PEDAGOGICAL AND METHODOLOGICAL OPPORTUNITIES OF USING ARTIFICIAL INTELLIGENCE TOOLS IN THE EDUCATIONAL PROCESS

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Annotation. This article analyzes the pedagogical and methodological opportunities of using artificial intelligence tools in the modern educational process. It examines the role of artificial intelligence in improving the quality of education, identifying students' individual learning needs, adapting educational materials, supporting teachers' methodological activities, and monitoring learning outcomes. The article also considers effective methods of using artificial intelligence-based tools in the educational process, including individualized learning, adaptive teaching, automated assessment, creation of interactive tasks, use of virtual assistants, and development of educational content.

Keywords: artificial intelligence, educational technologies, digital education, pedagogical opportunities, methodological opportunities, individualized learning, adaptive learning, virtual assistant.

Аннотация. В статье анализируются педагогические и методические возможности использования средств искусственного интеллекта в современном образовательном процессе. Раскрывается роль искусственного интеллекта в повышении качества образования, выявлении индивидуальных образовательных потребностей учащихся, адаптации учебных материалов, поддержке методической деятельности педагогов, а также мониторинге результатов обучения. Рассматриваются эффективные способы использования инструментов на основе искусственного интеллекта в учебном процессе, включая индивидуализированное обучение, адаптивное обучение, автоматизированное оценивание, создание интерактивных заданий, использование виртуальных помощников и разработку образовательного контента.

Ключевые слова: искусственный интеллект, образовательные технологии, цифровое образование, педагогические возможности, методические возможности, индивидуализированное обучение, адаптивное обучение, виртуальный помощник.

Annotatsiya. Mazkur maqolada zamonaviy ta’lim jarayonida sun’iy intellekt vositalaridan foydalanishning pedagogik va metodik imkoniyatlari tahlil qilinadi. Sun’iy intellektning ta’lim sifatini oshirish, o‘quvchilarning individual ta’lim ehtiyojlarini aniqlash, o‘quv materiallarini moslashtirish, o‘qituvchining metodik faoliyatini qo‘llab-quvvatlash hamda ta’lim natijalarini monitoring qilishdagi o‘rni yoritiladi. Shuningdek, sun’iy intellekt asosidagi vositalardan dars jarayonida foydalanishning samarali usullari, jumladan, individual ta’lim, adaptiv o‘qitish, avtomatlashtirilgan baholash, interaktiv topshiriqlar yaratish, virtual yordamchilardan foydalanish va ta’limiy kontent ishlab chiqish imkoniyatlari ko‘rib chiqiladi.

Kalit so‘zlar. Sun’iy intellekt, ta’lim texnologiyalari, raqamli ta’lim, pedagogik imkoniyatlar, metodik imkoniyatlar, individual ta’lim, adaptiv ta’lim, virtual yordamchi.

Today, the rapid development of digital technologies is having a significant impact on all areas of society, including the education system. In particular, the widespread adoption of artificial intelligence technologies requires a reconsideration of approaches to educational content, teaching methods, forms of interaction with students, and the assessment of learning outcomes. Artificial intelligence provides modern technological opportunities for processing large amounts of data, analyzing texts and images, answering questions, developing individualized recommendations, and creating various educational materials.

In the traditional educational process, teachers work simultaneously with many students who have different levels of knowledge, interests, abilities, and educational needs. Under such circumstances, providing an individual approach to each student, assigning tasks appropriate to their level of knowledge, and regularly monitoring their development can present certain difficulties. Artificial intelligence tools, however, make it possible to individualize the learning process, generate materials and tasks according to students’ needs, and provide additional methodological support to teachers.

At the same time, the use of artificial intelligence in education is not merely a matter of technological capability. Its effectiveness primarily depends on the correct definition of pedagogical objectives, methodologically sound implementation, and teachers' digital competence. If an artificial intelligence tool does not correspond to the objectives and content of a lesson, its use may result not in improved educational quality, but rather in students becoming dependent on ready-made answers. Therefore, when introducing artificial intelligence into education, it is necessary to take into account not only its opportunities but also its limitations and potential pedagogical risks.

Artificial intelligence is a set of technologies that enables computer systems to perform certain processes characteristic of human intellectual activity, such as analyzing information, understanding language, classification, problem-solving, and generating recommendations. In education, artificial intelligence can take various forms, including intelligent tutoring systems, adaptive learning platforms, text-generation systems, automated assessment tools, voice assistants, translation and speech-recognition systems, learning analytics tools, and others. One of the main advantages of artificial intelligence in education is its ability to organize the learning process based on data. Information about the speed at which a student completes tasks, the mistakes they make, the topics they have difficulty understanding, and the types of tasks they master most effectively can be analyzed and used to adapt subsequent learning activities.

