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**THE ROLE OF ARTIFICIAL INTELLIGENCE IN THE EDUCATION SYSTEM:
OPPORTUNITIES AND RISKS***Jumabayev Abdulhamid To'xtanazarovich**Namangan Regional Pedagogical Skills Center, Teacher of the Department of Methodology of
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Abstract: This article comprehensively analyzes the impact of artificial intelligence (AI) technologies on the modern education system. AI is creating positive opportunities in education, such as personalization, rapid assessment, automation of the pedagogical process, and expanding access to education. At the same time, the article deeply examines the potential risks of AI technologies - including problems with academic integrity, the weakening of the pedagogical role, data security, and negative consequences leading to social inequality. The article puts forward an educational model based on human-AI cooperation as the most optimal approach.

Keywords: artificial intelligence, educational technologies, personalized education, automatic assessment, academic integrity, digital inequality, pedagogical role, information security.

Introduction

The digital revolution that has been taking place in recent years has had a profound impact on all spheres of human activity. In particular, the rapid development of artificial intelligence (AI) technologies and their integration into various systems, including the education sector, is becoming a pressing issue. With the help of AI, it is possible to personalize, automate and analyze educational processes, which has the potential to radically change the traditional education model.

The main purpose of this article is to comprehensively analyze the impact of artificial intelligence on the education system, to highlight its capabilities and possible risks. The modern education system based on digital technologies was chosen as the object of research, and the subject is the role and functions of artificial intelligence technologies in this system.

This article seeks answers to the following main questions:

- How does artificial intelligence change the quality of education?
- What are the risks of this technology?
- Are educational institutions ready for these changes?

By answering the questions posed, we will try to identify ways to increase the effectiveness of integrating artificial intelligence into the education system.

Literature Review

In recent years, the role of artificial intelligence (AI) technologies in education has been increasingly important. The scientific literature has widely highlighted the potential of AI to personalize learning processes, automate assessment, and expand learning opportunities. For example, Luckin et al. (2016) recognize the potential of AI to develop educational content tailored to the needs of students, analyze their real-time activity, and provide recommendations based on an individual approach. This idea is supported by Nguyen, Gardner, and Sheridan (2021) in their research, noting that AI technologies can be an important support tool for teachers.

However, studies by Selwyn (2019) and Holmes et al. (2019) draw attention to the social, ethical, and methodological risks of AI. They believe that AI can limit the pedagogical role of teachers in education, as well as weaken students' independent thinking and sense of responsibility. In particular, issues such as academic integrity, plagiarism, and the fairness of assignments and assessments through AI are becoming more relevant.

International reports published by OECD (2021) and UNESCO (2021) provide an in-depth analysis of the political and legal norms for implementing AI in education systems, as well as the problems of digital inequality. According to their recommendations, active cooperation between governments, technology companies, and educational institutions is necessary to ensure the safe and fair use of AI technologies by educational participants.

Also, the experience of distance education and edtech startups analyzed by Ally and Wark (2020) shows positive results in terms of the impact of AI-based platforms on student motivation, mastery, and assessment systems.

In conclusion, the existing literature provides a balanced assessment of the opportunities and risks of SI in education. Research shows that for the successful implementation of SI, a deep understanding of technological innovations from pedagogical, ethical and legal perspectives is necessary. Therefore, the current article, summarizing this literature, offers a unique holistic (complex) approach.

Research Methodology

Artificial Intelligence and Education: A General Concept. Artificial intelligence (AI) is a technology based on the ability of computer systems and programs to imitate the functions inherent in human intelligence, including logical thinking, learning, problem solving, and decision-making. It relies on machine learning, deep learning, natural language processing, and other advanced algorithms. These technologies work on large amounts of data and are constantly improving.

AI is widely used in education. For example, systems based on a natural language model, such as ChatGPT, help students give real-time advice, answer questions, analyze texts, and develop writing skills. The Coursera platform analyzes users' activities and recommends suitable courses to them based on artificial intelligence. In addition, many innovative products of edtech (education technology) startups, in particular, personalized learning assistants, automated assessment systems and virtual tutors, are also based on SI technologies.

