

PAPER

THE ROLE AND TRANSFORMATION OF DIGITAL TECHNOLOGIES IN MODERN EDUCATION

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Abstract

This article focuses on the role of digital technologies in modern education, the emergence of digital technologies in education, collaborative learning, teachers' preparedness and support to acquire the skills required for the effective integration of digital technologies into teaching practices, and the enhancement of future trends in digital education.

Key words: Digital technologies, online learning, artificial intelligence, virtual reality, personalized learning, educational transformation, inclusivity, and sustainability.

In our country, comprehensive measures are being implemented to actively develop the digital economy and widely introduce modern information and communication technologies (ICT) in all sectors and fields, primarily in public administration, education, healthcare, and agriculture.

In particular, over 220 priority projects have been launched aimed at improving the **e-government system**, developing the local market for software products and information technologies, establishing IT parks across all regions of the Republic, and providing the sector with qualified personnel. The educational environment has changed significantly due to the rapid development of digital technologies. From **online learning platforms** to **artificial intelligence** and **virtual reality**, these technologies are introducing innovations in how education is delivered and received. This article analyzes the main digital technologies that have transformed education, their advantages, and the challenges they bring.

The Emergence of Digital Technologies in Education Online learning platforms have become a central feature of modern education. They offer openness to change, a wide variety of courses, and the opportunity to access high-quality local and international education from home. Artificial Intelligence (AI) transforms education by personalizing learning, automating administrative tasks, and creating intelligent learning systems that help students learn at their own pace. Virtual and Augmented

Reality (VR/AR) provide interactive and supportive learning environments that allow students to effectively study complex subjects. These technologies are particularly useful in fields such as medicine, engineering, and history. Impact of Digital Technologies on Learning Through personalized learning, digital tools enable the formation of individual learning pathways based on students' special needs, preferences, and learning styles. This approach supports more effective learning outcomes.

Collaborative learning is facilitated by digital technologies through online discussion platforms, digital workspaces, and social media, enabling students to work together and actively participate in the learning process. Access to global knowledge has become easier. Today, students can access vast amounts of information, sources, and resources via the internet, opening up new opportunities for research and independent learning.

Challenges of Integrating Digital Technologies in Education Digital divide — although digital technologies have the potential to revolutionize education, not all students have equal access to these tools and the internet. The digital divide remains a significant barrier to achieving equality in education.

Teachers' preparedness and support — teachers must acquire the necessary skills to effectively integrate digital technologies into their teaching practices. Professional development programs are essential to ensure teachers can confidently and effectively use digital tools. Data privacy and security — the use of digital

platforms in education raises concerns about data confidentiality and security. Educational institutions must take the lead in protecting students' personal information and complying with relevant legislation. Future Trends in Digital Education The future of education will focus even more on digital technologies. AI-powered assessment systems, blockchain-based diplomas and certificates, and the further development of VR and AR technologies will continue to reshape the educational landscape. Additionally, blended learning models that combine online and in-person education will become increasingly widespread. Digital tools and technologies play an essential role in modernizing the educational process, offering students new experiences and making teaching methods more effective.

The Main Role of Digital Technologies in Education

1. **Quick and easy access to information** — digital technologies allow students to obtain information from various sources, including scientific articles, books, videos, and other resources, via the internet.

2. **Variety of teaching methods** — technologies enhance the quality of education through interactive tools, online courses, simulations, videos, and animations, increasing students' engagement and activity.

3. **Distance learning** — during quarantine periods and pandemics, the importance of online learning has grown. New forms of remote teaching are implemented through digital platforms and tools, making education more widely accessible.

4. **Personalized education** — digital technologies help tailor learning to the individual needs of students. For example, educational platforms provide personalized courses and exercises based on students' pace, interests, and preferences.

5. **Improving educational effectiveness** — digital tools enable the analysis and evaluation of students' academic results. This allows teachers to identify students' needs, provide individual support, and make data-driven recommendations.

6. **Interactive and creative learning** — digital technologies make teaching and learning interactive and creative. For instance, VR and AR technologies allow students to absorb knowledge vividly and engagingly through new experiences.

Thus, digital tools and technologies are a key factor in shaping the future of education, making it more efficient, engaging, and high-quality.

National Strategies and Policy Measures According to the Presidential Decree No. 60 of January 28, 2022, "On Approval of the Digital Uzbekistan — 2030 Strategy and Measures for Its Effective Implementation several initiatives are underway:

- ✓ Ensuring full coverage of preschool education by providing schools with clean drinking water and modern sanitary infrastructure;
- ✓ Developing nearly 700 new textbooks, workbooks, methodological guides, and mobile applications for teachers;
- ✓ Launching 1,000 multimedia programs for tablets based on next-generation textbooks;
- ✓ Recruiting 500 foreign specialists annually for general secondary schools;
- ✓ Introducing vocational training courses in all general secondary educational institutions;
- ✓ Sending 1,000 educators abroad for professional development and internships;
- ✓ Doubling the average salaries of preschool and school teachers;
- ✓ Providing continuous skill development for 500,000 educators;
- ✓ Preparing pedagogical personnel under full government grants for high-demand fields and remote regions.

Furthermore, the government aims to increase the number of private secondary education institutions to 1,000 and allocate 1 trillion UZS in concessional loans to support their development. Role of CIS (Commonwealth of Independent States) Countries

in Modern Education The CIS countries are developing their educational systems in various directions and contributing to solutions for national and international challenges.

✓ **National education systems and globalization:** Each country shapes its educational system based on national traditions, history, and culture. Some, like Russia and Kazakhstan, are modernizing education and integrating ICT to align with global trends.

✓ **Integration into international education:** CIS countries are expanding opportunities for academic mobility and recognition of qualifications. Collaborative programs, especially between Russia and Kazakhstan, play an essential role.

✓ **Inclusivity and sustainability:** Many CIS countries prioritize inclusive education, ensuring equal opportunities for people with disabilities, low-income families, and orphans.

✓ **Digitalization of education:** Online platforms, video conferences, virtual labs, and interactive educational resources are becoming common. Increasing digital literacy and preparing ICT specialists are strategic priorities across CIS countries.

✓ **Socio-economic role of education:** Education is a key driver of social and economic development, addressing labor market demands and supporting entrepreneurship and migration policies.

Conclusion In modern education, the role of digital technologies is critically important. Transforming the educational environment through digital technologies provides exciting opportunities to improve teaching and learning processes. However, challenges such as accessibility, teacher preparedness, and data security must also be addressed.

By adopting innovations and overcoming these barriers, the future of education will become more inclusive, personalized, and effective.

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