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SOCIAL AND ETHICAL CRITERIA FOR THE USE OF ARTIFICIAL INTELLIGENCE IN MODERN EDUCATION

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Abstract. This article discusses the introduction of the concept of artificial intelligence into modern education, the emergence and development of artificial intelligence systems, as well as the application of artificial intelligence in contemporary educational processes with the aim of improving the quality of education.

Keywords. Information, artificial intelligence, digital technology, modern education, information security, telecommunications.

Introduction. First of all, if we seek an answer to the question of what Artificial Intelligence is, Artificial Intelligence is a set of technologies that solve complex problems using computer systems and mathematical models, and it operates through processes that imitate human thinking. An algorithm is a sequence of actions designed to solve a specific problem or achieve a particular goal; in other words, it represents the ordered steps that must be followed before starting any task. Digital technology is a collection of technological solutions that ensure the processing, transmission, and management of information in digital format through computer systems, software, and telecommunication tools. From this, it follows that artificial intelligence encompasses algorithms, digital technologies, and other related concepts. Today, digital technology enables every word we speak or write to be received digitally by another person and responded to accordingly. On a global scale, digital technologies and telecommunication processes are bringing profound changes to all fields, particularly to all stages of education. In recent years, comprehensive reforms have also been implemented in our country across all sectors. Artificial intelligence technologies, in particular, play a significant role in these reforms.At present, to introduce artificial intelligence into science and education, there is a growing need to increase the number of highly qualified specialists. Why is this necessary? The answer lies in the fact that only professionals who have mastered their field can serve as the main driving force behind the integration of artificial intelligence into work, education, learning, and other areas. In recent decades, artificial intelligence, information security, and AI technologies have been rapidly developing in various spheres of human life. These processes have made it one of the most important tasks to improve the effectiveness of educational processes, expand access to education, and provide learning opportunities tailored to the needs of pupils and students.In this regard, artificial intelligence technologies are opening new opportunities for students and learners within the education system. For this purpose, favorable conditions have been created for the development of innovative ideas, business models, products, and service delivery methods based on artificial intelligence technologies. Efforts are being made to rapidly introduce these innovations into priority sectors and fields and to apply them in practice.In pedagogical processes, artificial intelligence enables the automatic creation of tests and the analysis of homework results. This serves as one of the effective ways to save time. In modern education, artificial intelligence programs take into account each student's

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interests, level of knowledge, and learning capacity, offering personalized learning paths. Such an approach is almost impossible to achieve in traditional classroom settings. The scientist Alan Turing stated: *"If a machine can think like a human and can conceal this thinking, it may be considered intelligent."* By this statement, he emphasized that machines can potentially think at a level comparable to humans. It should be understood that even if a machine can think like a human, it still remains an intelligent system.

Literature Review and Methodology. Twenty to thirty years ago, a person carrying a heavy, button-based mobile phone seemed unusual to others. However, in today's rapidly developing era, we have reached a point where it is almost impossible to imagine our lives without mobile phones. These devices have become an integral part of daily life, allowing people to monitor their children, manage their work, complete personal tasks, and maintain everyday routines. In simple terms, the concept of Artificial Intelligence originates from the English phrase "Artificial Intelligence," which consists of two parts: "artificial," meaning man-made or non-natural, and "intelligence," referring to the ability to think, understand, reason, and draw conclusions. The roots of this term trace back to the Latin words *artificialis* and *intelligentia*.