Digital pedagogy is a set of methods for teaching and learning using digital technologies, which is directly related to artificial intelligence. SI is taking digital pedagogy to a new level, providing teachers and students with a more effective and interactive learning experience. This allows for updating educational approaches, adapting to student needs and automating monitoring of educational quality.

The possibilities of artificial intelligence in the education system.

The introduction of artificial intelligence technologies into the education system serves to increase the efficiency of the educational process, form an approach tailored to the individual needs of students, and simplify the work of teachers. With the help of these technologies, it becomes possible to analyze data, make decisions based on the results, and create an automated learning environment. In the following sections, we will consider what real opportunities AI creates in education.

1. Personalized learning process. A personalized learning process is the process of organizing education in accordance with the level of knowledge, learning pace, interests, and needs of each student. Artificial intelligence serves as a powerful tool for effectively organizing this process.

Content recommendation tailored to the needs of students AI algorithms analyze students' learning activities, previous test results, interests, and time spent, and recommend the most suitable educational materials for them. For example, topics that are difficult to learn are identified and simplified explanations, additional exercises or video tutorials are provided. This helps to clearly identify and fill in the student's knowledge gaps.

Adaptive curricula, on the other hand, change based on the student's real-time level of mastery based on AI. While in traditional education, all students are provided with the same curriculum, with the help of AI, each student is offered an individual learning path. This approach increases student motivation and makes the learning process more effective and useful.

In this way, the personalized learning process through artificial intelligence not only activates students, but also develops their ability to learn independently.

2. Rapid assessment and feedback system. Assessment systems based on artificial intelligence allow for quick and effective identification of students' achievements and shortcomings, which is an important aspect of the educational process. While traditional assessment requires a lot of time and human resources, AI automates this process, providing real-time analysis and feedback.

Automated testing technology allows students to quickly and objectively determine their level of knowledge. Artificial intelligence not only evaluates answers to standard test questions (for example, multiple-choice questions), but some advanced systems can also evaluate short or open-ended answers through semantic analysis. This reduces the teacher's workload and provides students with quick results.

Real-time analysis, on the other hand, monitors students' actions in completing tests or assignments, identifying where they made mistakes and what knowledge gaps exist. AI systems

provide immediate personalized feedback based on this analysis: for example, an explanation for a question answered incorrectly, additional exercises, or video recommendations.

This approach not only increases the accuracy of assessment, but also creates an interactive learning environment that allows students to work on themselves. And immediate feedback helps maintain their learning motivation.

3. Tools for teachers. Artificial intelligence has become a powerful tool that effectively supports not only students, but also teachers. Tools created on the basis of AI are of great help in simplifying the daily tasks of teachers, planning, evaluating and analyzing the lesson process.

Assistance in creating lesson plans is one of the most important areas of application of AI technologies. Special programs can automatically develop lesson plans that are adapted to the teacher's subject, topic, and age or level of knowledge. At the same time, based on the topics covered, students' previous results and interests, it recommends individual or group learning strategies. This increases the effectiveness of the lesson and saves the teacher's time.

Through the analysis of control work, AI helps teachers analyze large volumes of assessment results. The system categorizes students' errors, identifies common problem areas, and on this basis offers the teacher additional explanations or exercises on the topic. Some systems, for example, AI-based analytics platforms, can present the dynamics of each student's achievement in the form of graphs or diagrams.

In this way, AI tools automate the analytical and methodological work of teachers, allowing them to focus on more creative and pedagogical activities.

4. Expanding access to education. AI technologies in the field of education are not only increasing the quality and efficiency of education, but also significantly expanding access to education. In particular, AI-based distance learning tools and inclusive technologies are playing an important role in overcoming various barriers.

