

The Role and Effectiveness of Artificial Intelligence in the Digitalization of the Education System

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ABSTRACT

This article analyzes the role, capabilities, and effectiveness of artificial intelligence (AI) technologies in the process of digitalizing the education system. AI-based systems are becoming increasingly important in automating educational processes, individualizing learning materials, monitoring students' knowledge levels, and improving the quality of education. During the study, the advantages and existing challenges of applying artificial intelligence in the field of education were examined, and their impact on educational efficiency was evaluated. The results indicated that the use of artificial intelligence significantly increases student academic performance and the overall efficiency of the educational process.[1]

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Introduction

The rapid development of digital technologies globally has a significant impact on the education system, as well as on all other sectors. As a result of the integration of information and communication technologies into education, e-learning, distance learning, mobile learning, and digital learning environments are emerging. Under these conditions, artificial intelligence technologies are coming to the forefront as one of the crucial factors in developing the education system.[2]

Artificial intelligence is a set of technologies capable of modeling human intellectual activities such as thinking, learning, analyzing, and decision-making. Currently, AI technologies are widely used in automating educational processes, adapting educational resources, monitoring student activities, and shaping individual learning trajectories.[3]

The digitalization of the education system serves to train competitive and qualified personnel that meet the demands of modern society. Therefore, scientifically studying the role and effectiveness of artificial intelligence technologies in education is one of today's urgent tasks.

The main purpose of the study is to analyze the role and effectiveness of artificial intelligence technologies in the digitalization of the education system and to identify the prospects for their utilization.[4]

Methods

The study utilized theoretical and empirical methods of scientific knowledge, including scientific literature analysis, comparative analysis, a systems approach, generalization of statistical data, and pedagogical observation methods.

Artificial intelligence technologies used in the education system were selected as the object of the study. The subject of the research is the impact of these technologies on the effectiveness of educational processes.

During the analysis, international e-learning platforms such as Coursera and EdX, local digital initiatives such as "One Million Uzbek Coders" and "Five Million Artificial Intelligence Leaders," scientific sources, and the operations of AI-based educational systems were studied.[5]

Results

As a result of the analysis, several key directions of artificial intelligence technologies in digitalizing the education system were identified.

In particular, let us look at the digital software developed for general education schools for the subject of "Informatics and Information Technologies" using Claude AI. This digital software was created in the Karakalpak language based on the Latin alphabet, tailored for 8th-grade students of general education schools, and designed according to state education standards. In creating the program, AI tools such as Claude AI, ChatGPT, Gemini, and Grok AI, along with software development tools like HTML, Camtasia Studio, and Sublime Text, were utilized. Sufficient theoretical and practical information is provided for each topic. The software is noteworthy due to its integration of information with audio and various animations, the presence of hyperlinks for key terms and concepts, and other indicators. The software runs on Windows 10 and 11 operating systems. No special software needs to be installed on the Windows operating system to use the program.[6]



Homepage (Main Menu):

The main sections include: Lesson plans, steps on how to prepare a website, videos, hosting and domain, What is Joomla?, What is WordPress?, creating a free website, "I recommend", creating a professional website, necessary software, practical exercises, digital library, internet materials, glossary, test assignments, creating a mobile add-on, and Help.

When the lesson plans section of the software is activated, calendars, lesson plans, and presentations required for the subject teacher appear. These lesson plans and presentations are pre-placed and ready for teachers to use.[7]

taza

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A'piwoyi bosqishtan izbe-izlikte quramalig'ga shekem!

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REBUSLAR
BEKKEMLEW
BEKKEMLEW 2
BEKKEMLEW 3
BEKKEMLEW 4

Bas bet **U'yreniwdi biz benen ha'ziraq basla !**

Practical Tasks

Html tili haqqinda tu'sinik — тестирование easyQuizzy

сделано в [easyQuizzy](#)

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Ответы:
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1. <sub>
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3. <i>
4. <inter>

Test

One of the main advantages of this AI-developed software is the provision of sufficient theoretical and practical information for each topic. This data is combined with various audio and animated elements, which helps students understand the material more easily and learn with interest. The ability to quickly access key terms and core concepts via hyperlinks provides additional convenience for users.

Furthermore, significant results were achieved in the direction of digitalizing the educational process through this program.

In conclusion, this software is of great importance in improving the quality of education in general schools, reinforcing students' knowledge, and preparing them to use modern educational technologies effectively. The software not only enriches the learning process but also serves to introduce an innovative approach to education.

Artificial intelligence technologies used in the education system were selected as the object of the study. The subject of the research is the impact of these technologies on the effectiveness of educational processes.[8]

During the analysis, international and local scientific sources, e-learning platforms, and the operations of AI-based educational systems were studied.

Discussion

The research results showed that artificial intelligence is an important transformational factor in the education system. Organizing individual learning, monitoring student activities, and optimizing educational resources are essential tasks for modern educational institutions. It is in these processes that artificial intelligence technologies demonstrate high efficiency.

However, when introducing artificial intelligence into the education system, several challenges exist, such as insufficient digital infrastructure, low internet speeds, limited technical equipment, teachers' lack of skills in using AI technologies, scarce methodical support, the need to adapt educational content, personal data security, and the reliability of content generated by AI.[9]

At the same time, generative artificial intelligence tools—including ChatGPT, Gemini, Claude, and other platforms—have great potential in creating educational materials, providing individual consultations, and optimizing the learning process.

In the future, with the development of artificial intelligence, educational systems are expected to become even more personalized, flexible, and effective.[10]

Conclusion

Based on the research results, software developed on the basis of artificial intelligence technologies is considered an important tool for digitalizing the education system; adaptive learning systems based on AI provide an individual approach and increase student mastery levels; automation of educational processes facilitates teacher labor and saves time resources; virtual assistants and chatbots serve to ensure continuity in education; the possibility of effective management of the educational process using educational analytics is created; it is necessary to develop the digital competencies of educators for the effective use of artificial intelligence technologies. It was concluded that in the future, education systems based on artificial intelligence will become one of the main directions of digital transformation.

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