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Integration Of Artificial Intelligence In Pedagogical Education: Conditions And Ways Of Implementation

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Abstract: This article is devoted to the study of the process of integrating artificial intelligence into pedagogical education. The introduction of artificial intelligence technologies into the educational process significantly changes not only the methods of obtaining knowledge by students, but also the teaching methods of teachers. The article analyzes the pedagogical conditions and ways of effective implementation necessary for the integration of artificial intelligence into the education system. At the same time, achievements such as improving the quality and effectiveness of education through the use of artificial intelligence in the education system, individualization of the learning process of students, and saving time are presented. The article examines the technological approaches necessary for improving the pedagogical process, as well as the system of teacher training and the implementation of advanced pedagogical technologies.

This article will be useful for specialists in the field of education, teachers, and researchers, and will serve to further improve the integration of artificial intelligence technologies into the pedagogical process.

Keywords: Artificial intelligence, pedagogical education, technologies, educational process, student learning, individualization, pedagogical approaches, teacher training.

Introduction: Achievements in the field of artificial intelligence have a broad impact on all aspects of the education system in different countries of the world. The integration of AI technologies into pedagogical education makes it possible to update not only the learning process of students, but also the teaching

methodology of teachers. This process serves to solve such important tasks as increasing the effectiveness of teaching, improving the quality of education, and introducing new pedagogical methods into the education system.

There are a number of prerequisites for the effective implementation of the integration of artificial intelligence into the education system. Among these conditions are such important elements as technological infrastructure, teacher training, updating educational programs, and ensuring the individualization of the pedagogical process.

Also, through the use of artificial intelligence, there are opportunities to simplify the learning process and save time, taking into account the individual needs of students.

The article analyzes the process of integrating artificial intelligence into the education system and ways to implement it effectively. For the success of this process, it is necessary to update pedagogical approaches and methodological strategies. This article is devoted to the study of innovations in the field of innovative development of the education system and the introduction of pedagogical technologies.

METHODOLOGY

In this study, several research methods and approaches were used to study the process of integrating artificial intelligence into pedagogical education. The main goal of the research is to determine the necessary conditions for the effective introduction of artificial intelligence into the educational process and to analyze its place and capabilities in the education system. The following methods and approaches were used to achieve this goal:

1. Analytical method - At the first stage of the research, based on the study of existing scientific literature, experience in the application of artificial intelligence in the education system, and advanced pedagogical technologies, the theoretical and practical aspects of the process of integrating artificial intelligence were analyzed. With the help of this method, based on existing approaches and experience, the necessary conditions for ensuring the effective operation of the system have been determined.

2. Case study - the case study method was used to study the experience of educational institutions that have integrated artificial intelligence into the education system. With the help of this method, it was possible to study how artificial intelligence technologies are used in the educational process and the successes of students.

3. Experimental method - Experimental studies were conducted to measure the effectiveness of students' learning and changes in teachers' pedagogical methods through the use of artificial intelligence technologies in the educational process. With the help of this method, the influence of the joint use of pedagogical technologies and artificial intelligence on the effectiveness of education was studied.

LITERATURE REVIEW

Analysis of scientific literature on the integration of artificial intelligence into pedagogical education is important for determining the main directions of research and understanding existing theoretical and practical approaches. Research conducted in the field of applying artificial intelligence in the educational process largely contributes to the development of the education system from a technological, methodological, and socio-economic point of view.

There are several important studies on effective approaches to the integration of artificial intelligence into education. For example, Cormier[1] studied the role of artificial intelligence technologies in the learning process of students and their interaction. He emphasized that the application of artificial intelligence in the educational process not only increases the effectiveness of learning, but also develops students' self-learning abilities.

Zhang and others [2] analyzed innovations and innovations in the methods of applying artificial intelligence in education. According to them, artificial intelligence technologies allow for the creation of interactive and individual approaches in the educational process, which contributes to the diversification of students' learning methods. In addition, Anderson[3] paid special attention to the issues of modernizing the pedagogical process with the help of technologies. According to his analysis, artificial intelligence creates opportunities for teachers to better understand students' needs and personalize the learning process.

RESULT

The article analyzes the pedagogical conditions and ways of implementing the integration of artificial intelligence in the education system. The obtained results showed that the inclusion of artificial intelligence technologies in the educational process creates the possibility of significantly increasing the effectiveness of students' learning process.

