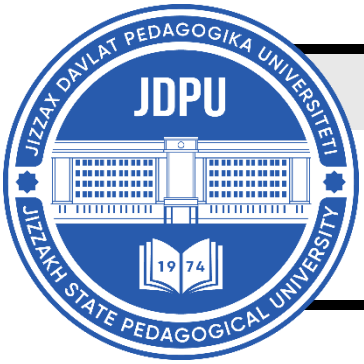
DOI: https://doi.org/10.37547/mesmj-V6-I4-10 Pages: 95-107

MENTAL ENLIGHTENMENT SCIENTIFIC – METHODOLOGICAL JOURNAL



MENTAL ENLIGHTENMENT SCIENTIFIC – METHODOLOGICAL JOURNAL

http://mentaljournal-jspu.uz/index.php/mesmj/index

THE IMPACT OF DIGITAL TECHNOLOGIES ON THE QUALITY OF HIGHER EDUCATION IN KAZAKHSTAN

Karlagash Bekseitovna Baimurzayeva
Master's degree holder,
Senior Lecturer at the Department of Russian Language and Literature
Faculty of Philology, M. Auezov South Kazakhstan University
Shymkent, Kazakhstan

ABOUT ARTICLE

Key words: digitalization, higher education, Republic of Kazakhstan, education quality, distance learning, electronic educational resources, information and communication technologies, digital transformation, digital literacy, educational platforms, state program "Digital Kazakhstan," Platonus, OpenU.kz, digital infrastructure, digital competencies of students.

Received: 10.06.25
Accepted: 12.06.25
Published: 14.06.25

Abstract: This article examines the impact of digitalization processes on the quality of higher education in the Republic of Kazakhstan. A systematic analysis of the theoretical foundations of digitalization is conducted, exploring the main directions of state policy in the field of digital transformation of the educational environment, as well as the practical experience of implementing digital technologies in Kazakhstan universities. Special attention is given to how digitalization influences the accessibility, personalization, flexibility, and effectiveness of educational services; the development of students' digital competencies; and the improvement of transparency and objectivity in the knowledge assessment system. The study also identifies the key challenges faced by higher education institutions: digital inequality, insufficient digital literacy among educators, the need for infrastructure modernization, and the protection of personal data. Based on this analysis, the article offers recommendations for the further development of digitalization in

higher education in Kazakhstan, taking into account international experience and the specific characteristics of the national education system.

Introduction: In today's world, digitalization is a dominant trend. In the Republic of Kazakhstan, this trend is reflected in the state program "Digital Kazakhstan" [1; p.5]. The development of information and communication technologies (ICT) has radically transformed the educational paradigm of the 21st century. Digitalization in education is defined as the integration of digital technologies into the processes of learning, teaching, administration, and interaction among all participants in the educational process. According to a study published in Frontiers in Psychology, the digital transformation of higher education institutions involves technologies, education, and management, as well as philosophical aspects reflecting the changing perception of education in the digital age [2; p.19].

Digitalization encompasses not only the technical dimension but also the transformation of pedagogical approaches, organizational structures, and educational practices. In modern conditions, it includes e-learning, distance learning, mobile learning, blended learning formats, the use of cloud technologies, as well as the application of data analytics and artificial intelligence [3; p.11]. E-learning allows for the delivery of educational materials and lectures in an online environment; distance learning enables students to gain knowledge outside of educational institutions; mobile learning allows access to information via smartphones and tablets anytime, anywhere. Blended learning combines the strengths of traditional and distance formats, while cloud technologies provide access to resources without geographical restrictions.

Current theoretical approaches to digitalization include the concept of connectivism, which emphasizes the importance of networked connections in the learning process [4; p.7]; the theory of digital pedagogy, which explores the influence of digital tools on teaching methods [5; p.14]; and the Education 5.0 concept, aimed at creating an educational environment that integrates modern technologies and innovative methods [6; p.8].

The quality of higher education is determined by the extent to which educational programs, services, and infrastructure meet established standards. According to the Bologna

recommendations, the main indicators of quality include the content of programs, the level of the teaching staff, the quality of teaching and learning materials, the level of research activity, the availability of educational resources, international cooperation, and the satisfaction of students and employers [7; p.45].

With Kazakhstan's accession to the Bologna Process in 2010, the country's higher education system has been actively adapting to international standards, including the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG) [8; p. 31] and ISO 21001:2018. The use of digital technologies helps meet these requirements by increasing the accessibility of learning materials, enhancing student-teacher interaction, and automating the assessment processes [9; p. 23].

