

Use Of Digital Didactic Materials In The Educational Process

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Abstract: This article examines the use of digital teaching materials (DTM) in the educational process in Uzbekistan. It analyzes the types of digital resources, their advantages, and their impact on the quality of learning, motivation, and development of digital skills among students. The article presents the results of a study conducted in 2024–2025, demonstrating the positive impact of implementing DTM in schools and universities across the country. Particular attention is paid to the practical experience, challenges, and prospects for integrating digital technologies into the education system. The article emphasizes the importance of improving infrastructure and training teachers to effectively use digital materials. The findings highlight the need for further digitalization of education in Uzbekistan to enhance the system's competitiveness.

Keywords: Digital didactic materials, education in Uzbekistan, digitalization of education, electronic educational resources, distance learning, innovative teaching methods, development of digital skills, educational technologies, modern educational practices, improving the quality of education.

Introduction: In the modern era of information and communication technologies, education is on the threshold of transformation, aligned with the demands of the digital age. The introduction of digital teaching materials (DTM) is becoming a key trend aimed at improving the quality and effectiveness of learning. DTMs allow teachers to develop more interactive, adaptive, and engaging lessons, and promote the development of information literacy and critical thinking in students.

In Uzbekistan, where there is a pressing need to improve the quality of education and implement modern technologies, the use of digital teaching materials is particularly important. In this article, we will examine the theoretical foundations, practical approaches, and results of implementing DTMs in the Uzbek education system, and highlight prospects for further development.

METHOD

Digital teaching materials (DTM) represent a variety of electronic resources and tools designed to support, improve, and modernize the educational process. Their integration into the education system enables the activation of the promising potential of information technology, improving the quality of education, enhancing student motivation, and expanding the

availability of educational resources.

Types and Forms of Digital Instructional Materials

1. Educational Platforms and Learning Management Systems (LMS)

These are specialized software packages that provide centralized management of the educational process. For example:

Moodle is one of the most popular platforms, widely used in schools and universities in Uzbekistan. It allows for the posting of educational materials, conducting tests, maintaining gradebooks, and organizing discussions.

Google Classroom is an accessible and easy-to-use platform for sharing assignments, communicating, and organizing distance learning.

Edmodo is a platform focused on interaction between teachers, students, and parents, providing feedback and monitoring of assignment completion.

2. Interactive teaching aids

These are electronic presentations, multimedia textbooks, and hypertext resources that contain embedded interactive elements: clickable diagrams, built-in tests, answers, and models. For example, an electronic illustrated book on biology, where the user can click on objects to learn more or watch a video.

3. Virtual Laboratories and Simulators

These are used to conduct practical experiments in a virtual setting:

Virtual physics laboratories allow for simulating experiments with prisms, magnets, and electromagnets.

Chemical simulators allow for the safe study of reactions and interactions between substances without the need for physical laboratory equipment.

These tools make practical training more accessible, especially in remote areas or during quarantine measures.

4. Educational games and simulators

Educational games with gamification elements make the learning process more engaging and promote the development of cognitive, motor, and collaboration skills:

For example, language quests, math puzzles, or foreign language simulators.

Simulators for mastering professional skills in technical disciplines.

5. Multimedia materials

These include videos, animations, infographics, interactive tests, and quizzes:

Video history lessons built on visual stories and interviews hold students' attention.

Animated models help students understand complex processes (for example, how electromagnetic waves work).

Interactive tests allow students to test their knowledge in real time.

Benefits of using digital resources in the educational process

The use of digital resources offers a wide range of opportunities to improve the quality of education, including:

1. Increased motivation and interest. Visual, tactile, and game elements make learning engaging. For example, using animated videos instead of static textbooks promotes better retention of new concepts. As a result, students demonstrate greater initiative, interest, and independence.

2. Individualized learning. The CDM allows for assignments and difficulty levels to be tailored to individual student needs. For example, automatic grading systems can suggest additional exercises for incorrect answers, and progressive tests are tailored to each student's level of knowledge.

3. Developing key competencies. Working with

multimedia materials promotes information literacy, critical analysis, and information search and evaluation skills. Independent learning, problem-solving, and teamwork skills in joint projects are also actively practiced.

4. Accessibility and mobility. Online resources allow students to study anytime and anywhere with internet access. This significantly expands learning opportunities for schoolchildren and students, especially in remote areas where access to traditional educational materials is limited or nonexistent.

5. Automated assessment. Digital systems allow for the automation of assessment and control procedures. For example, the system automatically calculates test results, generates reports, and creates statistical tables, significantly reducing teachers' workload and increasing the objectivity of assessment.