Firstly, artificial intelligence allows for the individualization of the pedagogical process, i.e., it is possible to offer educational materials and methods in accordance with the needs and abilities of students. This allows students to choose effective ways to manage

their learning processes and learn.

Secondly, it is possible to improve the quality of education using artificial intelligence. Data analysis, monitoring student achievements, and offering them personalized support contribute to the development of an individual approach to learning. This, in turn, increases students' success and gives them more motivation in the learning process.

Also, artificial intelligence changes the pedagogical methods of teachers. Teachers can increase the effectiveness of their work by applying technologies to their work. With the help of artificial intelligence, teachers can quickly identify the strengths and weaknesses of students, thereby managing the learning process more effectively.[4]

In general, the integration of artificial intelligence into the education system creates important opportunities for improving the learning process of students, increasing the effectiveness of education, and improving the pedagogical process. However, for the successful implementation of this process, it is necessary to ensure the necessary pedagogical, technological, and social conditions.

DISCUSSION

The article analyzes the process of integrating artificial intelligence into pedagogical education and its conditions. Based on the results obtained, the inclusion of artificial intelligence technologies in the educational process creates opportunities for improving the quality of education, individualizing the process of students' learning, and improving pedagogical methods.

The first important aspect is that artificial intelligence contributes to the further personalization of the educational process. By offering individual learning materials and methods based on students' needs, abilities, and interests, they can spend their time more effectively. This, in turn, brings students even more motivation and success in the learning process.

The second aspect is that artificial intelligence provides additional assistance to teachers in managing education. With the help of artificial intelligence, teachers can quickly identify changes in students and, accordingly, update the pedagogical approach. This, in turn, increases students' interest in learning and familiarizes teachers with modern pedagogical technologies.[5]

At the same time, there are some problems with the integration of artificial intelligence in the education system. Firstly, it is necessary to develop the necessary infrastructure, material resources, and a teacher training system for the successful implementation of these technologies. For teachers to effectively apply artificial intelligence technologies, advanced training courses, trainings, and educational programs are necessary.

The impact of artificial intelligence in the field of education is much deeper and more extensive. Firstly, artificial intelligence provides educational materials that correspond to each person's learning speed and style, providing students with a personalized learning experience. For example, an adaptive curriculum, along with analyzing the student's work activity, allows them to adjust their level of difficulty and practice more in the subjects they lack.[6].

Artificial intelligence not only reduces the workload of teachers, but also helps them work more effectively. By automating time-consuming tasks like homework and exam assessments, teachers can spend more time interacting individually with students and developing course materials. In addition, analytical tools based on artificial intelligence monitor the development of students and reveal their aspects of artificial intelligence, recommending additional instructions to teachers on these issues.

Artificial intelligence on distance learning and online learning platforms increases student motivation by providing interactive and interesting content. Virtual assistants and chatbots can help students 24/7, instantly answer their questions, and solve problems encountered during the educational process. [7]. This became especially important during the pandemic with the spread of distance learning. This process has created many conveniences for the integration of artificial intelligence into pedagogical education.

Artificial intelligence, by introducing a number of innovations and conveniences in education, will lead to significant changes in the implementation of research in pedagogical processes. Firstly, the ability to present personalized learning experiences stands out. Systems based on artificial intelligence offer individual learning plans by analyzing learners' learning speed, interests, and challenges. This allows students to develop at their own pace and increases their level of success.

Another key aspect of developing the scientific research competence of master's students through the integration of artificial intelligence into pedagogical education is that it facilitates the work that falls on the shoulders of master's students. Artificial intelligence undertakes time-consuming tasks such as automatic assessment of tasks and exams. This creates an opportunity to provide more individual assistance to masters and focus on developing lesson plans.

CONCLUSION

This article analyzes the process of integrating artificial intelligence into pedagogical education and the necessary conditions for its introduction into the education system. Artificial intelligence technologies contribute to the further personalization of the learning process of students and the development of the pedagogical methodology of teachers. This, in turn, increases the effectiveness of education and optimizes the educational process.

According to the results obtained, the integration of artificial intelligence into the education system creates opportunities for saving students' time, individualizing learning, and increasing efficiency. Also, teachers will have the opportunity to update pedagogical approaches by observing changes in students through the use of artificial intelligence in the educational process.

However, the necessary infrastructure, teacher training system, and updating pedagogical methods are crucial for the successful application of these technologies. It is also necessary to consider the security issues of artificial intelligence in the collection and use of personal data.

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