Studies show that digitalization significantly improves the quality of education. It expands access to learning, enabling students from remote regions and people with disabilities to receive quality education [10; p. 35]. The flexibility of learning formats allows students to choose a pace and mode that suits them, positively impacting material retention. Personalization of programs is achieved through artificial intelligence technologies that adapt content to learners' individual needs [11; p.18]. Digital platforms simplify communication among participants in the educational process, while automated testing and knowledge control ensure transparency and objectivity in assessment [12; p.22].

However, digitalization also faces challenges. The main problems include digital inequality between regions and social groups, insufficient digital literacy among teachers and students, the need for substantial investment in digital infrastructure, and risks related to information security and data protection [13; p.27].

Global leaders in educational digitalization–Singapore, South Korea, Finland, and the Netherlands–have achieved success thanks to coherent state policy, well-developed infrastructure, and a highly qualified teaching workforce [14; p.9]. Kazakhstan is also actively developing educational digitalization by implementing platforms such as Platonus, Univer 2.0, BilimLand, Oqylyq, OpenU.kz, and others, thus creating a digital learning ecosystem aimed at improving the quality of higher education [15; p.30].

The development and implementation of digital technologies in Kazakhstan's higher education system is a priority area of state policy in the context of building a knowledge-based

economy and information society. The digitalization of education is regarded as a crucial tool for increasing both the accessibility and quality of educational services and enhancing the global competitiveness of Kazakhstani universities [1; p. 5].

In order to actively implement digital technologies across various spheres of life, the State Program “Digital Kazakhstan” was developed and adopted in 2017 [1; p.6]. The main goal of this program was to create the necessary conditions for the country’s transition to a digital economy, including the establishment of a sustainable digital educational environment. The program covers five key areas: development of digital infrastructure, digital transformation of the economy, digital government, development of human capital, and the creation of an innovative ecosystem. Particular attention is given to education as a key element in preparing professionals for the digital economy [2; p.9].

According to the program's provisions, the integration of digital technologies into the education system involves: modernization of educational infrastructure, development and implementation of modern electronic educational resources, creation of a unified informational educational space, and ensuring equal access to quality educational services for all citizens, including students from rural and remote regions [2; p. 12].

The implementation of the higher education digitalization strategy is carried out by the Ministry of Science and Higher Education of the Republic of Kazakhstan, which develops regulatory acts, defines the main directions for digital transformation in the educational sector, and coordinates the activities of universities in the adoption of innovative technologies [3; p.8]. One of the key documents regulating the digital transformation of education is the Concept for the Development of the Digital Educational Environment of Universities in the Republic of Kazakhstan for 2021–2025 [4; p.10]. This document outlines the main goals and objectives of universities regarding the digitalization of the educational process, scientific research, academic program management, and interaction with external partners.

As part of the national strategy, various digital platforms are being actively introduced in Kazakhstan universities, among which Platonus, Univer 2.0, BilimLand, Oqylyq, OpenU.kz, and others stand out. The Platonus platform automates the academic process, including the formation of individual study plans, student registration, attendance tracking, and academic performance monitoring [5; p.22]. Univer 2.0 is used to automate academic procedures and

enhance administrative efficiency [5; p.25]. OpenU.kz was developed as a national online platform for massive open online courses (MOOCs) to provide educational programs in a distance-learning format [6; p. 28].

In addition, Kazakhstan's state policy emphasizes the development of digital competencies among academic staff. To this end, training sessions, workshops, and professional development programs are organized, fostering digital literacy and ICT proficiency among instructors [7; p.18].

An essential aspect of state policy is the creation and maintenance of a legal and regulatory framework governing digitalization in education. The Republic of Kazakhstan actively aligns its standards and regulations with international requirements, particularly the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG) [8; p.31]. This enables national universities to successfully integrate into the global educational ecosystem and strengthens international recognition of Kazakhstani diplomas.

The government also places strong emphasis on ensuring equal access to quality education. In the context of digitalization, it is crucial to bridge the digital divide between regions, ensure stable and fast internet access, create digital labs and classrooms, and implement distance learning platforms in small and regional universities [9; p.35].

According to data from the Ministry of Science and Higher Education of Kazakhstan, by 2024, 117 universities in the country were using various forms of electronic and distance learning, ensuring the continuity of education even during the COVID-19 pandemic [10; p. 37]. The pandemic served as a powerful catalyst for digital change, clearly demonstrating the effectiveness and necessity of further digital transformation in higher education [11; p.27].

Despite the progress achieved, certain challenges remain in the process of digitalization. These include the insufficient preparedness of both teachers and students to work in digital environments, limited funding for universities to acquire modern equipment, the need to improve the legal framework, and the development of unified standards for the use of digital technologies in education [12; p.29].

