http://www.moderntechno.de/index.php/meit/article/view/meit36-00-042
DOI: 10.30890/2567-5273.2024-36-00-042

UDC 37.091.3:004.8

OPPORTUNITIES OF ARTIFICIAL INTELLIGENCE TECHNOLOGIES IN DEVELOPING COMMUNICATION COMPETENCIES IN THE EDUCATIONAL PROCESS

Bubnov Igor,
c.hist.s., as.prof.
ORCID: 0000-0001-5155-0780
Odesa I.I.Mechnikov National University,
Odesa, Frantsuz'kyy b-r 24/26, 65000

Abstract. *This article explores the impact of artificial intelligence (AI) technologies on the development of communication competencies in the field of education. The study emphasizes the growing role of AI-based tools in shaping educational practices, highlighting their applications for personalized learning, intelligent support, and adaptive management. Core components of ICT competencies—such as vision, culture, knowledge, practice, development, and citizenship—are discussed in detail, along with examples of how AI fosters their formation. The paper also examines ethical and practical challenges, including data privacy, over-reliance on technology, and the absence of emotional intelligence in AI systems. Ultimately, the research underscores AI's potential to enhance digital skills and professional growth among educators and learners while advocating for its responsible and ethical integration into the educational process*

Key words: *artificial Intelligence (AI); AI-based tools (AIEd); educational environment; information and communication competencies; personalized approach; intercultural communication; simulated communication scenarios; role-playing games; public speaking skills; emotional intelligence.*

Introduction.

The widespread adoption of artificial intelligence (AI) technologies has become an integral feature of modern society. Naturally, this process has also affected the field of education, where not only has significant experience been accumulated in using AI-based tools (AIEd), but also a number of complex problems have emerged that require immediate solutions. Continuous monitoring of the emergence of new AI products is important not only for implementing relevant innovations in the educational environment but also for anticipating and managing the possible consequences of these processes.

Problem statement.

Various aspects of artificial intelligence (AIEd) have been the subject of scientific research for nearly thirty years. According to international scientometric databases (including WOS), 20,380 sources (including 18 monographs and 12,276 articles) on the subject of AI were documented between 2015 and 2020 alone [1]. The volume and pace of new publications on this topic have grown significantly in recent years. A substantial portion of these works focuses on the features of AI use in education.

Initially, researchers focused on general educational issues: defining the role and significance of AIEd technologies in education; explaining the functionality of AI products for organizing and managing the learning process; and analyzing the advantages and risks of integrating AI technologies into the educational environment.

Over time, numerous specialized scientific publications have emerged, highlighting issues such as: the use of AI for the development of formal education and lifelong learning; the interdisciplinary context of AI in the sciences of learning (education, psychology, linguistics, sociology, and anthropology); the development and implementation of adaptive learning environments and various flexible, personalized, inclusive, and effective AIEd tools [2, p.23].

One of the issues requiring attention is the influence of AI technologies on the development of information and communication competencies among all participants in the educational process. This problem is relevant both in the context of forming relevant soft skills for students and in terms of the professional growth of educators, enabling them to master innovative tools and methods for effective communication in organizing the learning process.

In researching the application of AIEd in education, most scholars typically identify five key types:

1. Creating an intelligent educational environment adapted to the needs and abilities of students;
2. Intelligent support for the learning process to provide individual assistance and feedback;
3. Intelligent assessment of educational achievements, including the evaluation of learners' knowledge and skills and providing recommendations for further learning;
4. Intelligent support for educators in planning lessons, assessing student performance, and managing teams;
5. Intelligent educational management through recommendations for course and program selection, among other services [3].

Given these properties of AI technologies, their importance in forming and developing information and communication competencies among educational participants is difficult to overestimate.

AI-based digital tools can influence nearly all components of ICT competence, which were outlined in 2008 by the International Society for Technology in Education (ISTE) in the National Educational Technology Standards for Teachers (NETS-T) [4]. These components include:

- **ICT Vision:** Understanding the significance of AI in accessing vast amounts of information and resources to enhance learning;
- **ICT Culture:** A worldview that appreciates the role of AI technologies in developing communication opportunities in an information society;
- **ICT Knowledge:** A set of knowledge about the possibilities and functionality of various AI tools for improving the learning process;
- **ICT Practice:** Practical application of knowledge and skills in AI for achieving educational goals and solving tasks;
- **ICT Development:** The ability to improve and create interactive tools for learning basics of programming, robotics, data management, internet safety, etc.;
- **ICT Citizenship:** The willingness to demonstrate ethical behavior when using AI for responsible social interaction.

