DIGITAL TRANSFORMATION IN EDUCATION: THE BEGINNING OF A NEW ERA

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ЦИФРОВАЯ ТРАНСФОРМАЦИЯ В ОБРАЗОВАНИИ: НАЧАЛО НОВОЙ ЭРЫ

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Abstract. Digital technology is a powerful tool that can support and transform education in many ways, from making it easier for teachers to choose learning materials to enabling learners to create new ways of learning. that digital transformation is one of the main factors that guarantee quality education.

Аннотация. Цифровые технологии являются мощным инструментом, который может поддерживать и трансформировать образование во многих отношениях, от облегчения выбора учебных материалов для учителей до предоставления возможности учащимся создавать новые способы обучения. Цифровая трансформация является одним из основных факторов, гарантирующих качественное образование.

Keywords: Digital transformation, digital technologies, informatization, digital competence, education.

Ключевые слова: Цифровая трансформация, цифровые технологии, информатизация, цифровая компетентность, образование.

Contemporary higher education institutions need to shape approaches to identifying solutions to problems not only existing in the present but also those arising from future professions, emerging technologies, and unresolved issues. This is the most important task for educational institutions during the period of digital transformation, just as it is in all fields. Recognizing the importance of digital development for Uzbekistan's economic growth, the government has prioritized digital transformation in its first strategic plan.

The adoption of the "Digital Uzbekistan – 2030" strategy and the focus on digitalization in the development strategy of New Uzbekistan for 2022-2026 reflect this commitment. As progress accelerates at an unprecedented pace and digitalization processes continuously evolve, every field specialist is required to consistently enhance their knowledge and skills. In this regard, our leader, Sh.Mirziyoyev, stated: "To achieve progress, we need digital knowledge and modern information technologies. They offer us a shortcut to development. Indeed, information technologies are penetrating all fields worldwide today" [1].

Indeed, the effective use of digital technologies has led to the development of artificial intelligence systems that can compete with human intelligence in recent years, the rapid automation of workplaces, and the exponential growth of other innovations.

As a result, educational institutions face the crucial task of developing technical, cognitive, social, emotional, and digital competencies necessary to address the challenges of the new era. Achieving this requires demanding a digital transformation of education. Recognizing the importance of continuously working, thinking, learning about and adapting to advanced technologies, as well as the need to incorporate them into various fields, is essential in understanding that the 21st century is characterized by innovation.

Digital technologies not only contribute to the current state of our lives but also hold significant importance for the future, enabling us to communicate, conduct activities, conduct scientific research, and solve various problems. As an example, the COVID-19 pandemic has demonstrated our reliance on digital technologies. During the COVID-19 pandemic, the widespread use of digital learning systems with inadequate infrastructure and limited resources in educational institutions around the world was identified as a major reason for the most serious disruptions and the suspension of education. As a result, students around the world were unable to acquire necessary knowledge due to the closure of educational institutions. The COVID-19 pandemic urged rapid changes in educational institutions to create inclusive, open, and sustainable learning systems using technology and human resources. This underscores the need for education institutions to learn and gain experience to increase their digital capabilities and readiness for successful digital transformation.

Digital transformation (DT) is the process of optimizing the management system of fundamental technologies and integrating digital technologies into existing technologies by organizations [2].

Digital transformation has influenced the field of education just like it has impacted every other sector. In education, it involves reevaluating the processes of learning and teaching, as well as leveraging the practical aspects of digital transformation through knowledge and technical tools, collaborating with modern digital infrastructure and software, and modernizing existing (legacy) technology while considering the attitudes towards the use of digital technology for effective utilization.

The drivers of digital transformation in education, along with their sources, include technological and organizational drivers, digital learning competencies, students' adaptive skills (Soft Skills) and specialized-professional skills (Hard Skills), as well as pedagogical factors.

Technological drivers that can fundamentally transform educational systems include cloud computing, artificial intelligence, the Internet of Things, digital games, augmented reality, 5G networks, social networks, and educational software [3].

