

ECONOMIC SCIENCES

APPLICATION OF INNOVATIVE TECHNOLOGIES IN EDUCATION MANAGEMENT IN AZERBAIJAN: MODERN CHALLENGES AND OPPORTUNITIES

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Abstract

The article is devoted to the methods of using new innovative technologies in modern education. The development of modern education is one of the main priorities facing the state in Azerbaijan. The adaptation of Azerbaijani education to modern world standards is the main principle of the Strategic Development Plan in education. In particular, special attention has been paid to this area in Azerbaijani schools in order to improve the teaching-learning process of primary school students. The use of innovative technologies is one of the important factors for students to achieve high results in education. In this regard, benefiting from the experience of developed countries, observing their methods in the field of applying innovative technologies in education and applying them in Azerbaijan is one of the important issues facing the country's education.

Modern pedagogical technologies such as collaborative learning, project-based methodology, use of new information technologies and Internet resources in the modern educational process create conditions for the implementation of a student-centered approach, individualization and differentiation of education.

Keywords: educational management, innovative technologies, digital transformation, modern challenges, digitalization in education.

Introduction. Digital transformation continues to create radical changes in various areas of society, and education management is not left out of this impact. Traditional methods in the field of education management have difficulty adapting to the rapidly changing world. For this reason, with the application of digital technologies, education management systems are being updated, and more transparent and effective management models are being established. This transformation is not limited to the application of technology. It also changes conceptual approaches to education management, increasing the role of analytics and artificial intelligence in decision-making. The main goal of the study is to examine the changes that digital transformation has brought to the education management system of Azerbaijan and to determine the future prospects of this process against the background of existing difficulties.

Analysis of recent research and publications. Today, a number of important studies have been conducted on the digital management of education, both in Azerbaijan and internationally. Among them, the studies on the digital development of education by N. Aliyeva, A. Guliyev, T. Anderson, J. Dron, M. Fullan and others can be cited.

The purpose of the work is to analyze modern challenges, opportunities, and prospects for the application of innovative technologies in education management in Azerbaijan and to provide recommendations based on the relevant results.

The main material of the study. In modern times, the process of educational management is changing radically against the background of the enrichment

of society with information technologies. Traditional management methods are giving way to innovative approaches, and these changes directly affect the effectiveness of educational institutions [2]. The application of innovative technologies in educational management allows us to optimize not only the teaching process, but also the activities of management structures.

By innovative technologies, we mean not only computers and software, but also artificial intelligence, cloud technologies, digital analysis tools, automated management systems and other modern technological solutions [3]. These tools allow us to conduct more accurate analyses in decision-making in the field of education, monitor student and teacher activities, and use resources more efficiently [4].

The application of innovative technologies in education management is carried out in several directions:

1) Electronic management systems (LMS – Learning Management System). Through these systems, the distribution of course materials, assessment, registration of participation and other administrative functions are automated [5].

2) Cloud technologies. They provide effective platforms for storing and sharing data, while also enabling flexible collaboration at different management levels [6].

3) Data-Driven Decision Making. Educational institutions can make more targeted management decisions by analyzing student performance, teacher performance and other statistical data [7].

4) Artificial intelligence and analytical systems. Through predictive analytics, students' success poten-

tial can be determined in advance and recommendations can be provided to teachers on the application of individual approaches [8].

A number of reforms are being implemented in the Azerbaijani education system in this direction. For example, the "Student-Graduate Tracking System" (SMIS), "Education TV", "Virtual School" projects and other digital initiatives implemented by the Ministry of Science and Education are clear examples of this process [1]. Especially during the pandemic, the importance of innovative technologies has become even more evident and the digital transformation of educational institutions has accelerated [2].

However, there are a number of conditions for the successful application of innovative technologies in educational management: strengthening technological infrastructure, increasing the knowledge and skills of teachers and administrators in the field of ICT, development of the regulatory and legal framework and stability of financial provision are among these conditions.

Thus, innovative technologies act as an important tool for increasing transparency, efficiency and quality in educational management. The correct and strategic application of these technologies will strengthen the competitiveness of the Azerbaijani education system in the global education space.

Digital transformation - the systematic and strategic integration of modern information and communication technologies (ICT) into educational processes - is one of the main factors determining the future of education today. The transition from traditional educational models to flexible and dynamic educational environments enriched with digital technologies not only increases the quality of education, but also ensures its accessibility and effectiveness [6].

Digital transformation brings a number of fundamental changes to the education system. Most importantly, the limitations of space and time in the educational process are eliminated. Thanks to online classes, hybrid learning models, interactive resources and electronic platforms, education becomes more flexible and personalized [4]. This is especially important in terms of providing equal opportunities to students and students from different socio-economic backgrounds [7]. At the same time, through digital technologies, communication between all parties involved in the educational process – teachers, students, parents and administrators – is established more efficiently and in real time. By presenting educational resources in digital format, teachers can make lessons more interactive and interesting, and students have access to these materials at any time and place. Digital assessment tools and analytical systems allow for more accurate monitoring of student development dynamics and timely intervention.

Digital transformation also offers great advantages at the management level. As a result of collecting, analyzing and using data in electronic databases, education planning and management are carried out in a more informed and evidence-based manner. This approach allows education policymakers and leaders to make more accurate decisions.

The digital transformation initiatives that have taken place in the Azerbaijani education system in recent years – "Virtual School", "Education TV", "Student-Graduate Information System" (SMIS), electronic textbooks and digital learning platforms – serve as real examples of this process. These initiatives have played an important role in ensuring the continuity of education during the pandemic and its sustainable development in the subsequent period.