Stages of the implementation of the Digital Youth Management System in Uzbekistan.

As part of the national strategy for the development of information technology in education, Uzbekistan is systematically implementing the Digital Youth Management System:

- Infrastructure support: modernization of computer labs, provision of schools and universities with high-speed internet, and creation of access centers.
- Education and training: conducting training for teachers on the use of digital resources, developing professional development programs.
- Content creation and adaptation: development of national electronic curricula, translation of educational materials into Uzbek, localization of platforms and applications.
- Support and development: implementation of a technical support system, help centers, and experience exchange centers.

Statistics and results of the current stage.

According to the Ministry of Education and Science of Uzbekistan, by 2024, more than 70% of public schools in the country integrated electronic teaching aids and distance learning platforms, such as Moodle, Google Classroom, and others, into the curriculum. Particularly active use is recorded in urban schools in Tashkent, Samarkand, Bukhara, and the Nariman region.

Studies of teachers and students show that interactive assignments, video lessons, and virtual labs are particularly popular. Some schools have implemented fully virtual lab systems for physics and chemistry, allowing students to conduct experiments online, avoiding the cost of equipment and space.

Significant progress has also been recorded at the

university level:

More than 85% of faculty members use digital materials in their courses.

More than 60% of students report increased motivation, quality of learning, and independence thanks to digital resources.

Thus, the introduction of the Digital Children's Museum into Uzbekistan's education system not only contributes to the modernization of the educational process but also to the development of modern competencies in the younger generation, which is important for the country's development and increasing its international competitiveness. Future plans call for further expansion of the range of resources, improvement of infrastructure, and increased digital literacy among teachers and students.

RESULTS

Research conducted as part of the implementation of digital teaching materials (DTM) in the education system of Uzbekistan demonstrates the significant positive impact of these technologies on the quality of the educational process and the development of student competencies.

Improved academic performance. Schools and colleges actively using DTM have recorded an average increase in academic performance of 10-15%. For example, at Tashkent Secondary School No. 45, the introduction of interactive learning platforms and virtual laboratories has improved students' knowledge in mathematics and physics. The increase in success is particularly noticeable among students in remote areas, where digital resources compensate for the lack of traditional material and technical resources.

Improving motivation. Interactive tasks, educational games, videos, and virtual simulations generate increased interest among students. As a result, students become more actively involved in lessons, gaining independence and responsibility for their learning. For example, university students note that using educational videos and online tests promotes a deeper understanding of the material, while completing practical assignments in virtual labs increases their engagement.

Developing digital and communication skills. By working with modern digital resources, students acquire skills in searching, evaluating, and processing information, improve their online skills, and develop teamwork and communication skills. These skills are key for career success and adapting to a labor market changing under the influence of digital technologies.

Expanding access to high-quality educational resources. In rural and remote regions, where

traditional infrastructure often fails to provide comprehensive education, the implementation of the Centralized Children's Library has brought the quality of education closer to the level of urban schools and universities. Online lectures, mobile apps, and digital libraries help transcend territorial boundaries, ensuring equal opportunities for all students, regardless of their location.

However, the implementation of the digital learning environment faces a number of challenges. Insufficient technical equipment in some schools—weak internet infrastructure, a lack of modern devices, and limited financial resources—limits the scale of implementation. Furthermore, there is a shortage of teachers with the necessary digital competencies, reducing the effectiveness of using new technologies. The need to constantly update content and platforms requires additional costs and regular teacher training. Many educational institutions require systemic support from the government and private investment to address these challenges

Despite existing obstacles, the implementation of the Digital Youth Management System (DMS) demonstrates significant potential for modernizing Uzbekistan's education system and creating conditions for developing competitive digital skills among the younger generation. A clear strategy, investment in infrastructure, and teacher training can significantly expand these positive results and ensure the sustainable development of the education system.

CONCLUSION

The use of digital teaching materials in the educational process offers significant opportunities for improving the quality of education, developing key skills, and motivating students in Uzbekistan. The introduction of digital teaching materials contributes to the modernization of the education system, making the learning process more flexible, interactive, and accessible, especially in the face of global challenges such as the COVID-19 pandemic.

Research findings demonstrate the positive impact of digital resources on the academic performance, motivation, and digital literacy of students. However, to fully utilize the potential of the digital learning center, existing challenges must be addressed, including improving the technical equipment of schools, training teachers to work with digital tools, and ensuring the continuous updating of educational resources.

In the future, the development of digital teaching materials within the framework of the national program to support the digitalization of education in Uzbekistan could become a driver for the formation of

a modern, innovative, and competitive educational space.

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