From a scientific perspective, artificial intelligence is a collection of sciences and technologies aimed at modeling and implementing human-like cognitive processes—such as thinking, learning, analyzing, problem-solving, and decision-making—through computer systems and software. The term "Artificial Intelligence" was first introduced into scientific discourse in 1956 by the American scientist John McCarthy, who defined this field as a domain of research focused on recreating aspects of human intellectual activity using technical means.Artificial intelligence has entered human life like a storm, influencing every sector of society and causing remarkable transformations. Today, artificial intelligence is one of the most important directions of modern science and technology, widely applied in education, healthcare, industry, economics, and social fields, and it plays a crucial role in increasing the efficiency of human activities. At the same time, the development of information systems capable of perception, transformation, and interpretation has become increasingly significant.In modern education, one of the key ethical criteria for the use of artificial intelligence is the protection of personal data. Students' personal information, learning activities, and assessment results must be kept confidential and used only for legal and pedagogical purposes. Furthermore, artificial intelligence systems should be developed and implemented in a manner that respects human dignity and adheres to pedagogical ethics. In the educational process, artificial intelligence should not completely replace teachers; instead, it should serve as a supportive tool that enhances their professional activities. Potential biases embedded in algorithms may lead to unfair treatment of certain learners; therefore, artificial intelligence systems used in education must be continuously monitored and evaluated.The scientist Marvin Minsky stated: *"Artificial intelligence makes it possible for machines to carry out complex thinking processes characteristic of humans."* Artificial intelligence creates opportunities not only for students but also for teachers in the teaching process. For example, it can assist in designing educational programs, introducing software innovations, and incorporating engaging and evidence-based content. It can also help educators identify and apply instructional materials aligned with students' interests to make lessons more meaningful. Through artificial intelligence, various methods and fields—such as genetics, robotics, visual learning, and natural language processing—can be explored and applied in education.The primary goal of artificial intelligence is to model human cognitive processes—thinking, learning, analyzing, reasoning, and decision-making—using technical systems and to apply them in practical activities. This technology

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aims to solve complex problems quickly, accurately, and efficiently, reduce human workload, and improve the quality of decision-making. From a scientific standpoint, artificial intelligence does not seek to completely replace human intellectual activity but rather to support and enhance it. Therefore, another important objective of artificial intelligence is to ensure effective collaboration between humans and machines.Artificial intelligence systems enable the analysis of large volumes of data and the automation of repetitive and complex processes, allowing humans to focus more on creative and strategic tasks. It is important to remember that for artificial intelligence to be used successfully and to prevent negative outcomes, it is necessary to anticipate potential malfunctions and know when to halt implementation in practice. While scientific and technological advancements make human life easier, they simultaneously give rise to new challenges. Thus, the future of humanity is closely and inseparably linked to how effectively artificial intelligence tools are used.

Discussion and Results.

Sugata Mitra, an educational researcher, states: *"Technology will not replace teachers, but it will make them more powerful."* This means that when teachers effectively use technology in education, it enhances the overall quality of teaching and learning. An analysis of the social and ethical criteria for the use of artificial intelligence in modern education reveals several important aspects. First of all, the role of technology in the educational process should be viewed primarily as a supportive tool rather than a replacement for teachers. At the same time, the ability to provide individualized learning allows educators to address the unique needs of learners, thereby increasing learning effectiveness.From a social perspective, artificial intelligence should create equal opportunities for all learners. If technologies are implemented improperly, they may deepen existing inequalities within society. Therefore, the introduction of digital tools requires close cooperation between educators and technology specialists. From an ethical standpoint, protecting personal data and maintaining academic integrity are of paramount importance when using artificial intelligence. Learners' independent thinking skills should not be weakened by technology; on the contrary, artificial intelligence should serve as a tool that strengthens knowledge and supports deeper understanding.Moreover, the improper use of technology may lead to challenges in the pedagogical process. For instance, learners may become overly dependent on ready-made answers, or a reduction in social interaction may occur. For this reason, defining and strictly adhering to the social and ethical criteria for the use of artificial intelligence is essential for ensuring the sustainability and quality of education.

Analysis and observations indicate that artificial intelligence effectively supports the educational process and facilitates individualized learning approaches. Through technology, equal opportunities can be created for all learners, and social disparities can be reduced. At the same time, ethical responsibility remains crucial: learners' personal data must be protected, and their ability to think independently must be preserved. When artificial intelligence is used as a supportive tool in pedagogy, it contributes to improving educational quality, ensuring academic integrity, and enhancing students' knowledge levels.One of the main advantages of artificial intelligence in modern education is its ability to adapt the learning process through personalized approaches. Artificial intelligence can assess a learner's level of knowledge and offer customized tasks and materials accordingly. This enables learners to study at a pace suited to their abilities and supports deeper knowledge acquisition. Additionally, artificial intelligence reduces teachers' workload by automating various aspects of the educational process. For example, it can automatically assess tests, monitor student performance, and conduct statistical analyses, allowing teachers to devote more time to pedagogical and creative activities.

