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THE ROLE AND PROSPECTS OF ARTIFICIAL INTELLIGENCE IN THE FIELD OF EDUCATION

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Abstracts: This work provides a comprehensive analysis of the role, practical applications and prospects of artificial intelligence (AI) technologies in the modern education system. Today, along with the development of digital learning tools, artificial intelligence is deeply penetrating the field of education. The article examines the possibility of personalized learning using AI, identifying the unique learning style of each student and creating educational programs adapted to it. In addition, automated testing systems, analysis of student achievements and difficulties, virtual teachers and distance learning platforms based on artificial intelligence are considered. It also highlights the possibilities of reducing the burden of teachers, organizing the educational process more effectively, and improving the quality and approaches of education through the use of AI. It is emphasized that in the future, it will be important to constantly update curricula using artificial intelligence, constantly monitor the level of knowledge of students, and develop individual educational directions. At the same time, the ethical and technological issues that may arise when using AI, as well as the risks of diminishing the role of human contact between teacher and student, are also considered.

Key words: artificial intelligence (AI), educational technologies, personalized learning, virtual tutor, automated assessment, distance learning, educational system innovations, student monitoring, AI and educational quality, digital education, perspectives of artificial intelligence in education, ethical issues, technological progress.

Аннотация: В данной работе дается комплексный анализ роли, практического применения и перспектив технологий искусственного интеллекта (ИИ) в современной системе образования. Сегодня, наряду с развитием цифровых средств обучения, искусственный интеллект глубоко проникает в сферу образования. В статье рассматривается возможность персонализированного обучения с использованием ИИ,

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выявления уникального стиля обучения каждого ученика и создания адаптированных под него образовательных программ. Кроме того, рассматриваются автоматизированные системы тестирования, анализа достижений и трудностей учеников, виртуальные учителя и платформы дистанционного обучения на основе искусственного интеллекта. Также освещаются возможности снижения нагрузки на преподавателей, более эффективной организации учебного процесса, повышения качества и подходов образования за счет использования ИИ. Подчеркивается, что в будущем будет важно постоянно обновлять учебные программы с использованием искусственного интеллекта, постоянно контролировать уровень знаний учеников, разрабатывать отдельные образовательные направления. При этом также рассматриваются этические и технологические вопросы, которые могут возникнуть при использовании ИИ, а также риски снижения роли человеческого контакта между учителем и учеником.

Ключевые слова: искусственный интеллект (ИИ), образовательные технологии, персонализированное обучение, виртуальный репетитор, автоматизированная оценка, дистанционное обучение, инновации в системе образования, мониторинг учащихся, ИИ и качество образования, цифровое образование, перспективы искусственного интеллекта в образовании, этические вопросы, технический прогресс.

Artificial intelligence (AI) technologies are currently transforming education around the world. The global integration of AI into education is accelerating, for example, the AI education market, which was valued at $5.18 billion in 2024, is expected to grow to $112.3 billion by 2034. According to UNES, AI has the potential to significantly transform the way most learning experiences are delivered, accelerating access to quality education. These developments have led to a global digital transformation that relies on big data and intelligent systems in education. AI systems have the advantage of processing very large amounts of data and providing continuous, personalized feedback for each student. These platforms automatically identify students' learning gaps and adapt educational materials and exercises to their level. In addition, in practice, many teachers are using AI to automate simple, repetitive tasks such as grading test tasks, monitoring the learning process, and creating practical exercises. This allows teachers to focus more on complex pedagogical tasks and an individual approach to students. In recent years, the issue of integrating artificial intelligence and education has become one of the central focuses of the global scientific community. Experts emphasize the need to use technology in accordance with the principles of inclusion and equality, and to create equal opportunities for all levels of education. Today, research in the field is aimed at improving educational efficiency,

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supporting teachers, and simplifying administrative processes using AI, further increasing the scientific importance of the topic.

