

ANALYSIS OF SCIENTIFIC-PEDAGOGICAL PRINCIPLES AND APPROACHES TO ORGANIZING THE LESSON PROCESS BASED ON THE USE OF ARTIFICIAL INTELLIGENCE TECHNOLOGIES

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Abstract: This thesis analyzes the scientific-pedagogical principles and practical approaches to applying artificial intelligence (AI) technologies in organizing the lesson process. The study substantiates principles such as personalization, adaptivity, continuous feedback, data-driven management, and the preservation of the human factor, showing that each directly influences the quality indicators of the modern lesson process. It also presents a comparative overview of practical integration models, including blended learning, the flipped classroom, and intelligent tutoring systems. The conclusions establish that artificial intelligence should be regarded not as a replacement for the teacher but as a tool that enhances teaching practice - a perspective considered essential for improving the quality of modern education.

Keywords: artificial intelligence, lesson process, pedagogical principles, personalized learning, adaptive learning systems, digital educational technologies

Today, the digitalization of education and the integration of artificial intelligence (AI) technologies into the learning process have become one of the most pressing directions in global pedagogy. AI-based systems make it possible to automatically analyze a learner's pace of knowledge acquisition, individual needs, and level of mastery, which in turn calls for a fundamental renewal of the organizational-pedagogical foundations of the traditional lesson process. In this regard, a systematic analysis of the scientific-pedagogical principles and approaches underlying the organization of the lesson process through artificial intelligence technologies carries significant theoretical and practical importance.

The purpose of the study is to identify the core pedagogical principles for organizing the lesson process using artificial intelligence technologies and to scientifically substantiate the approaches for applying them in practice.

The results of the analysis show that organizing the lesson process on the basis of artificial intelligence rests on the following scientific-pedagogical principles.

The principle of personalization. AI systems make it possible to adapt instructional material to each learner's level of knowledge, learning pace, and interests. Unlike the traditional "one-size-fits-all" approach, this principle brings the idea of differentiated instruction into practical realization.

The principle of adaptivity. AI algorithms adjust the complexity of subsequent tasks in real time based on the learner's current performance, thereby ensuring a flexible and dynamic structure of the learning process.

The principle of continuous feedback. Whereas assessment in the traditional lesson is often periodic in nature, AI-based tools enable continuous monitoring of learner activity and prompt feedback, allowing pedagogical adjustments to be made in a timely manner.

The principle of data-driven management. The large volumes of learning data (learning analytics) collected by AI systems allow the teacher to make pedagogical decisions based on precise statistical indicators for both the class as a whole and individual learners.

The principle of preserving the human factor. Artificial intelligence should be regarded not as a substitute for the teacher but as a tool that strengthens the teacher's pedagogical practice.

Educational, emotional-psychological, and value-based tasks must remain the responsibility of the teacher.

In terms of practical approaches, several models can be distinguished for integrating artificial intelligence technologies into the lesson process: the blended learning model, in which the traditional lesson is combined with AI-based platforms; the flipped classroom model, in which theoretical material is mastered at home with the help of AI while classroom time is devoted to practical exercises; and the intelligent tutoring systems model, in which the software tool functions as an individual “virtual tutor” for the learner.

In conclusion, organizing the lesson process on the basis of artificial intelligence technologies must rest on scientific-pedagogical principles such as personalization, adaptivity, continuous feedback, and data-driven management. In this process, artificial intelligence should function as a technological instrument of the pedagogical process, while the teacher’s professional skill and educational responsibilities remain the unchanging human foundation of the lesson process. This approach is regarded as an important factor in improving the quality of modern education and in shaping learners’ 21st-century competencies.

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