

MODERN METHODS, ADVANTAGES, AND LIMITATIONS OF TEACHING USING ARTIFICIAL INTELLIGENCE

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Abstract

This article analyzes modern methods of teaching based on artificial intelligence, as well as their advantages and existing limitations. It highlights aspects such as personalization of education through AI, increasing motivation, real-time feedback, inclusivity, and overall effectiveness. At the same time, issues related to privacy, algorithmic errors, the reduction of the human factor, technical and economic challenges, and academic integrity are also discussed. The article substantiates the need for a balanced and strategic approach to implementing artificial intelligence in education.

Key words

artificial intelligence, education, personalization, motivation, real-time feedback, inclusive education, algorithmic bias, academic integrity, digital literacy

Annotatsiya

Ushbu maqolada sun'iy intellekt asosida o'qitishning zamonaviy usullari, ularning afzalliklari va mavjud cheklovlari tahlil qilingan. AI yordamida ta'limni shaxsiylashtirish, motivatsiyani oshirish, real vaqt rejimidagi fikr-mulohaza, inklyuzivlik va samaradorlik kabi jihatlar yoritilgan. Shu bilan birga, maxfiylik, algoritmik xatoliklar, insoniy omilning kamayishi, texnik va iqtisodiy muammolar hamda akademik halollik masalalari muhokama qilingan. Maqolada sun'iy intellektni ta'limga joriy etishda muvozanatli va strategik yondashuv zarurligi asoslab berilgan.

Kalit so'zlar

sun'iy intellekt, ta'lim, personalizatsiya, motivatsiya, real vaqt fikr-mulohaza, inklyuziv ta'lim, algoritmik bias, akademik halollik, raqamli savodxonlik

Аннотация

В данной статье рассматриваются современные методы обучения с использованием искусственного интеллекта, их преимущества и ограничения. Освещаются такие аспекты, как персонализация обучения, повышение мотивации, обратная связь в реальном времени, инклюзивность и эффективность образовательного процесса. Также анализируются проблемы конфиденциальности, алгоритмических ошибок, снижения роли человеческого фактора, технические и экономические ограничения, а также вопросы академической честности. Подчеркивается необходимость стратегического и сбалансированного подхода к внедрению ИИ в образование.

Ключевые слова

искусственный интеллект, образование, персонализация, мотивация, обратная связь, инклюзивное обучение, алгоритмическая предвзятость, академическая честность, цифровая грамотность



The integration of artificial intelligence (AI) into education is giving rise to new teaching methods and formats. With the help of these technologies, adaptive learning programs, gamified learning, virtual tutors, and many other innovative approaches are being tested. One of the most significant advantages of organizing the learning process using AI is the possibility of personalization. AI analyzes each student's knowledge level and learning pace to create an individual learning trajectory. As a result, advanced learners do not get bored, while those who lag behind receive additional support—each student can learn at their own pace and style. Personalized learning programs developed through AI have been proven in practice to significantly improve students' knowledge levels. For example, platforms like Duolingo optimize independent learning processes and automatically correct grammatical errors, helping learners improve their outcomes.

Another important aspect of AI-powered educational tools is increasing motivation and engagement. Features such as gamification, level systems, and instant assessment enhance students' interest in learning. Research shows that AI-enhanced educational applications increase learners' motivation and make lessons more engaging. As a result, students tend to practice more and strive to gain more knowledge. Scientific literature also highlights increased motivation, individualized learning materials, and the effectiveness of real-time feedback as key benefits of AI in education. Real-time feedback allows students to immediately understand their mistakes and receive explanations, which helps them avoid repeating errors and leads to deeper learning.

AI technologies also contribute to enhancing creativity and efficiency in the educational process. They assist teachers in creating lesson materials and enrich educational resources. For example, AI tools can generate lesson plans, presentations, or test questions based on simple prompts, saving teachers time by automating technical tasks. Additionally, AI plays a crucial role in inclusive education. Tools such as text-to-speech, speech recognition, and speech-to-text help students with disabilities access educational materials more easily, ensuring equality and inclusivity in education.

AI can also simplify the understanding of complex and abstract concepts. For instance, AI-based image generation tools can create visual models for difficult concepts in physics or biology, helping students better comprehend them. This is especially important for mastering abstract topics such as mathematical graphs or historical events.

Despite these advantages, the implementation of AI in education also raises several concerns and limitations. One of them is privacy and security. AI systems often collect and process students' personal data, raising concerns about data protection and usage. There is also a risk of misinformation and intrusion into personal privacy. Therefore, strong data security policies and clear regulations are necessary.

Another issue is algorithmic bias. AI systems are trained on human-generated data, which may contain biases that affect decision-making. In education, this can lead to unfair outcomes. For example, some AI detectors incorrectly classify texts written by non-native English speakers as AI-generated, potentially harming students' academic reputation. Therefore, caution is required when implementing such tools.

The reduction of human interaction is another limitation. Excessive reliance on AI may weaken the social and emotional aspects of education. Direct communication between teachers and students remains essential. However, AI can also automate administrative tasks, allowing teachers to focus more on students.

There are also economic and technical limitations. Implementing advanced AI systems requires significant financial resources and infrastructure. In developing countries, including Uzbekistan, limited access to technology and high-speed internet can hinder AI adoption.



Academic integrity is another concern. Students may over-rely on AI tools to complete assignments, which negatively affects learning outcomes. While institutions are introducing policies and tools to address this issue, technical solutions alone are insufficient. Promoting ethical use and digital responsibility is essential.

Experts emphasize the need for a well-thought-out strategy when integrating AI into education. UNESCO (2023) has issued global guidelines recommending attention to ethical issues, long-term planning, and maintaining the human element. Currently, only about 10% of educational institutions have formal AI policies. Therefore, it is crucial to develop regulatory frameworks and improve digital literacy among educators and students.

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