As organizational drivers, the development of the Education 4.0 strategy, promoting inclusive and gender-balanced digitalization, redesigning, updating, and customizing educational programs, using digital technologies for interprofessional communication, shaping educational competencies, enhancing the experience of providing education through digital technologies, providing various innovations, ensuring comprehensive academic literacy, innovative pedagogical guidance, using hybrid teaching methods, evaluating practical exercises, and promoting reciprocal communication are considered.

The modern trends of societal development, the development of computer technologies, globalization, and the information process affect all fields, including education. Virtually all future educational and work positions require a certain level of rapidly changing digital skills and competencies.

Digital competence is one of the new concepts describing competencies related to digital technologies. In recent years, a variety of terms such as "ICT skills", "technological skills", "IT skills", "21st-century skills", "information literacy", "digital literacy and digital competencies", and "digital competence and skills" have been used. These terms are often used interchangeably with "digital competency" and "digital literacy" [4].

Digital learning competencies include learning to learn, continuous feedback and expression of ideas, integration of digital technologies for general education, selecting the necessary technology appropriately, collaborative work and planning, using digital technologies for personal and collective educational purposes, shaping innovative pedagogical guidance, assessing and improving various innovations, providing academic literacy, ensuring innovative pedagogical guidance, using hybrid teaching methods, evaluating practical exercises, and promoting reciprocal communication [5].

According to M. Fayziyeva's research, digital transformation enhances students' high-level thinking ability and conceptual understanding, improves logical thinking, develops information creation and communication skills on various topics, and encourages effective activity and successful problem-solving skills [6].

UNESCO also contributes to accelerating global efforts to use digital technologies to improve access to education, ensure inclusive and equitable quality education for all, and promote lifelong learning opportunities for all by supporting the development of digital competencies and digital literacy among teachers and students [7].

Students mostly prefer to use digital devices in educational activities. Consequently, the transition of daily educational activities to digital devices may cause a shift in the usual environment and routine of the traditional learning process, resulting in the revelation of one of several risks of digital transformation in education.

To achieve this, educational institutions need to undergo organizational restructuring. Continuous updating and adaptation of the educational institution's program, using digital technologies to support communication, and addressing the phased and temporal gaps between learners and experts, especially among other educational institutions, are of crucial importance. Educational institutions need to promote interest in scientific research and utilize hybrid teaching methods. It is essential to empower teachers with independence and support innovation in the classroom [9].

Once, education was simply about imparting knowledge to individuals. Now, it's essential to equip learners with adaptable skills that will guide them toward their resilient trajectories in an uncertain and ever-changing environment. To achieve this, each educator must possess both digital skills and relevant competencies themselves, and be equipped with the necessary tools.

Education should not only aim to impart knowledge but also to teach students how to learn. It is essential to promote the independence and responsibility of learners, to develop their skills in critical thinking and constructive criticism, to encourage them to engage in discussions and debates, to base their decisions on cognitive processes, to ask questions, to observe, and to express their own opinions and positions based on the teacher's observations.

Integrating digital technologies into education involves developing materials that meet the needs of learners, creating new methods of distance learning, devising new approaches to monitoring and evaluation. For this purpose, modern educators need to be knowledgeable about the relevant technologies, assess their usefulness, compatibility with content and environment, reliability, security, quality, design, operating principles, attractiveness, and interactivity.

Furthermore, digitizing education entails collaborative work among professors and educators, collaborative creation of online learning materials through online networks, establishing

partnerships with other educational institutions, exchanging experiences with colleagues, implementing innovative methods, and enhancing opportunities for development and improvement. Additionally, they themselves adapt international experiences, innovative technologies, and productive educational models.

Education models need to adapt to provide learners with the necessary skills for reading, work, and various interactions. These essential interpersonal skills are referred to as "Soft Skills" Soft skills enable individuals to adapt to a changing world and various professional tasks, acquire knowledge independently throughout life, communicate effectively, demonstrate social and cultural awareness, innovate, be curious, empathetic, proactive, responsible, solve problems, and collaborate effectively.