However, technology alone is not enough to successfully implement digital transformation. In addition to the development of infrastructure in this area, it is important to increase the digital skills of teachers and other education participants, adapt pedagogical approaches, and ensure digital inclusion.

Consequently, digital transformation is an important process that ensures that the education system responds to modern challenges. This transformation requires not only technical changes, but also a change in the approach to education and the formation of a new teaching philosophy. Thus, digital transformation becomes a key tool in ensuring the quality, accessibility, and sustainability of education.

Technological, economic, and social changes taking place on a global scale pose new and complex challenges to education systems. While the digitalization of education and the application of innovative technologies create development opportunities on the one hand, on the other hand, it creates the need to adapt to these changes, effectively allocate resources, and form new skills. These challenges cover not only technical, but also pedagogical, social, and ethical aspects.

One of the most important challenges is ensuring educational equality. The rapid development of digital technologies can further deepen the digital divide between different segments of society. The weakness of ICT infrastructure in rural and remote regions, the lack of necessary equipment and the Internet limit the access of pupils and students living in these regions to quality education. This is contrary to the principle of social justice and may also lead to inequality in the labor market in the future.

Another important challenge is the digital readiness of teachers and their ability to adapt to technological changes. Digital transformation is not limited to the use of technological tools; it also requires the renewal of teaching methodologies and changes in pedagogical approaches. Teachers should be regularly involved in advanced training courses to work with new tools and resources, and to effectively implement distance and hybrid learning models. In addition, psychological resistance and lack of motivation related to the adoption of technology are also factors that should be taken into account.

In the modern era, technologies such as artificial intelligence, automated analysis tools and big data bring new opportunities to education management. However, along with these opportunities, ethical and legal problems also arise. Questions regarding data protection, limiting interference with personal data, and the role of artificial intelligence in decision-making processes in the education system still remain open. In

this context, it is necessary to ensure the principles of transparency, accountability and ethical responsibility.

Another challenge for the sustainable development of education is the formation of skills in line with the changing demands of the labor market. A large part of the professions of the future will be closely related to technology and information. In this regard, the content and priorities of the education system should be reconsidered. In addition to traditional knowledge-based learning models, 21st century skills such as creative thinking, critical thinking, communication, and collaboration should also be included in the curriculum.

Finally, the sustainability and flexibility of education in a changing world are also among the modern challenges. Especially during the pandemic, it became clear that education systems must be more prepared and adaptive to unexpected crises. For this, it is important to establish alternative teaching mechanisms, diversify educational resources and promote innovative approaches at the institutional level.

Thus, modern challenges require changes in not only technological, but also strategic and social approaches to education management. In order to adequately respond to these challenges, coordinated state policy, strong pedagogical preparation and continuous technological investments play an important role.

The application of innovative technologies in education management opens up wide opportunities for both solving existing problems and planning future development. The correct and purposeful use of digital tools and technological solutions allows the education system to operate more efficiently, transparently and flexibly. These opportunities are not limited only to technological innovations, but also serve to increase efficiency in the educational process and optimize management.

First of all, the application of digital management systems allows for reducing administrative burdens in educational institutions and more efficient use of resources. Electronic journals and diaries, electronic management platforms for school administration, digital tracking of student and teacher activities, enable a more accurate and analytical approach when making strategic decisions. Real-time data collection and analysis through such systems directly affects the quality of education.

A second important opportunity is the development of distance and hybrid education models. The widespread use of the Internet and the growth of online learning platforms allow education to reach a wider audience by eliminating time and space constraints. This is extremely important in terms of ensuring the continuity of education, especially in pandemics or other emergencies. At the same time, it contributes to the realization of the concept of lifelong learning and promotes personal development.

Innovative technologies also expand personalized learning opportunities. Artificial intelligence-based learning platforms and adaptive learning systems can make the learning process more productive and motivating by providing content tailored to the individual needs of students. These technologies also help teachers identify students' weaknesses and strengths in a

timely manner and create opportunities for result-oriented intervention.

In terms of future prospects, the application of blockchain technologies in education should be particularly noted. This technology allows for the secure and transparent storage and recognition of educational documents, certificates and diplomas. Thus, fraud is prevented and the process of recognizing diplomas at the international level is facilitated.

At the same time, the application of big data (Big Data) and educational analytics tools creates broad opportunities for the scientific formulation of educational policies, prediction of student success and efficient planning of resources. This makes educational management a more strategic and fact-based process.

The future of education also depends on the development of open educational resources (OER). These resources provide free, high-quality and comprehensive materials for teachers and students. This also serves to democratize knowledge and promote inclusive education. Finally, the wider application of artificial intelligence, virtual reality (VR), and augmented reality (AR) technologies can significantly improve the effectiveness of learning by increasing the interactivity and practicality of education.

Thus, innovative technologies create broad opportunities and prospects not only for solving current problems in educational management, but also for building a sustainable and competitive education system. To make the most of these opportunities, strategic planning, state support, and continuous pedagogical innovations are among the essential conditions.

Conclusion. As shown in the article, the application of innovative technologies in education management is one of the necessary requirements of the modern era. Digital transformation creates important opportunities in terms of improving the quality of education, ensuring transparency and effectiveness of management. The steps taken in this direction in the world show that successful implementation is possible not only with technological support, but also with the preparation of human capital, the adaptation of the regulatory legal framework and the formation of an educational environment open to continuous innovations.

Azerbaijan, not remaining aloof from these global trends, has taken serious steps towards the digitalization of education in recent years. However, some problems in infrastructure, personnel training and management processes in this area still remain relevant.

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