

USE OF ARTIFICIAL INTELLIGENCE IN THE EDUCATIONAL PROCESS ВИКОРИСТАННЯ ШТУЧНОГО ІНТЕЛЕКТУ В ОСВІТНЬОМУ ПРОЦЕСІ

The article highlights the peculiarities of using artificial intelligence in the educational process from a practical perspective. It is determined that nowadays the potential of artificial intelligence in the mentioned sphere is demonstrated in the automation of administrative and routine processes, personalisation of learning, globalisation of access to knowledge for those seeking education, intelligent creation and updating of educational content, provision of career guidance services, application of various methods to improve the perception of information, expansion of resources to enhance knowledge, skills, and abilities of academic staff, assistance to the work of a teacher in the classroom, round-the-clock counselling of students using chatbots. The article considers the provisions of the Concept of Artificial Intelligence Development in Ukraine in the areas of higher education, professional development, and retraining. The tasks to be fulfilled by artificial intelligence tools in higher education have been defined. It has been outlined that the introduction of artificial intelligence into the educational process and the digitalisation of society associated with it encourage educators and researchers to learn to present educational materials in a new way. It has been established that artificial intelligence contributes to better performance of students and accelerates their learning pace when combined with high-quality educational materials. Artificial intelligence systems can also help students get back on track faster by alerting teachers to problems in the students' mastery of the material they have assigned. It is determined that artificial intelligence exerts a significant impact on education, in particular on the administration of the educational process. It has been stated that technical progress cannot replace educators, but it can improve their teaching methods, so it is essential to integrate artificial intelligence into the educational process in a way that would complement the work of teachers and improve the learning outcomes of students.

Key words: artificial intelligence, educational process, education, training, student, teacher.

Стаття присвячена висвітленню особливостей використання штучного інтелекту

в освітньому процесі з позиції практичного аспекту. Визначено, що потенціал штучного інтелекту в освітньому процесі сьогодні демонструється в автоматизації адміністративних і рутинних процесів, персоналізації навчання, глобалізації доступу до знань для здобувачів освіти, інтелектуальному створенні та оновленні освітнього контенту, наданні профорієнтаційних послуг, застосуванні різних способів для покращення сприйняття інформації, розширенні ресурсів для покращення знань, вмій та навичок викладачів, асистуванні роботи викладача на занятті, цілодобовому консультуванні здобувачів освіти за допомогою чат-ботів. Розглянуто положення Концепції розвитку штучного інтелекту в Україні у сферах вищої освіти і підготовки кваліфікації та професійної перепідготовки кадрів. Визначено завдання, які передбачають вирішити інструменти штучного інтелекту у вищій освіті. З'ясовано, що впровадження штучного інтелекту в освітній процес і цифровізація суспільства, яка з ним пов'язана, заохочують викладачів, науковців і практиків освіти вчитися подавати освітні матеріали по-новому. Встановлено, що штучний інтелект дає можливість здобувачам освіти вчитися краще та швидше в поєднанні з якісними освітніми матеріалами. Системи штучного інтелекту також можуть допомогти здобувачам освіти швидше повернутися на правильний шлях, попереджаючи викладачів про проблеми в освоєнні заданого ними матеріалу здобувачами освіти. Визначено, що штучний інтелект має великий вплив на освіту, зокрема на адміністрування освітнього процесу. З'ясовано, що штучний інтелект не може замінити викладачів, однак може покращити їхні методи навчання, тому важливо інтегрувати штучний інтелект в освітній процес таким чином, щоб доповнювати роботу викладачів і покращувати результати навчання здобувачів освіти.

Ключові слова: штучний інтелект, освітній процес, освіта, навчання, здобувач освіти, викладач.

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Problem Statement. Nowadays, the introduction of digital technologies (AI) into the curriculum of educational institutions of all levels is being intensified, and the particular relevance of this aspect, in turn, leads to the active development and implementation of artificial intelligence in the educational process. It is worth mentioning that various AI tools are available to participants in the educational process through web browsers on the Internet. Therefore, they can be used not only on personal computers but also on smartphones and tablets. The massive use of artificial intelligence is transforming the process of teaching and learning, especially in higher education. For this area, the approach of artificial intelligence of virtual groups (both for students and for advanced training of specialists in various fields) is valuable.

