

THE IMPACT OF NEW TECHNOLOGIES ON THE EDUCATION SYSTEM OF UZBEKISTAN

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Annotation

This article examines the impact of new technologies on Uzbekistan's education system. It analyzes opportunities including e-learning platforms, smart classrooms, and AI integration, alongside challenges like digital inequality and teacher training needs. The study presents government initiatives including "Digital Uzbekistan 2030" strategy and recent developments in educational technology, offering recommendations for sustainable integration.

Keywords: new technologies, education system, digital transformation, e-learning, Uzbekistan, ICT in education, smart classroom, artificial intelligence

INTRODUCTION

The 21st century has witnessed unprecedented technological advancement transforming education worldwide. Uzbekistan, as a rapidly developing Central Asian nation with 36.8 million people, has recognized educational technology's critical importance, embarking on ambitious reforms to modernize its education system through digital transformation.

The education system of Uzbekistan, inherited from the Soviet period, has undergone substantial restructuring since 1991. The Presidential Decree "On Approval of the Strategy 'Digital Uzbekistan 2030'" demonstrates the country's commitment to leveraging

technology for educational improvement. The COVID-19 pandemic served as an unexpected catalyst, forcing rapid transition to remote learning modalities.

Recent developments have accelerated this transformation. In 2024, Uzbekistan was selected as one of six "Global Champions" to participate in the UNICEF Learning Pioneer Programme, recognizing the nation's strong commitment to digital transformation in education. This selection positions Uzbekistan as a regional leader in educational innovation.

This article analyzes how new technologies are reshaping education in Uzbekistan, examining opportunities, challenges, government initiatives, and recommendations for sustainable integration.

OPPORTUNITIES AND CHALLENGES

Enhanced Access to Resources. The National Electronic Library and platforms like "ZiyoNET" provide centralized access to educational materials. Partnerships with Coursera, edX, and domestic "Maktab.uz" enable access to global university courses. The IT Academy's "One Million Uzbek Coders" project has achieved remarkable success with over 2.5 million registered participants and 1.175 million certificates issued as of 2022.

Personalized Learning Through AI. Recent TALIS 2024 data reveals that 62% of teachers in Uzbekistan report having used artificial intelligence in their work, significantly higher than the OECD average of 36%. Teachers utilize AI primarily to efficiently learn about topics (92%), generate lesson plans (91%), and review student performance data (86%).

Pilot implementations of AI-powered educational platforms have shown promising results. The Eduten mathematics platform pilot in 17 Uzbek schools demonstrated a +16.9% increase in mathematics skills and +10.2% improvement in arithmetic fluency over a 12-week period. The effect size of 0.42 standard deviations indicates meaningful educational impact.

Interactive Environments. Smart classrooms with interactive whiteboards and VR/AR applications provide immersive learning experiences. In May 2024, ZTE Corporation collaborated with Tashkent University of Information Technologies to open a joint smart classroom, advancing ICT talent cultivation.

Administrative Efficiency. Electronic education management systems allow authorities to track attendance and learning outcomes systematically, supporting evidence-based policymaking. Automated student information systems reduce administrative burdens on teachers.

International Partnerships. According to the National Statistics Committee, 37,200 foreign citizens visited Uzbekistan for educational purposes between January and November 2025, marking a 54.3% increase compared with the previous year. Additionally, 12,500 foreign students were enrolled in Uzbek universities at the start of the 2024/2025 academic year, representing an 18-fold increase over the past decade.

Challenges

Digital Divide. While internet penetration reaches 70%, significant urban-rural disparities remain. Many rural schools lack computer labs and reliable electricity. The TALIS 2024 data indicates that 54% of teachers who have not used AI report that their schools lack the necessary infrastructure, significantly higher than the OECD average of 37%. **Teacher Readiness.** Despite high AI usage rates, teacher readiness remains critical. Among teachers who have not used AI, 46% report lacking the knowledge and skills to teach using AI. With over 450,000 teachers in the national system, comprehensive training represents a major challenge.

Content Limitations. Quality educational software in Uzbek language remains limited, creating dependence on Russian or English resources. **Cybersecurity Risks.** Student data protection and online safety concerns require robust protocols many institutions lack.

Gender Disparities. Research indicates significant gender gaps in digital competencies, with women trailing men by nearly 24% across digital skills categories.

GOVERNMENT INITIATIVES

The "Digital Uzbekistan 2030" strategy targets 100% broadband coverage in schools, universal teacher digital literacy training, and domestic software industry development. The strategy outlines three phases: early stage (2024-2025) focusing on infrastructure; middle stage (2025-2027) building unified national smart education network; and long-term phase (2028-2030) targeting comprehensive intelligent education systems.

The "New Uzbekistan School" concept promotes student-centered, technology-supported learning. Recent curriculum revisions mandate computer science from primary grades.

In September 2025, President Shavkat Mirziyoyev announced that artificial intelligence lessons will be introduced in high school classes starting from 2026. To support this initiative, 2,000 classrooms require computer equipment and 6,300 interactive whiteboards. Specialized school branches named after Khorezmi (IT), Mirzo Ulugbek (engineering), and Ibn Sina (natural sciences) will open in regions, with graduates eligible for direct second-year admission to technical universities.

The IT Park Uzbekistan initiative has established 550 specialized IT Centers across the country, with 70% located in regional areas. Through the UNICEF Giga Initiative, Uzbekistan expanded internet connectivity to at least 10 Mbps in almost all schools.

Public-private partnerships with Microsoft, Google, ZTE, and Huawei provide resources and technical assistance, ensuring that Uzbekistan's educational infrastructure meets international standards.

RECOMMENDATIONS

Ensure Equitable Access. Prioritize rural connectivity and provide subsidized devices for low-income families. The pair-mode functionality demonstrated in Eduten pilots,

where two students share one device, offers a practical solution for resource-constrained environments.

Support Teachers. Develop comprehensive training with ongoing mentoring and peer support networks. Training should address both technical skills and pedagogical adaptation to technology-enhanced environments.

Develop Local Content. Invest in Uzbek-language educational software and open educational resources that align with national curriculum standards.

Address Gender Gaps. Implement targeted programs to address the 24% gender gap in digital skills, ensuring that female students and educators have equal access to technology and training opportunities.

Maintain Balance. Preserve human elements of education while leveraging technology appropriately. Technology should enhance rather than replace teacher-student relationships and critical thinking development.

CONCLUSION

New technologies offer transformative potential for Uzbekistan's education system, but realizing this potential requires addressing digital divide, teacher capacity, content quality, and gender disparities. The nation's selection as a UNICEF Learning Pioneer Programme Global Champion and ambitious initiatives like AI curriculum integration starting 2026 position the country for significant educational advancement.

However, technology alone cannot solve systemic educational challenges. Success requires sustained investment in infrastructure, comprehensive teacher support, local content development, and careful attention to equity considerations. As Alisher Navoi stated, "Knowledge is the fountainhead of all excellence"—making technology serve knowledge dissemination while preserving the human elements of education remains our enduring mission.

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