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Another significant advantage of artificial intelligence is its integration with distance learning and online resources. This allows learners to access education from any location and facilitates access to global knowledge resources. At the same time, it promotes the development of independent learning skills. However, the application of artificial intelligence in education also involves several limitations and challenges. One of the primary concerns is the potential increase in social inequality. If not all learners have equal access to digital technologies, disparities in education may intensify.Furthermore, artificial intelligence may reduce learners' independent thinking abilities. Excessive reliance on ready-made answers and automated assistance can weaken critical and creative thinking skills. From a technological standpoint, the effectiveness of artificial intelligence systems depends on data quality and security. If learners' personal data are misused or inadequately protected, serious ethical and social problems may arise.In addition, the introduction of artificial intelligence may reduce pedagogical interaction. The guiding, motivational, and educational role of teachers cannot be fully replaced by technology. If the learning process becomes overly dependent on technological tools, reduced direct interaction between teachers and learners may negatively affect educational effectiveness. Although the widespread use of artificial intelligence in education creates numerous opportunities, it also presents several shortcomings and limitations related to technological, social, and pedagogical factors.The use of artificial intelligence in education is highly dependent on technological resources. If digital devices, internet access, and software tools are not equally available to all learners, equitable use of these opportunities becomes difficult, further widening the gap between resource-rich and resource-poor learners. Secondly, there is a risk of reduced independent thinking and creative approaches. If learners rely excessively on artificial intelligence for ready-made solutions and automated recommendations, their critical thinking and decision-making skills may decline. Therefore, artificial intelligence tools should be used strictly as supportive instruments rather than sources of ready answers, serving to reinforce learning rather than replace intellectual effort.Thirdly, issues related to data quality and security remain a major concern. Artificial intelligence systems rely heavily on learners' personal data, and improper use or insufficient protection of this data can lead to ethical and social challenges. Fourthly, there is a risk of reduced pedagogical communication. Artificial intelligence cannot fully replace the motivational, educational, and guiding roles of teachers. Overreliance on technology may diminish direct teacher–student interaction, negatively affecting the overall effectiveness of the educational process.Finally, technological complexity and system errors also present challenges. Artificial intelligence systems may malfunction, generate inaccuracies, or provide incorrect analyses that could negatively impact learners. Therefore, when implementing such technologies, it is essential to ensure their quality, reliability, and adaptability.

Conclusion. The application of artificial intelligence in modern education makes it possible to improve the quality of education and to create a more flexible learning process. By identifying learners' levels of knowledge and providing customized tasks and materials, artificial intelligence enhances the effectiveness of the learning process. At the same time, technology performs functions such as automated test assessment, data analysis, and support for distance learning, which reduces teachers' workload and allows them to devote more time to pedagogical activities. Integration with online resources and distance learning platforms enables learners to access knowledge from any location while also fostering the development of independent learning skills.However, the use of artificial intelligence in education also presents a number of limitations and challenges. First, if technological resources are not distributed

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equally among learners, social inequalities may intensify. In addition, excessive reliance on ready-made answers and automated assistance can weaken students' independent thinking and creative abilities. Since artificial intelligence systems depend on learners' personal data, improper use or inadequate protection of such data may lead to ethical and social issues. Furthermore, a reduction in pedagogical interaction poses a risk, as artificial intelligence cannot fully replace the educational and motivational role of teachers. Technological complexity, system errors, and inaccurate analyses may also reduce the overall effectiveness of the educational process.At the same time, the responsible and thoughtful use of artificial intelligence can significantly enhance educational effectiveness. Technology supports the improvement of learners' knowledge levels, promotes equal educational opportunities, and upholds academic integrity. Maintaining strong collaboration between educators and technology specialists, safeguarding students' independent thinking skills, and ensuring the security of personal data are essential for sustaining educational quality. Overall, the primary goal of artificial intelligence in modern education is to facilitate the learning process, support deeper knowledge acquisition, and effectively assist teachers in their professional activities. Only through such an approach can artificial intelligence become a reliable tool that contributes to the sustainable development of education.

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