The topic of artificial intelligence in the educational process is especially relevant for the future transition of the higher education system to a modular credit system of education based on differentiated learning conditions, which, in turn, determines the importance of the subject matter of this research.

Review and Analysis of Recent Research and Publications. Certain aspects of using AI in education have been researched by many domestic and foreign scholars. In particular, a group of scientists led by I. Vizniuk argues that digital technologies are transforming educational models. The use of artificial intelligence in the educational process offers the possibility of adapting and personalising this process. Artificial intelligence tools make it possible to assess the knowledge of students and choose the learning

format which would be appropriate for them and correspond to their needs. However, scientists note that AI appears to be unlikely to replace teachers, as they are informants and mentors, so using the former in order to conduct educational process is not possible without the proper role of teachers, since they play a crucial role in providing the quality of education using artificial intelligence tools [1, p. 21]. M. Mariienko and V. Kovalenko emphasise that in addition to creating a personalised educational environment and providing feedback to students, AI can also be used as a teacher's assistant in the educational process. According to scientists, despite the potential of artificial intelligence in the educational process, there are also concerns about its possible negative impact on the latter. Such potentially negative consequences include the risk of interference in the role of the teacher, the risk of reducing the creativity and critical thinking skills of students, as well as the risk of increasing the gap between students with high and low socio-economic background [2, p. 52]. Foreign scientists L. Chen, P. Chen, and Z. Lin emphasise that AI is widely used in the educational process, in particular in educational institutions of various forms. Artificial intelligence initially took the form of a computer and computer-related technologies, moving from web and online education systems to the use of chatbots for the efficient implementation of the educational process. By using the mentioned platforms, teachers have been able to perform various administrative functions, such as checking and grading students' assignments more efficiently and effectively, and achieve higher quality in their work. On the other hand, as the systems use machine learning and adaptability, with the help of artificial intelligence, the content of educational programmes can be customised and personalised to meet the needs of students, which contributes to more knowledge acquisition [4]. G. Malik, D. Tayal, S. Vij argue that AI supported by standard learning tools can be the basis of all tutoring systems. These systems help in the development of such qualities as self-reflection, answering profound questions, resolving conflicting statements, devising creative questions, and enhancing decision-making skills [6].

Identification of Previously Unresolved Aspects of the Researched Problem. Despite the existence of a significant number of works on the use of artificial intelligence in the educational process, the generalised features of such a process from the point of view of practice have not been considered, so this aspect needs to be developed.

Formulation of the Research Objectives. The purpose of the article is to highlight the peculiarities of using AI in the educational process from a practical perspective.

Research Summary. Artificial intelligence exerts a considerable impact on the current level of tertiary education, as well as the potential to transform the system of higher education, increase institutional

competitiveness and empower participants of the educational process at all levels. The AI has a potential to change the way educators teach and students learn, helping to maximise students' performance and prepare them for the future. AI tools can be time-saving for teachers, for instance while grading reports, which, in turn, can help them allocate more time and pay more attention to students' problems and queries.

The use of artificial intelligence in the educational process does not devalue the work of teachers itself, but rather takes it to a new level. The potential of AI in the educational process today can be demonstrated as follows [3]:

1. Automation of administrative and routine processes frees teachers from performing routine tasks, including grading exams, checking homework, completing necessary documents, preparing progress reports, and organising resources, developing and updating teaching materials.

2. Personalisation of learning, modification of educational programmes for students in accordance with their cognitive needs and functions (for instance, the need for revision), for the convenience of knowledge acquisition and adaptability of the educational process.

3. Globalisation of access to knowledge for students who want to study subjects that cannot be taught in educational institutions or due to the disability or illness of a student.