The Education 4.0 system should also foster the development of another category of skills commonly referred to as "Hard Skills" which encompass professional competencies and technical knowledge. Modern professionals need to understand not only their field of expertise but also the design of digital technology interfaces, management skills such as managing personnel, quality, time, technological resources, and all kinds of risks. Additionally, they should have knowledge of financial management principles, be aware of and understand the economic processes occurring in society, and possess computational and logical thinking skills, all of which fall under the category of "Hard Skills".

The most crucial aspect of digital transformation is enhancing innovative teaching technologies, effective teaching methods and styles, refining scientific-practical-methodological principles, developing educational project designs, and extensively applying them in the teaching process, which also underscores the significance of pedagogical factors. In advanced nations, cutting-edge modern educational technologies such as innovative partnerships, problem-based learning, project-based learning, game-based learning, tactile learning, and integrated learning are prevalent. These advanced modern educational technologies assist students in fostering independent thinking, enhancing entrepreneurial activities, acquiring information, reprocessing it, generalizing, making positive conclusions, making correct decisions, and developing into highly qualified specialists. However, in some educational institutions, adherence to traditional teaching methods, inadequate competency of some professors in utilizing modern technologies for teaching, lack of independent learning skills among students, overburdening of teachers at the initial stage, and emergence of issues in implementing educational technologies may pose challenges.

Quality education is not just a future asset, but it is a fundamental principle that provides the opportunity to address any present or future challenges effectively. In today's world, the situation emphasizes the importance of nurturing a generation that understands all the delicate aspects of its profession and is capable of creatively addressing the issues inherent in every stage of their mutual activity, namely the development of modern information technologies.

To achieve high efficiency, it is essential not only to focus on the content being taught but also on how knowledge is conveyed to students. Developing adaptive skills that enable students to overcome challenges related to changes in society and the labor market is crucial. They need to be encouraged to have more autonomy, self-management, and responsibility. As a result, there will be continuous improvement both within and outside the educational institution.

The analysis of scientific research shows that if educational institutions do not utilize digital technologies properly, many shortcomings in the digital transformation of education may arise. For instance, failure to attract students' attention and hindered acquisition of necessary knowledge, skills, and competencies in the curriculum could have a negative impact [8].

The majority of students prefer using digital devices in their learning activities. As a result, the integration of digital tools into daily learning activities may become a regular occurrence,

disrupting the traditional learning process and potentially exposing some of the challenges of digital transformation in education.

As an example of these issues, artificial intelligence-based educational technologies, such as ChatGPT, may present incorrect information during the process of generating content. This can potentially mislead learners and lead to them completing tasks with inaccurate or harmful information, hindering their ability to learn correct information. In such cases, learners may struggle with assignments that could be facilitated with carelessness or incorrect information.

Another issue is that in the process of writing essays using generative artificial intelligence tools, students may encounter difficulties in expressing their own ideas or understanding of information. This could lead to them providing arbitrary or incorrect responses to questions, or struggling to convey their own thoughts and knowledge accurately. While such problems and consequences may always exist, digital technologies continue to advance rapidly. In the coming years, many aspects of education and its various processes are expected to seamlessly transition into digital transformation without significant doubt. To effectively implement digital transformation, other issues such as revenue and expense analysis, security, and user acceptance need to be addressed with seriousness.

It should be emphasized in summary that all of these efforts are aimed at advancing digital transformation in our country, which has taken steps towards building a New Uzbekistan. These efforts involve long-term and wide-ranging initiatives to integrate digital innovations into all levels of the education sector, create opportunities for the adoption of digital skills among all learners in line with human values, develop analytical and critical thinking, acquire comprehensive digital competencies necessary for the future, further develop our country, and contribute to the prosperity of our people. It should be emphasized in summary that all of these efforts are aimed at advancing digital transformation in our country, which has taken steps towards building a New Uzbekistan. These efforts involve long-term and wide-ranging initiatives to integrate digital innovations into all levels of the education sector, create opportunities for the adoption of digital skills among all learners in line with human values, develop analytical and critical thinking, acquire comprehensive digital competencies necessary for the future, further develop our country, and contribute to the prosperity of our people.

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