

Article

Prospects of Digital Technologies in The Development of Educational Services

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Abstract: This article analyzes the development of digital technologies in education and their practical applications. In particular, it discusses the prospects for digital education based on the automation of learning processes, the convenience of education through online platforms and mobile applications, and new pedagogical concepts and methodologies.

Keywords: digital technologies, innovations in education, online education, mobile education, automation, pedagogical concepts, quality of education, digital transformation, e-learning platforms, digitization in education, mobile technologies

1. Introduction

Digital technologies continue to influence all spheres of society, including the education sector. The introduction of digital technologies into education in Uzbekistan is an important stage in directing the educational process in effective and modern ways, and all steps in this area are of great importance for achieving success. The goal is not only to increase the digital literacy of young people, but also to provide them with modern knowledge and skills, preparing specialists who are relevant to the labor market.[1]

A number of normative documents on the introduction of digital technologies in education have been adopted in Uzbekistan, which are aimed at ensuring digital transformation in the education system, introducing innovative methods and supporting the use of digital aids. [2] These documents are aimed at optimizing educational processes, strengthening the digital infrastructure in education, introducing e-learning platforms and providing educational institutions with digital technologies. [3] You can familiarize yourself with the main contents of the following normative documents and their goals:

1. **"Strategy for the Development of the Digital Economy in 2020-2025" of the Republic of Uzbekistan :**
 - **Goal :** Development of the digital economy and development of digital education platforms in Uzbekistan.
 - **Aspects related to education :** Development of e-learning, organization of distance learning, provision of educational institutions with digital equipment, creation of online courses and resources.[4]
2. **"Measures aimed at the implementation of digital technologies in the field of education in the Republic of Uzbekistan and the development of digital infrastructure in education" (2021) :**
 - **Goal :** Providing educational institutions with digital technologies, introducing systems and platforms based on the digitalization of education.[5]
 - **Digitization in education :** development of online platforms and mobile devices for students , improvement of digital skills for pedagogical personnel, introduction of electronic systems for monitoring the educational process.

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3. **"Development strategy of distance education and electronic education"(2020) :**
 - **Purpose :** To increase the effectiveness of distance education, to expand the use of digital technologies in the field of education.[6]
 - **Main directions :** Online courses and platforms, video conferencing, introduction of mobile devices, digital resources for effective organization of education.
4. **"Electronic Government Development Strategy" of the Republic of Uzbekistan :**
 - **Purpose :** Development of digital services of state bodies and institutions, including digitization of educational services.[7]
 - **Education connection :** Introduction of electronic education systems, improvement of information systems in the field of education, increase of transparency of education services.
5. **"A practical guide to creating digital educational content" (2019) :**
 - **Purpose :** To create digital content and use it effectively in the educational process.
 - **Educational aspects :** Digital learning resources and online classes, videos, e-books and tests. [8]
6. **Resolution of the Republic of Uzbekistan "On accelerated measures for the digitalization of education" (2021) :**
 - **Purpose :** Digitization of the education system, introduction of modern digital technologies to educational institutions.
 - **Digitization in education :** digital infrastructure of educational institutions, e-journals, online courses, training for pedagogical personnel.[9]
7. **"Introduction of mobile education system" (2022) :**
 - **Purpose :** organization of educational processes through the mobile platform, facilitating the appeal of young people to education.
 - **Educational Aspects :** Education through mobile applications, adaptation of educational content to mobile devices.
8. **The Government's "Decision on the Development of Internet Education, Electronic Platforms and the Use of Electronic Books" (2023) :**
 - **Objective:** Expand online learning platforms, introduce e-books and resources.[10]
 - **Digitization in education:** Courses on electronic platforms, virtual laboratories, online tests and fiction.
9. **Joint measures of the Republic of Uzbekistan for the digital transformation of society :**
 - **Goal :** To monitor the rapid development of digital infrastructure and the provision of educational institutions with digital technologies.
 - **Digitization in education :** Digital pedagogy, e-learning platforms, internet-based learning, online and open source resources.[11]

2. Materials and Methods

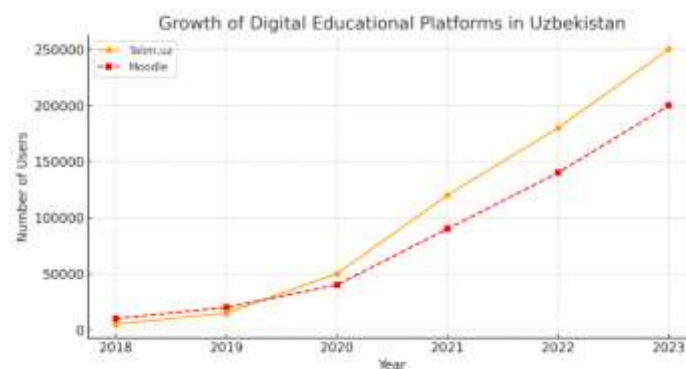


Figure 1. Graph of the Growth in the Use of Digital Educational Platforms

Figure 1 illustrates the increasing number of users of the educational platforms Talim.uz and Moodle in Uzbekistan from 2018 to 2023.

Talim.uz – a national online platform, whose user base grew from 5,000 in 2018 to 250,000 in 2023.[12]

Moodle – an international distance learning system widely used in universities and schools. The number of users increased from 10,000 to 200,000 over the same period.