Distance learning opportunities are becoming more interactive and flexible with the help of AI. Students can use AI-based customized content anywhere and at any time. For example, automated learning platforms (Coursera, Khan Academy, Duolingo, etc.) track students' progress in real time and provide personalized recommendations and resources. This reduces the time and space constraints in education and makes the learning process accessible to everyone.

Creating new opportunities for students with disabilities and those living in remote areas is an important direction of SI technologies that serve social justice. For example, AI-based speech-to-text or text-to-speech technologies serve as important tools for students with hearing and visual impairments. Automatic translation systems, interactive subtitles, and facial expression assistants based on mimicry reduce language and cultural barriers. In remote areas, AI-based educational chatbots or offline learning modules provide continuous access to education.

Thus, through SI tools, education will not only become more flexible and personalized, but will also become more accessible and equitable for more people.

The dangers of artificial intelligence in education

Although artificial intelligence technologies have created great opportunities in the field of education, the dangers and problems arising in this process should not be ignored. The quality of education, fairness, ethical standards, and data security have become issues closely related to AI technologies. The following sections will analyze these negative factors.

1. The problem of academic integrity. The widespread introduction of artificial intelligence is raising urgent problems related to academic integrity. The use of AI tools by students instead of independently completing their assignments leads to the superficial formation of knowledge.

Plagiarism and the completion of assignments using AI is one of the widespread problems in the academic environment. Using language models such as ChatGPT, students can create essays, articles, or laboratory reports in a short time. Although these texts often do not look like plagiarism, they are actually not created independently by the student. This leads to a violation of ethical standards in education and a lack of deep assimilation of knowledge.

The problem of the inability to realistically assess student knowledge is also associated with the excessive use of artificial intelligence. If a student submits assignments entirely to an AI tool, the teacher cannot accurately assess his or her real level of knowledge. As a result, the assessment system loses its objectivity, and this situation negatively affects the students' educational activities at the next stage.

Also, academic institutions have not yet introduced sufficient technical and methodological solutions to these problems. This is leading to an increase in cases of abuse of AI technologies.

2. Weakening of the pedagogical role. While the widespread introduction of artificial intelligence into education, on the one hand, serves to personalize, automate, and simplify the learning process, on the other hand, it can negatively affect the role and authority of the teacher - one of the key figures in the education system. The pedagogical process is not limited to the transfer of knowledge, but also includes multifaceted activities such as personal relationships, motivation, moral education, and social interaction. AI is limited by the fact that it cannot fully cover these complex human interactions.

The impact on the authority of teachers is one of the possible negative consequences of AI technologies. As students increasingly turn to artificial intelligence systems, the role of the teacher as a source of information is weakened. This can negatively affect their professional status in society, social standing, and the level of trust students have in the teacher. When education is based solely on technology, the role of the human factor decreases, and aspects such as personal development, inspiration, and empathy may not be fully formed in students.

Can AI fully master the pedagogical process? - this question still remains open. Although artificial intelligence algorithms have achieved high results in analyzing data, recommending and evaluating content, they cannot perfectly imitate elements such as human reasoning, experience, personal attitude, and pedagogical intuition. Aspects such as "emotional intelligence," understanding the mental state of students, and adapting to uncertain situations in

the classroom, which are important in pedagogical activity, remain beyond the capabilities of AI systems.

Therefore, AI tools can serve to facilitate the work of teachers, but cannot completely replace them. On the contrary, the role of the teacher should be further strengthened through a balanced integration of technologies into pedagogical activity.

3. Privacy and Data Security. With the introduction of artificial intelligence technologies into the education system, personal data about students and teachers is being collected and processed on many digital platforms. This raises the issue of privacy, information security and responsible use of data. The effectiveness of AI-based systems relies on large amounts of data - in particular, on students' academic activities, ratings, behaviors and individual profiles. In such conditions, the risk of misuse or leakage of information increases.

The issue of storing student data in AI systems is complex and multifaceted. Many edtech platforms collect and store their academic activities, test results, behaviors and even emotional responses in order to analyze user profiles and provide personalized services. These processes are sometimes carried out without explicit consent or sufficient explanation to users. As a result, students' privacy and control over their information are limited.

