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THE ROLE OF ARTIFICIAL INTELLIGENCE IN PERSONALIZING THE EDUCATIONAL PROCESS

Abstract: *this paper explores the integration of artificial intelligence (AI) into modern education as a tool for personalizing learning. Traditional educational models often struggle to accommodate individual student needs, learning paces, and learning styles. AI-driven adaptive learning systems, intelligent tutoring systems, and learning analytics provide opportunities for real-time feedback, customized educational content, and more flexible teaching approaches. The article discusses the main applications of AI in education, examines challenges and ethical considerations, and concludes that responsible implementation of AI technologies can improve student engagement and learning effectiveness.*

Keywords: *artificial intelligence, personalized learning, adaptive systems, educational technology, student engagement.*

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РОЛЬ ИСКУССТВЕННОГО ИНТЕЛЛЕКТА В ПЕРСОНАЛИЗАЦИИ ОБРАЗОВАТЕЛЬНОГО ПРОЦЕССА

***Аннотация:** в статье рассматривается интеграция искусственного интеллекта (ИИ) в современное образование как инструмента персонализации обучения. Традиционные образовательные модели часто с трудом приспосабливаются к индивидуальным потребностям учащихся, темпу и стилю обучения. Управляемые искусственным интеллектом адаптивные системы обучения, интеллектуальные системы репетиторства и аналитика обучения предоставляют возможности для обратной связи в режиме реального времени, индивидуального образовательного контента и более гибких подходов к обучению. В статье рассматриваются основные области применения искусственного интеллекта в образовании, рассматриваются проблемы и этические соображения, а также делается вывод о том, что ответственное внедрение технологий искусственного интеллекта может повысить вовлеченность учащихся и эффективность обучения.*

***Ключевые слова:** искусственный интеллект, персонализированное обучение, адаптивные системы, образовательные технологии, вовлечение студентов.*

Introduction.

The rapid development of digital technologies has transformed many areas of modern society, including education. However, traditional teaching methods often remain focused on uniform instruction for all students, despite differences in abilities, interests, and learning speeds. One of the main challenges in education is creating conditions that support individual learning needs within a single classroom environment.

Artificial intelligence (AI) offers new possibilities for solving this problem through personalized learning. AI-based technologies can analyze student performance, adapt educational materials, and provide individualized support. As a result, students may become more motivated and engaged in the learning process.

This article examines the role of AI in personalizing education and discusses the advantages, challenges, and future potential of AI-powered learning systems.

Main Approaches to AI-Based Personalization.

1. Adaptive Learning Platforms.

Adaptive learning platforms are designed to adjust educational content according to students' progress and individual needs. Systems such as DreamBox, Knewton, and Smart Sparrow analyze student responses in real time and modify the difficulty level, sequence of tasks, and type of instructional materials.

For example, if a student experiences difficulties with a mathematical concept, the platform may provide additional explanations, examples, and simpler exercises before introducing more advanced topics. Such systems allow learners to study at their own pace and reduce the pressure associated with traditional classroom instruction.

2. Intelligent Tutoring Systems (ITS).

Intelligent Tutoring Systems simulate personalized one-on-one tutoring. Programs like Carnegie Learning's MATHia provide step-by-step guidance, detect common mistakes, and offer hints during problem solving.

These systems imitate some functions of human tutors by adapting explanations to students' responses and helping learners better understand complex topics. ITS technologies are especially useful in subjects that require continuous practice, such as mathematics and programming.

3. Learning Analytics and Predictive Modeling.

Learning analytics involves collecting and analyzing educational data from digital learning platforms such as Moodle or Canvas. AI algorithms can identify learning patterns, monitor student progress, and detect potential academic difficulties.

Predictive modeling helps educators recognize students who may need additional support. As a result, teachers can provide more targeted assistance instead of applying the same teaching approach to all learners.

Benefits of AI in Education.

AI technologies offer several important advantages in the educational process.

First, personalized learning allows students to progress according to their own abilities and pace. This can improve understanding of educational materials and increase academic motivation.

Second, AI systems provide immediate feedback, helping students quickly identify and correct mistakes. Fast feedback supports independent learning and encourages active participation in lessons. In addition, AI tools can help teachers save time on routine tasks such as grading and progress tracking. This allows educators to focus more on communication, creativity, and student support.

Many students also appreciate having access to educational materials that correspond to their previous knowledge and individual learning preferences.

Challenges and Ethical Considerations.

Despite its advantages, AI in education faces several important challenges.

Data Privacy.

Educational platforms collect large amounts of student information, including academic performance and behavioral data. Therefore, institutions must ensure that personal data is protected and used responsibly. Privacy and consent remain significant concerns in digital education.

Algorithmic Bias.

AI systems may produce unfair or inaccurate results if they are trained on biased or incomplete data. In some cases, this can reinforce educational inequalities and negatively affect certain groups of students.

Teacher Role.

AI should support teachers rather than replace them. Educators continue to play an essential role in communication, emotional support, motivation, and the development of critical thinking skills.

Infrastructure.

Many educational institutions still lack reliable internet access, modern devices, and sufficient financial resources to fully implement AI technologies in the classroom.

Recommendations.

To maximize the benefits of AI while minimizing possible risks, educational institutions should take several important steps.

1. Develop transparent policies for responsible data collection and privacy protection.
2. Provide teachers with training in AI literacy and digital teaching methods.
3. Introduce AI technologies gradually through pilot programs and testing.
4. Combine AI tools with human interaction, empathy, and professional teacher guidance.

Conclusion.

Modern technologies, especially artificial intelligence, are not a replacement for quality teaching but a valuable supplement to the educational process. AI-based personalized learning helps address individual differences among students, improves engagement, and supports more flexible and effective education.

At the same time, successful implementation of AI requires ethical responsibility, teacher involvement, and adequate technological infrastructure. Future research should focus on the long-term impact of AI in education and the development of fair and secure educational technologies.

For educators and policymakers, integrating AI into education is becoming an increasingly important part of creating modern and.

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