4. Intelligent content creation and updating, digital textbooks based on intelligent analysis of educational data, diagnostics of learning difficulties.

5. Provision of career guidance services.

6. The use of different methods for better perception of information: simulation, visualisation, and creation of web-based learning environments (virtual reality) will enable students to deepen their knowledge and enhance their skills in a more effective way.

7. Expanding resources to boost the knowledge, skills, and abilities of educators and provide them with comprehensive information.

8. Assisting the teacher's work in the classroom to identify gaps in the students' knowledge of particular issues.

9. Round-the-clock counselling of students using chatbots [5].

According to the Concept for the Development of Artificial Intelligence in Ukraine, the main task of using artificial intelligence in the educational process is to ensure that this process is implemented by qualified personnel. Labour market requirements indicate that the modern education system should train more competent specialists in the field of artificial intelligence. In order to achieve the goals of the concept in the field of education, it is necessary to ensure the fulfilment of the following tasks:

1. In the field of higher education:

- creating special educational programmes on artificial intelligence in the field of IT, inclusion of AI aspects in other educational programmes in various

specialities, the creation of interdisciplinary master's and doctoral programmes;

- involving the IT industry and other industries in the development of qualification requirements for AI specialists, development and implementation of training programmes and certification of students;
- including key online courses on artificial intelligence in educational programmes;
- organising and conducting internships for IT teachers in IT companies, IT departments of enterprises and institutions, and in public organisations that develop and apply AI technologies;
- developing international cooperation and double and joint degree programmes in the field of AI, including those implemented with foreign partners.

2. In the area of professional development and retraining:

- developing programmes for professional development and adult education in the field of AI, and providing scholarships for students of these programmes, including specialised programmes for certain groups of people, including people with special educational needs and internally displaced persons;
- ensuring social protection for specialists trained in artificial intelligence;
- developing and implementing a national information campaign on general aspects, risks, and threats of the use and further spread of AI technologies in Ukraine [3].

Nowadays, AI tools such as chatbots, plagiarism detection software, and spell and grammar checkers are combined with new, more powerful, and controversial applications that address academic questions, grade assignments, recommend classes, and even teach.

For example, in higher education, artificial intelligence tools are used to perform the following tasks [7]: detecting plagiarism; ensuring the integrity of exams; chatbots for registration; learning management systems; lecture transcripts; improving online discussion boards; analysing student performance; academic research; and connecting campuses.

The introduction of artificial intelligence into the educational process and the digitalisation of society that goes with it encourage educators and researchers to learn how to present educational materials in a new way. Which means that they are to master the latest advances in science and technology introduced into the educational process. In this regard, clubs, various courses, and webinars have become popular on social media, both at the level of government agencies and NGOs, informing those wishing to take certain assessments that determine the level of their knowledge of using artificial intelligence tools in the educational process.

It is worth mentioning that one of the significant advantages of using AI in the educational process is its ability to personalise learning. With the help of artificial intelligence, teachers can analyse data on students' performance, identify their strengths and weaknesses, and offer them individualized learning

paths. This approach ensures that students receive the knowledge they need at the right time, leading to better learning outcomes.

Artificial intelligence combined with high-quality educational materials enhances students' academic performance and helps teachers keep track of the problems that students face. Similarly, AI provides learners with an enhanced learning experience, as it allows teaching staff to customise and personalise educational materials according to the needs and capabilities of their students. In general, AI has a major impact on education, including the administration of the educational process.

Conclusions. Based on the research results, it has been determined that AI plays a significant role in the organisation of the educational process. Teachers who use artificial intelligence tools in the educational process can explain educational materials to students better, which, in turn, leads to a more intensive learning process. It is important to note that AI cannot replace teachers, but it can improve their teaching methods and facilitate their routine. Therefore, it is important to integrate artificial intelligence into the educational process in a way that complements the work of educators and improves the learning outcomes of students. Knowledge of how artificial intelligence tools work allows to systematically analyse works, creatively apply modern scientific achievements, and have basic skills in practical work in the environment of AI systems development.

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