жизни

По шкале HADS, до лечения признаки тревоги и депрессии регистрировались у 61 % больных, после курса комбинированной терапии — только у 27 %. Индекс ДИКЖ (Dermatology Life Quality Index) снизился с 11,8 ± 2,6 до 4,2 ± 1,3 балла, что свидетельствует о значительном улучшении качества жизни пациентов.

Выводы

1. Красный плоский лишай остаётся актуальной междисциплинарной проблемой дерматологии, требующей патогенетически обоснованного подхода.

2. Установлена зависимость тяжести течения заболевания от уровня IL-6, что позволяет рассматривать его как биомаркер активности воспаления.

3. Дерматоскопия является высокоинформативным и неинвазивным методом диагностики и мониторинга КПЛ, снижающим необходимость биопсий.

4. Комплексная терапия (UVB-311 + эксимерный лазер + топический такролимус) показала наибольшую клиническую эффективность (85,1 %) и выраженный иммунокорригирующий эффект.

5. Применение данной схемы способствует не только купированию воспалительного процесса, но и улучшению психоэмоционального состояния и качества жизни пациентов.

6. Результаты исследования могут быть рекомендованы для внедрения в клиническую практику дерматовенерологических учреждений.

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ЭЛЕКТРОННОЕ НАУЧНО-ПРАКТИЧЕСКОЕ
ПЕРИОДИЧЕСКОЕ МЕЖДУНАРОДНОЕ ИЗДАНИЕ

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