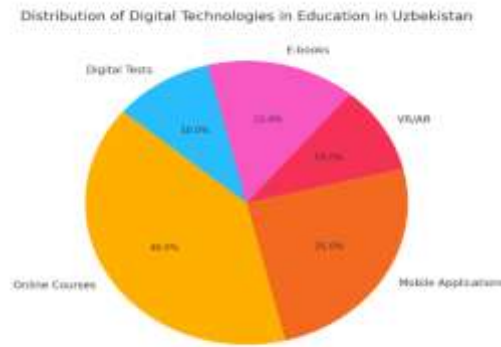


Figure 2. Pie Chart of the Distribution of Digital Technologies in Education

Figure 2 illustrates the digital technologies used in the educational processes of Uzbekistan:

Online courses (40%) – the most popular learning format, widely adopted by universities and online schools.

Mobile applications (25%) – actively developing, allowing students to learn at their convenience. [13]

VR/AR (10%) – the least widespread so far but have development potential, especially in natural sciences.

E-books (15%) – used in universities and secondary schools as an alternative to traditional textbooks.

Digital tests (10%) – facilitate online exams and knowledge assessments.

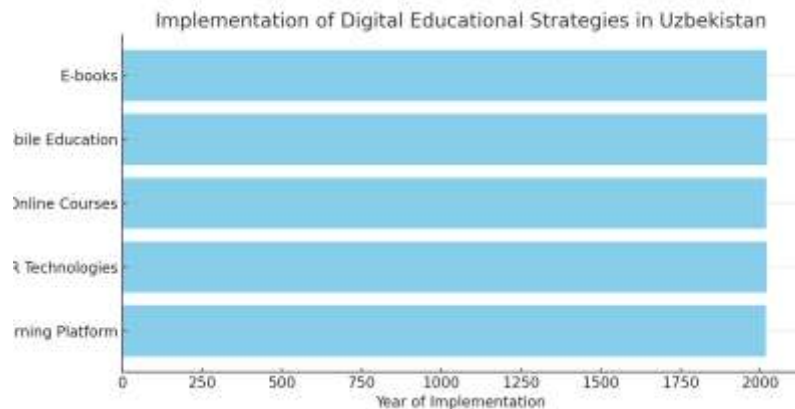


Figure 3. Horizontal Bar Chart of Digital Education Strategy Implementation

Figure 3 illustrates when key digital education strategies were introduced in Uzbekistan:

E-learning platforms (2018) – the first online courses and distance learning systems.

Online courses (2019) – began to develop actively, leading to the emergence of various online programs.

VR/AR technologies (2020) – started being used in educational institutions, especially in major universities.

E-textbooks (2021) – a large-scale transition to digital resources in schools and universities.

Mobile education (2022) – the launch of educational mobile applications and platforms.

3. Results

Practical application of digital technologies in education . A number of advanced projects are being implemented in Uzbekistan to introduce digital technologies in the field of education. Interest in high-quality and efficient organization of education through digital platforms and programs in educational institutions is growing day by day.[14]

Previous developments and digital platforms . The first steps in digital technologies in the field of education in Uzbekistan were taken by the state through a number of platforms. For example:

- **Talim.uz** is an online educational platform that provides students with new opportunities to solve their own problems and organize their education. Through the platform, students have the opportunity to study video programs, e-lessons, and multimedia materials.
- **The Moodle** platform is an online learning system installed in various educational institutions in Uzbekistan. It allows teachers to organize lessons online and students to provide interactive learning.

Innovations in digital education:

- **Virtual Reality (VR) and Augmented Reality (AR)** – 3D models, virtual environments, and animated materials are enabling students to learn subjects in an interactive and engaging way. For example, some schools in Tashkent are organizing special courses for studying biology and chemistry using VR.
- **Online employment** - after education, it is important not only to be literate, but also to have the digital skills necessary for work. Therefore, educational institutions offer online training programs for young people in IT courses, web design, programming, and digital marketing.
- **Socio-economic importance of digital education.** The introduction of digital technologies in education not only improves the educational level of students, but also improves their social and economic status. As digital education creates easy access to information and knowledge, new opportunities are opening up for students.
- **Supporting education in rural areas.** The introduction of digital technologies in education is creating great opportunities for the population in rural areas. By providing access to the Internet and introducing online educational platforms, it is possible to create equal opportunities for all students, regardless of organizational conditions and means.[15]
- **Rural Education Project.** A special e-learning system has been introduced for students in rural areas. In this system, each student has the opportunity to study using e-books, video lessons, and online tests.
- **Demand for skills in education.** To prepare specialists who meet the requirements of the current labor market, education based on digital technologies is required. As a result, Uzbekistan is paying great attention to improving the professional skills of young people through educational programs aimed at training information technology specialists, web designers, programmers, and engineers.

4. Conclusion

The use of digital technologies in education is helping to adapt the education system in Uzbekistan to modern requirements, making the learning process more efficient and interactive. The new opportunities created for students will help to increase their knowledge literacy, as well as ensure competitiveness in the labor market. The prospects for digital education are broad, and the implementation of significant steps and projects for this purpose is bearing fruit.

Prospects and future directions of development:

1. Information security in education:

Information security is becoming an important issue in the digital education process. It is necessary to use modern technologies to protect the personal data of students, in particular, to ensure the security of online classes.

2. In the field of creating a nationwide electronic platform:

To further develop digital education in Uzbekistan, it is aimed to create a single electronic platform for schools and universities. This platform will consolidate all educational materials, lessons, and tests for students and teachers, and will allow them to monitor, evaluate, and optimize the educational process.

3. In the direction of adaptation of digital education to international standards:

The Uzbek education system is seeking to expand cooperation with global online education platforms in order to adapt to international standards. For example, cooperation with international online education platforms such as Coursera, edX, and Udemy provides students with access to world-class knowledge.

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