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СОВЕРШЕНСТВОВАНИЕ МЕТОДИКИ ИНДИВИДУАЛИЗАЦИИ ОБРАЗОВАТЕЛЬНОГО ПРОЦЕССА В ВЫСШЕМ ОБРАЗОВАНИИ НА ОСНОВЕ ИСКУССТВЕННОГО ИНТЕЛЛЕКТА

Аннотация. *Быстрое развитие цифровых технологий существенно повлияло на систему высшего образования, обострив потребность в персонализированных подходах к обучению. В статье рассматривается совершенствование методики индивидуализации образовательного процесса в высших учебных заведениях на основе технологий искусственного интеллекта (ИИ). Разработана адаптивная модель обучения на основе анализа индивидуальных особенностей обучающихся, их успеваемости и темпа обучения с помощью аналитики обучения на основе ИИ. Предложенная методика позволяет формировать персонализированные траектории обучения, автоматизированное оценивание и непрерывную обратную связь. Результаты экспериментального исследования показывают, что индивидуализированное обучение на основе ИИ существенно повышает академическую успешность и учебную мотивацию студентов, что подтверждает эффективность и практическую значимость предложенной методики для современного высшего образования.*

Ключевые слова: *искусственный интеллект, индивидуализация обучения, адаптивное обучение, аналитика обучения, высшее образование.*

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IMPROVING THE METHODOLOGY OF INDIVIDUALIZING THE EDUCATIONAL PROCESS IN HIGHER EDUCATION BASED ON ARTIFICIAL INTELLIGENCE

Abstract. *The rapid development of digital technologies has significantly influenced the higher education system, highlighting the need for personalized learning approaches. This article examines the improvement of the methodology for individualizing the educational process in higher education institutions based on artificial intelligence (AI) technologies. An adaptive learning model was developed by analyzing students' individual learning characteristics, academic performance, and learning pace through AI-driven learning analytics. The proposed methodology enables the formation of personalized learning trajectories, automated assessment, and continuous feedback. The results of the experimental study demonstrate that AI-based individualized learning significantly enhances students' academic achievement and learning motivation, confirming the effectiveness and practical relevance of the proposed methodology for modern higher education.*

Keywords: *artificial intelligence, individualized learning, adaptive learning, learning analytics, higher education.*

Introduction

In the context of global digital transformation, higher education institutions face new challenges related to improving the quality and effectiveness of teaching and learning. Traditional teaching models often rely on uniform instructional

approaches that do not sufficiently account for students' diverse learning abilities, cognitive styles, and educational needs. As a result, some students may experience learning difficulties, while others may not fully realize their academic potential.

Artificial intelligence technologies provide new opportunities for addressing these challenges by enabling the analysis of large volumes of educational data and supporting data-driven decision-making in teaching [1–3]. AI-based systems can adapt learning content, instructional strategies, and assessment methods to individual learners [2]. Therefore, improving the methodology of individualizing the educational process through artificial intelligence has become a pressing research issue in higher education pedagogy.

Research Methodology

The study employed a mixed-methods research design, combining theoretical analysis, pedagogical modeling, and experimental methods. The research was conducted in several stages: analysis of theoretical foundations of individualized learning and AI technologies in education; development of an AI-based adaptive learning model; implementation of the model in the educational process; evaluation of learning outcomes using quantitative and qualitative indicators.

Learning analytics tools were used to collect and analyze data on students' academic performance, learning behavior, and engagement levels [3, 4]. Statistical methods were applied to compare the results of control and experimental groups.

Results and Discussion

AI-Based Individualized Learning Model

The proposed model of individualized learning based on artificial intelligence consists of three main stages:

Diagnostic Stage. At this stage, students' initial knowledge level, learning preferences, and cognitive characteristics are assessed using AI-powered

diagnostic tools. The collected data serve as the basis for creating individual learner profiles.

Adaptive Learning Stage. Based on the diagnostic results, AI algorithms generate personalized learning paths by recommending appropriate learning materials, tasks, and activities. The system dynamically adjusts the content and difficulty level according to students' progress and performance.

Experimental Results

The experimental study was conducted with undergraduate students in a higher education institution. The experimental group was taught using the AI-based individualized learning methodology, while the control group followed traditional instructional methods.

The results revealed that students in the experimental group demonstrated higher academic achievement, improved learning motivation, and greater engagement compared to those in the control group. Statistical analysis confirmed the significance of these differences, indicating the effectiveness of the proposed methodology.

The findings align with previous research on adaptive learning systems [1, 2] and highlight the importance of integrating artificial intelligence into pedagogical methodologies rather than using it solely as a technological tool.

Conclusion

This study demonstrates that improving the methodology of individualizing the educational process in higher education based on artificial intelligence contributes significantly to enhancing learning outcomes and student motivation. The proposed AI-based methodology enables personalized learning trajectories, continuous assessment, and data-driven instructional decisions.

The results suggest that higher education institutions should actively integrate artificial intelligence technologies into their teaching practices. Future

research may focus on expanding the model to different academic disciplines and exploring ethical and data privacy issues related to AI in education.

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