Cyber-threats and uncertain algorithms pose even more complex risks. AI systems, especially platforms operating through cloud services, can be vulnerable to cyberattacks. Also, the decision-making mechanism of some artificial intelligence algorithms is manifested as a "black box", that is, the conclusions they reach are incomprehensible to humans. This can lead to unfair or incorrect decisions in assessments, recommendations and other educational services.

Therefore, transparency, compliance with information security standards and an approach based on ethical norms are necessary when using AI technologies in education. The personal data of each student and teacher should be reliably protected, collected on the basis of their consent, and the user should be provided with full control.

4. The risk of increasing social inequality. While artificial intelligence has created new opportunities in education, the uneven use of these technologies also poses the risk of deepening existing social inequalities. In particular, the digital divide is growing as social groups that do not have access to technological tools, the Internet, or digital literacy are unable to use these technologies.

The negative consequences for groups with limited access to technology are evident in many developing countries and even in some social strata of developed countries. Low-income families, students in remote areas, or people with disabilities often do not have access to modern devices, stable Internet, and quality digital educational resources. As a result, the wide use of AI tools is limited to certain social groups.

This situation contradicts the principle of equality in education and increases social stratification. In an environment of unequal access, advanced learning opportunities offered by AI – such as personalized learning paths, real-time assessment, adaptive learning platforms – become resources that are only accessible to those with technological advantages. On the contrary, disadvantaged groups are excluded from these tools, and the gap in educational

quality increases. Therefore, it is important to develop fair, inclusive and equitable approaches to the use of AI in education. It is necessary to take measures to improve technological infrastructure and provide equal access to digital opportunities for all through cooperation between policymakers, educational institutions and technology companies.

Analysis and Recommendations

The above analysis shows that the introduction of AI into education is a complex process with both positive and negative aspects. These technologies can achieve significant results in terms of improving the quality of education, personalization, rapid assessment, and expanding access. At the same time, risks related to academic integrity, information security, social inequality, and the role of the teacher should not be ignored. The following are recommendations for mitigating these situations and making the most of the opportunities.

Approaches to making the most of the opportunities should primarily focus on the balanced integration of AI technologies into the pedagogical process. AI should be used as an auxiliary tool, not a substitute for the teacher. Although personalized learning, assessment, and recommendations are offered through AI tools, the functions of control and guidance must be performed by human educators.

The need for political and legal norms is one of the necessary conditions for the safe and fair use of artificial intelligence in education. The development of legal mechanisms that ensure privacy, data protection, transparency of AI tools and algorithmic impartiality remains a pressing issue. At the same time, the user's right to control the data collected by AI-based platforms must be guaranteed.

The need to train teachers and students is also one of the main factors. Special advanced training programs, seminars and trainings should be organized to teach educational participants to use AI technologies consciously, responsibly and effectively. Teachers should have the skills to integrate AI tools into their pedagogical strategies, and students should understand the principle that these tools should not be used as a means of acquiring knowledge, but as a way to obtain ready-made answers.

Conclusion

Artificial intelligence technologies create significant opportunities for the modern education system. In particular, it serves to improve the quality and efficiency of education by personalizing the learning process, automating assessment, expanding access to education, and supporting the methodological activities of teachers. At the same time, along with the unlimited possibilities of these technologies, there are also a number of significant risks: problems of academic integrity, weakening of the pedagogical role, information security, and deepening social inequality.

Therefore, a balanced and responsible approach is necessary when integrating AI into the education system. Like any technological innovation, artificial intelligence can only produce positive results if it is coordinated with human control and ethical standards. This requires a holistic approach in political, legal, and methodological terms.

The most effective model in education in the future may be an approach based on the cooperation of human teachers and artificial intelligence technologies. Artificial intelligence should act as an assistant, analyst, and recommender, while the teacher should act as a subject performing the main pedagogical and educational tasks. Only then will technology become a tool for human development.

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