THE ROLE OF ARTIFICIAL INTELLIGENCE IN MODERN EDUCATION

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Abstract. *This thesis examines the role of artificial intelligence in modern education and its influence on teaching, learning, assessment, and academic support processes. The study focuses on the main opportunities provided by AI-based technologies, including personalized learning, automated feedback, adaptive learning systems, intelligent tutoring, content generation, and data-driven educational decision-making. Particular attention is given to the potential of artificial intelligence to improve access to learning resources, support students with different educational needs, and reduce routine workload for teachers. At the same time, the thesis considers major challenges associated with the use of AI in education, such as academic integrity, data privacy, algorithmic bias, overdependence on automated tools, and the need for digital and AI literacy. The analysis emphasizes that artificial intelligence should be integrated into education as a supportive pedagogical tool rather than as a replacement for teachers. It is concluded that the effective use of AI requires clear pedagogical objectives, responsible implementation, teacher supervision, and the development of students’ critical thinking and independent learning skills.*

Keywords: *artificial intelligence, modern education, personalized learning, adaptive learning, automated feedback, digital technologies, academic integrity, AI literacy, teaching and learning.*

Introduction

Artificial intelligence has become one of the most influential technologies shaping contemporary education. Its rapid development has changed how educational content is created, delivered, assessed, and personalized. AI-based tools are increasingly used in schools, universities, online learning platforms, and professional training environments to support both teachers and students.

One of the main advantages of artificial intelligence in education is its ability to personalize the learning process. Traditional teaching often applies the same instructional approach to all learners, while AI systems can analyze students’

performance, learning pace, strengths, and difficulties. Based on this information, adaptive learning platforms can recommend suitable tasks, provide additional explanations, and adjust the level of complexity according to individual needs.

Artificial intelligence also provides new opportunities for teachers. Automated assessment tools can assist in checking assignments, analyzing learning outcomes, and identifying common difficulties among students. Generative AI systems can help teachers prepare lesson materials, examples, questions, and supplementary resources. This can reduce routine workload and allow educators to devote more attention to teaching, mentoring, and communication with learners.

At the same time, the use of AI in education raises a number of important challenges. Students may become overly dependent on automated systems, especially when AI-generated content is used without critical evaluation. Issues of academic integrity, plagiarism, data privacy, misinformation, and algorithmic bias also require careful consideration. Therefore, the use of artificial intelligence should be accompanied by clear ethical standards and responsible pedagogical practices.

The relevance of this topic is determined by the growing need to understand how artificial intelligence can be integrated into education without reducing the role of human interaction, independent thinking, and teacher guidance.

The purpose of this thesis is to examine the main roles of artificial intelligence in modern education, identify its pedagogical opportunities and limitations, and determine the conditions necessary for its effective and responsible use.

Main Part

Artificial intelligence is transforming education by introducing tools that support personalization, automation, interaction, and data-based decision-making. Its role is particularly visible in areas where educational institutions need to respond to differences in students’ learning pace, academic needs, and levels of preparedness.

One of the most important applications of AI is personalized learning. AI-based platforms can analyze students’ responses, learning progress, and recurring difficulties, and then recommend suitable materials or tasks. This makes it possible to create a more flexible learning environment in which students receive support according to their individual needs rather than following a completely uniform learning pathway.

Another significant area is automated feedback and assessment. Artificial intelligence can assist in checking quizzes, identifying common errors, and providing immediate feedback. In some cases, AI systems can also support formative assessment by helping learners understand their weaknesses before final evaluation. However, such

systems should be used carefully, especially when tasks require creativity, interpretation, argumentation, or subjective judgment.

Generative artificial intelligence has also expanded the possibilities for creating educational content. Teachers can use AI to generate examples, discussion questions, lesson plans, summaries, practice exercises, or differentiated materials. Students, in turn, can use AI for brainstorming, language support, explanation of difficult concepts, and revision. The educational value of these tools depends on whether they are used to support independent thinking rather than replace it.

AI can also improve accessibility. Students with different learning needs may benefit from speech recognition, text-to-speech systems, automated translation, simplified explanations, and adaptive interfaces. These functions can help make educational resources more inclusive and easier to access.

At the same time, the growing use of AI in education creates serious pedagogical and ethical challenges. AI-generated information may contain inaccuracies, bias, or misleading content. Students may use AI-generated answers without understanding the material, which can weaken independent learning and critical thinking. Data privacy is another important concern because many AI systems process large amounts of user information.

For these reasons, AI literacy is becoming an essential component of modern education. Students need to learn how to formulate effective prompts, verify AI-generated information, identify possible errors, cite sources appropriately, and distinguish between assistance and academic misconduct. Teachers also need professional development to understand the capabilities and limitations of AI tools.

Thus, the role of artificial intelligence in education should be understood not as replacing teachers, but as expanding the range of pedagogical tools available to them. Its effectiveness depends on clear educational goals, responsible use, human supervision, and the preservation of meaningful interaction between teachers and learners.

Conclusion

Artificial intelligence has become an important component of modern education, influencing teaching methods, learning processes, assessment practices, and access to educational resources. Its main advantages include personalized learning, automated feedback, adaptive instruction, support for content creation, and improved accessibility for students with diverse educational needs.

At the same time, the effectiveness of AI depends on how it is integrated into the educational process. Artificial intelligence should not replace teachers, independent

thinking, or meaningful human interaction. Instead, it should be used as a supportive tool that helps educators improve the quality, flexibility, and efficiency of teaching.

The analysis also shows that the use of AI creates new responsibilities for both teachers and students. Academic integrity, data privacy, algorithmic bias, misinformation, and excessive dependence on automated systems must be taken into account. Therefore, the development of AI literacy, critical thinking, and responsible digital behavior is becoming increasingly important.

In conclusion, artificial intelligence has significant potential to improve modern education when it is applied according to clear pedagogical goals, ethical principles, and appropriate human supervision. The future effectiveness of AI in education will depend not only on technological development, but also on the ability of educational institutions to use these technologies responsibly, critically, and purposefully.

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