Today, artificial intelligence technologies are being actively implemented at almost all stages of the education system. These technologies allow not only to automate the educational process, but also to deeply transform it. The main reason for this is the ability of artificial intelligence systems to analyze large amounts of data in real time, adapt education to the individual needs of students, and provide constant feedback. AI-based platforms, such as adaptive learning systems, automatically offer students appropriate lessons, learning materials, and test tasks by determining their level of knowledge. This approach allows for an individual approach to each student, especially in large classrooms. These systems also identify knowledge gaps that arise in the educational process and develop strategies to eliminate them.

In many countries, artificial intelligence is also widely used to facilitate the work of teachers. For example, AI has been used to create automated assessment systems that quickly and objectively grade tests and written assignments. This allows teachers to spend more time on complex pedagogical tasks, personal development, motivation, and critical thinking skills of students. At the same time, AI is also serving as a tool for teachers to develop lesson plans, training materials, and interactive assignments.

Another important advantage of artificial intelligence technologies is their application in the field of educational management. Through decision-making processes based on digital data, educational institutions are able to analyze the level of success, attendance and development dynamics of students. Based on this data, individual development directions, support strategies and effective forms of educational policy are developed.

At the international level, the issue of introducing artificial intelligence into education is attracting more and more attention. UNESCO, OECD, and other major organizations are developing special strategic documents in this regard. They emphasize, first of all, the need to pay attention to ethical standards, data privacy, inclusion and equal opportunities in the use of technology. This serves to increase the possibilities of AI-based distance learning, especially for students with limited opportunities or regions with poorly developed educational infrastructure.

Research on the use of artificial intelligence in education also requires an interdisciplinary approach. As fields such as psychology, pedagogy, computer science, and data science work together, this direction is leading to complex changes not only technologically,

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but also socially and culturally. As a result, the role of artificial intelligence in education has become a point of intersection of modern science and innovation policy.

Several studies have been conducted around the world on this topic, including:

1. UNESCO (2021, 2023) – UNESCO's report "AI and Education: Guidance for Policy-makers" analyzes global strategies, ethical issues, and opportunities for integrating artificial intelligence into education. The report highlights areas of AI for individualized learning, equity in education, and teacher support.
2. Holon IQ (2024) – The "Global Education AI Market Outlook" analysis published by Holon IQ estimates that the AI education market will be worth $5.18 billion in 2024, and is projected to exceed $112 billion by 2034. This shows that interest in the technology is growing rapidly.
3. OECD (2021) – The analytical document "AI in Education: Challenges and Opportunities" discusses how OECD members are implementing AI technologies, what policy approaches are needed, and the social impact of this process.
4. World Economic Forum (WEF) – "Future of Jobs Report" (2023) highlights the need for new competencies related to artificial intelligence, increasing digital literacy among students, and preparing them for future professions.
5. Stanford University – AI Index Report (2023) – This annual report covers the global development of artificial intelligence, including its impact on education systems, based on digital data.

In conclusion, the latest energy of artificial intelligence technology is an important step towards increasing the load of the educational system, improving the quality and convenience of education. AI serves to automate the physical learning process, but also to adapt it in the analysis mode on an individual basis, to provide real-time and enhanced interactivity. By loading big data (data) that can be learned, machine learning (machine learning), and adaptive systems, students are being identified and adapted lesson materials are being offered to them. AI is strengthening its position as a tool for teachers. They are gaining the opportunity to automate lessons, classes, simplify production processes and constantly monitor students. This is the basis for focusing on complex pedagogical strategies, creative methods and personal creations.

International research and policy documents emphasize the need to take into account not only technological advances, but also ethical, social and cultural aspects when introducing artificial intelligence technologies into education. In particular, issues such as data security, privacy, equal opportunities and inclusion remain relevant. Recommendations from UNESCO,

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OECD and other international organizations consider a responsible and humane approach to the use of artificial intelligence necessary. The digital transformation of the education system in the future is unimaginable without artificial intelligence. Therefore, countries need to develop clear strategies for the implementation of this technology, train teachers in new conditions and regularly analyze the impact of technology through scientific research. Only then can AI technologies serve inclusive, equitable and high-quality development in global education.

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