However, it is important to view artificial intelligence not simply as a source of information, but as a tool that serves specific pedagogical objectives. Its primary function should not be to provide students with ready-made answers, but rather to support the processes of learning, thinking, inquiry, and problem-solving.

One of the most important pedagogical opportunities provided by artificial intelligence tools is the individualization of education. Since each student has a different level of knowledge and pace of learning, applying the same tasks and teaching methods to all students does not always produce the expected results. Artificial intelligence can analyze a student's performance and recommend simpler or more complex tasks, provide additional explanations, or explain a topic in a different way.

For example, if a student repeatedly makes mistakes when solving equations in mathematics, an artificial intelligence-based system can identify the nature of the mistake and recommend additional exercises related specifically to that topic. At the same time, more advanced students can be offered more complex, analytical, or creative tasks. As a result, the learning process can be better adapted to students' individual abilities.

Another important pedagogical opportunity of artificial intelligence is the provision of immediate feedback. In traditional education, identifying errors in a student's work and providing explanations often requires considerable time from the teacher. Digital tools, however, can rapidly analyze certain types of assignments and provide students with information about their mistakes. This allows students to identify and correct their errors in a timely manner.

Artificial intelligence also expands students' opportunities for independent learning. Outside the classroom, students can ask questions about a particular topic, request alternative explanations of concepts they do not understand, receive practical exercises, or check their knowledge. However, in such situations, students should critically evaluate the information provided by artificial intelligence and, when necessary, verify it using other reliable sources.

Artificial intelligence creates significant methodological opportunities not only for students but also for teachers. Teachers can use it to develop lesson plans, create questions and tasks appropriate to a particular topic, prepare assessment materials, design differentiated assignments for students with different levels of preparation, and simplify or make texts more complex.

For example, a teacher can use artificial intelligence to develop sets of tasks at basic, intermediate, and advanced levels of difficulty for a particular topic. This saves teachers' time and increases their ability to organize lessons according to students' different levels of preparation. Artificial intelligence can also be used to develop problem-based situations, discussion topics, project assignments, and creative questions. For example, in history, it can generate problem-based questions aimed at analyzing the causes and consequences of a historical event; in biology, it can create environmental scenarios; in language and

literature, it can develop questions for text analysis; and in mathematics and physics, it can generate tasks based on practical problems.

However, teachers should not directly incorporate materials generated by artificial intelligence into lessons without reviewing them. They should first evaluate the content for scientific accuracy, age appropriateness, compliance with the curriculum, and alignment with pedagogical objectives. This is important because answers generated by artificial intelligence are not always completely accurate or reliable.

Particular attention should be paid to the issue of academic integrity. Having artificial intelligence complete an assignment in its entirety and submitting it as the student's own independent work contradicts the fundamental objectives of education. Therefore, assignments should be designed in such a way that students can demonstrate their own ideas, analysis, experience, and conclusions.

The protection of personal data is also important. Care should be taken not to enter students' personal, family-related, or other confidential information into unknown artificial intelligence systems. Educational institutions should develop clear internal policies and guidelines regarding the use of artificial intelligence.

Along with its numerous advantages, artificial intelligence also presents certain challenges. One of the main problems is the possibility of presenting incorrect or incomplete information in a convincing manner. Therefore, both teachers and students need to critically verify information and answers generated by artificial intelligence.

The second challenge is the risk of students becoming excessively dependent on technology. If students rely on artificial intelligence even for simple tasks instead of solving them independently, their abilities in independent thinking and problem-solving may not develop sufficiently.

The third challenge is the digital divide. Not all students may have equal access to technological devices, the internet, and modern digital tools. Therefore, when organizing artificial intelligence-based education, it is necessary to consider the creation of equal opportunities for all students.

The fourth challenge is teachers' digital competence. The use of technology without a clear pedagogical purpose does not automatically improve the quality of a lesson. Teachers need to understand the capabilities and limitations of artificial intelligence as well as the methodology for using it effectively in education.

The most appropriate model for using artificial intelligence in education is the integration of human and technological capabilities. Artificial intelligence can assist with data processing, content creation, and providing individualized recommendations, while teachers remain responsible for defining educational objectives, monitoring students' development, organizing the educational and formative process, and making final pedagogical decisions.

Therefore, the use of artificial intelligence in modern education should be aimed not only at developing students' technological literacy but also at fostering critical thinking, information analysis, independent decision-making, creativity, and digital culture. Responsible, purposeful, and methodologically grounded use of artificial intelligence represents one of the important directions of future education and creates significant opportunities for improving the quality and effectiveness of the educational process.

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