

## The role of artificial intelligence in modern education

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**Abstract:** *This article examines the concept of artificial intelligence, its essence, and its role in modern education. The integration of artificial intelligence into the educational process contributes to improving students' learning methods, enhancing the quality of education, and personalizing the teaching process. The article analyzes the advantages of educational platforms based on artificial intelligence, virtual assistants, and automated assessment systems. In addition, attention is paid to certain challenges and limitations that may arise in the use of artificial intelligence in education. The findings indicate that artificial intelligence has become an integral part of modern education and that its future development will further increase the effectiveness of the educational process.*

**Keywords:** *artificial intelligence, modern education, digital technologies, educational process, personalized learning, automated assessment, virtual teacher*

The twenty-first century is marked by a technological revolution in which artificial intelligence (AI) has transformed nearly every aspect of human life. In an era of rapidly advancing technologies, artificial intelligence continues to develop autonomously and dynamically. The education system has not remained untouched by these changes. On the contrary, AI has begun to introduce innovative transformations into modern educational processes, reshaping teaching methods and creating new learning opportunities. Artificial intelligence refers to the ability of computer systems and software to perform functions traditionally associated with human intelligence. In other words, AI enables machines to think, learn, solve problems, and make decisions. The term “artificial intelligence” was first introduced in 1956 at the Dartmouth Conference by the American scientist John McCarthy. Since then, the field has developed significantly, and today AI technologies are widely applied in medicine, finance, transportation, and education. AI systems are capable of rapidly analyzing large volumes of data, drawing conclusions, and providing personalized recommendations to users. AI algorithms rely on big data, employ machine learning techniques, and often produce faster and more accurate results than humans. As a result, education has moved beyond simple digital tools toward more complex, AI-driven approaches that enable personalized learning and increased student engagement. As AI continues to evolve globally, it is increasingly important to educate the younger generation about its nature, functions, and applications. Considering the characteristics of traditional education and the growing demand for individualized learning, artificial intelligence has become a valuable support mechanism. Numerous online platforms, such as Coursera, Udemy, and Khan Academy, use AI to analyze learners' knowledge levels and recommend appropriate courses and exercises. In 2025, Time magazine named AI innovators as its “Person of the Year.” The cover featured prominent technology leaders, including Meta CEO Mark Zuckerberg, NVIDIA CEO Jensen Huang, OpenAI CEO Sam Altman, and xAI founder Elon Musk. According to Time's editorial board, 2025 marked the year in which AI demonstrated its full potential and made its irreversible impact evident. OpenAI reports that its chatbot is used weekly by approximately 700 million users. In Uzbekistan, the Cabinet of Ministers adopted a resolution in July 2025 on the implementation of priority projects in the field of artificial intelligence technologies for 2025-2026. In addition, the state institution “Center for the Development

of Artificial Intelligence and the Digital Economy” was established. In the education sector, the “One Million AI Leaders” initiative was launched. Starting from the next academic year, AI-related topics will be integrated into the Informatics curriculum, and a specialized textbook is being developed in cooperation with the Massachusetts Institute of Technology. At New Uzbekistan University, 100 AI trainers and instructors are expected to be trained this year, with the number increasing to 1,300 next year. These developments demonstrate the rapid advancement of AI at both global and national levels. Significant changes have also occurred in modern education worldwide. Purdue University has made AI competencies mandatory for all undergraduate students, elevating AI knowledge to the level of academic qualification. The United Nations has adopted a resolution promoting the use of AI in education and sustainable development. Through AI technologies, students are now provided with adaptive and personalized learning programs, which enhance the effectiveness of the learning process. Artificial intelligence accelerates the processes of automatic assessment, evaluation, and analysis of students’ assignments. Automated assessment refers to the use of AI and digital technologies to evaluate learners’ knowledge and skills quickly and accurately. This approach reduces teachers’ workload and allows them to devote more time to individualized instruction. Modern AI systems can assess not only test responses but also essays, creative writing, and even oral answers. By tracking students’ learning progress and identifying strengths and weaknesses, AI supports data-driven decision-making by educators. In addition, several AI-powered platforms are designed specifically for language learning. Applications such as Duolingo and Babbel make language learning more engaging and effective through speech recognition, pronunciation assessment, and grammatical error detection. These platforms adapt to learners’ individual styles, automatically adjust difficulty levels, and increase motivation through gamification. Research indicates that regular use of AI-based language learning applications leads to faster results compared to traditional methods. AI technologies also enhance accessibility and effectiveness in education for learners with special needs. Features such as speech-to-text, text-to-speech, and image description assist students with visual or hearing impairments. For learners with dyslexia or other learning difficulties, AI-based tools provide tailored educational materials that meet their specific needs. This represents an important step toward the development of inclusive education. The integration of AI into education has produced several positive outcomes. First, educational effectiveness has increased, as learners can study at their own pace using personalized approaches. Second, teachers’ workloads have been reduced through automated assessment, monitoring, and administrative support, allowing educators to focus more on creative and interactive teaching. Third, educational resources have become accessible to a broader audience. AI-powered online platforms eliminate geographical barriers and provide quality education to learners worldwide. Fourth, the learning process has become more interactive and engaging. Technologies such as virtual reality and gamification enhance student motivation and support deeper knowledge acquisition. Within the framework of the “Digital Uzbekistan - 2030” strategy, the Republic of Uzbekistan is actively implementing modern digital technologies in education, including the effective use of artificial intelligence. However, despite its advantages, the integration of AI in education also presents several challenges. One of the primary concerns is the technological divide. Not all educational institutions and learners have equal access to advanced AI technologies, which may exacerbate digital inequality. Data security and privacy protection are also critical issues. AI systems collect large amounts of personal data about students, and misuse or data breaches could lead to serious consequences. Furthermore, AI-generated “creative” works may hinder the development of students’ genuine creativity. Instead of formulating original ideas and solutions, students may become overly reliant on AI-generated outputs. In Uzbekistan and many other countries, clear legal frameworks and guidelines regulating the use of AI in education are still lacking. It remains unclear

when and how students may use AI tools and under what circumstances such use constitutes academic misconduct. To address these challenges, it is essential to develop clear regulations and systematic guidelines. Artificial intelligence should not be viewed as a replacement for teachers but rather as a tool that enhances their capabilities and improves educational quality. With a balanced and well-considered approach, AI technologies can help nurture a more knowledgeable, skilled, and globally competitive future generation.

In conclusion, artificial intelligence is becoming an integral component of modern education. It personalizes learning, increases efficiency, and creates new opportunities. However, to use this technology effectively, it is necessary to develop technological infrastructure, train educators, ensure data security, and provide equal access for all learners. Ultimately, the goal remains simple: to deliver high-quality, engaging, and effective education to every student. Artificial intelligence serves as a powerful tool in achieving this goal, contributing to a more human-centered and outcome-oriented educational system.

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