Only some examples can be highlighted of how the application of digital AI tools contributes to the formation of defined competencies. Specifically, AI technologies, by providing participants in the educational process with broad access to various sources of information, significantly expand the range of their communicative skills and abilities. In particular, thanks to the adaptation of informational content to the level of knowledge of the students, programs based on machine learning can analyze personal language patterns of students, identify their weaknesses, and offer individual recommendations for improvement. This personalized approach allows for the consideration of the unique features of each student not only in the provision of knowledge but also in the construction of a more effective communication model.

AI technologies also contribute to the development of intercultural communication. In particular, translation and communication technologies based on relevant AI tools help overcome language barriers in the interaction of representatives of different countries and cultures. Automated translators and simultaneous translation systems also allow for the rapid exchange of thoughts and ideas, which promotes a deeper understanding of cultural differences and improves interaction skills.

The use of artificial intelligence in educational institutions allows for the creation of simulations of real communication situations. Interaction with virtual characters in role-playing games gives participants in the educational process the opportunity to simulate the behavior of real people in various situations. This, in particular, helps not only develop public speaking skills but also allows for safe experimentation with different communication styles, modeling negotiation options, concluding agreements, and so on.

At the same time, the world experience of practices using artificial intelligence in education reveals a number of problems and challenges that have an impact on the formation of ICT competencies of participants in the educational process. In particular, these include: a high dependence on technological processes for the functioning of such systems, which can lead to the loss of key human skills and abilities; lack of emotional intelligence in such systems, that is, limitations in understanding and responding to human emotions, which is especially important in the psychological sphere of communication, where emotional context plays a significant role; lack of communication, because intelligent systems may have limited capabilities to understand an individual's words, especially in situations where nuanced psychological aspects are important; lack of human ethical understanding, meaning that artificial intelligence cannot always consider ethical aspects and the importance of moral issues in education and communication; lack of intuition in AI systems, which can lead to limitations in the ability to respond spontaneously and consider intuitive aspects in education and communication, and so on.

At the same time, global practices in using AI in education reveal challenges that also affect the formation of ICT competence [5, p.841]. These include:

- Over-reliance on technological processes, potentially leading to a loss of essential human skills;
- The lack of emotional intelligence in AI systems, limiting their ability to

understand and respond to emotions, which is crucial in psychological aspects of communication;
- Communication limitations due to AI's inability to grasp nuanced psychological aspects in verbal exchanges;
- Ethical concerns, as AI systems may lack the capacity to address moral and ethical dimensions in learning and communication;
- The absence of intuition, restricting AI's ability to react spontaneously or incorporate intuitive aspects into learning and communication [6, p.288].

Thus, AI technologies serve as a powerful tool for improving the information and communication competencies of participants in the educational process, promoting the development of new skills and abilities that are critically important in today's digital world. At the same time, AI should not be seen only as a tool that facilitates the teaching/learning of educational material and the perception of information by the participants in the educational process, but also as a means of developing professional competence and personal self-improvement

Conclusions.

AI technologies are transforming education by enhancing personalized learning, fostering communication skills, and providing adaptive learning environments. They have become essential for equipping students and educators with the competencies required in the digital age. The use of AI fosters all components of ICT competence, including vision, culture, knowledge, practice, development, and citizenship. These competencies are critical for effective participation in the modern educational process. Despite their potential, AI systems face limitations such as the absence of emotional intelligence, ethical concerns, and the risks of over-reliance on technology. Addressing these challenges requires critical awareness and balanced integration of AI tools. The integration of AI into education should focus not only on improving efficiency and accessibility but also on fostering lifelong learning and professional growth.

References

1. Технології штучного інтелекту в наукометричних базах даних. URL: https://nim.media/articles/tekhnologiyi-shtuchnogo-intelektu-v-naukometrichnikh-bazakh-danikh

2. Rose Luckin, Wayne Holmes. Intelligence Unleashed An argument for AI in Education UCL Knowledge Lab, University College London. 2016. 58 p.

3. Lai T., Zeng X., Xu B. et al. The application of artificial intelligence technolo in education influences Chinese adolescent's emotional perception. Current Psycholo 2023. URL: https://doi.org/10.1007/s12144-023-04727-6

4. NETS for teachers 2008. *Internal Society for Technology in Education's*

5. *National Educational Technology Standards for Teachers 2008.* URL: https://people.umass.edu/pelliott/reflections/netst.html

6. Толочко С.В., Годунова А.В. Теоретико-методологічний аналіз закордонних практик використання штучного інтелекту в освіті й науці. *Вісник науки та освіти.* 2023. №7(13). С. 832-848.

7. Бубнов І.В. Можливості та ризики використання штучного інтелекту в

освітній сфері сучасної України. *The latest information and communication technologies in education.* Abstracts of XI International Scientific and Practical Conference Florence, Italy, November 27-29, 2023**.** 285-290 pp. URL: https://eu-conf.com/ua/events/the-latest-information-and-communication-technologies-in-education