The state policy of the Republic of Kazakhstan in the field of higher education digitalization is aimed at creating a modern educational ecosystem based on the application of digital technologies, which will ensure the international competitiveness of Kazakhstani

universities. At the same time, further digital transformation requires a comprehensive approach, including infrastructure modernization, the development of digital competencies among education stakeholders, and the establishment of an effective regulatory framework.

Modern higher education in Kazakhstan is actively progressing toward digital transformation. The practical implementation of digitalization in the country's universities has been made possible through government support, investments in digital infrastructure development, and initiatives by the institutions themselves. Particular focus is placed on the creation of electronic educational resources, the introduction of distance learning formats, the automation of academic management processes, and the application of modern information technologies in both teaching and research activities [1; p.5].

One of the most important areas of higher education digitalization in Kazakhstan is the implementation of automated information systems for academic process management. The most widely used of these is Platonus, a platform specifically developed for Kazakhstan universities. It enables student registration, the creation of individual learning plans, class scheduling, academic performance and attendance tracking, and the maintenance of digital gradebooks [2; p.22]. According to data from the Ministry of Science and Higher Education of the Republic of Kazakhstan, in 2024, over 70% of universities in the country actively used Platonus in their operations [3; p.37].

Another major domestic development is Univer 2.0, which provides automation of educational processes, management of academic curricula, monitoring of faculty workload, and automated generation of class schedules [4; p.25]. Universities in Kazakhstan report a significant reduction in administrative workload due to the adoption of this platform.

Alongside the automation of internal documentation, Kazakhstan universities are also actively implementing platforms for distance and online learning. One of the most widely used is the national platform OpenU.kz, created under the "Digital Kazakhstan" program. It offers a wide range of massive open online courses (MOOCs) [5; p.28]. OpenU.kz allows students including those from remote regions to access high-quality educational programs, learn from the country's top educators, and obtain certificates upon course completion.

An important component of practical digitalization has been the use of the BilimLand platform, which offers interactive educational resources, video lectures, tests, and training

simulators for independent study [6; p.19]. This platform is in high demand both in schools and higher education institutions across the country.

The Oqylyq.kz platform provides students and teachers with access to licensed electronic textbooks and learning materials, significantly reducing costs on printed resources and ensuring quick access to up-to-date information [7; p.15].

In addition to domestic solutions, Kazakhstan universities widely use international digital platforms such as Moodle, Google Classroom, Canvas, Microsoft Teams, Zoom, and others. According to surveys conducted among instructors at leading Kazakhstani universities, the most actively used platforms are Moodle (used in over 80% of universities), Zoom, and Google Classroom [8; p.23].

Since 2024, several universities in Kazakhstan have begun integrating with applications such as Kaspi and mGov, enabling the digitization of many student documents, including ID cards, diplomas, certificates, and more [9; p.29]. This has significantly simplified documentation processes and increased convenience for students.

Digitalization has also transformed the interaction between students and instructors. Electronic libraries are now widely used in universities; virtual laboratories are being created; and online conferences, seminars, and workshops are regularly conducted. The shift to digital forms of learning has enhanced the flexibility of the educational process and enabled the development of individual learning paths for students [10; p.34].

A crucial area of practical digitalization is the development of monitoring and quality control systems in education. The use of electronic testing systems, automated knowledge assessment tools, and systems for formative and summative evaluation has greatly improved the objectivity and transparency of academic achievement evaluations [11; p.27].

However, despite these significant achievements, certain problems persist in the digitalization process. Key challenges include: low digital literacy among some teachers and students, lack of funding for the purchase of hardware and software, and uneven digital infrastructure across various regions of the country [12; p.32]. These issues require continued systematic solutions at both the state and institutional levels.

Overall, the experience of digitalization in Kazakhstan universities demonstrates positive progress. A foundation has been laid for the continued development of digital

educational technologies, the formation of digital culture in the academic environment, and the enhancement of educational quality and global competitiveness of Kazakhstani higher education institutions [13; p.35].

In recent years, digitalization has become a key driver of transformation in Kazakhstan's higher education system. The introduction of modern information and communication technologies (ICT) has significantly impacted the quality of education, changing both the methods of teaching and the content of academic programs, the modes of interaction between students and teachers, as well as the organization of academic and scientific activities [1; p.5].

One of the primary ways digitalization has enhanced educational quality is by increasing access to educational services. The implementation of distance and blended learning formats has allowed for greater participation by students from remote regions, increased opportunities for individuals with disabilities, and supported students balancing work and study [2; p.17]. Distance learning platforms such as OpenU.kz, Moodle, Google Classroom, and others have become an integral part of the learning process in Kazakhstan universities [3; p.28].

Another important outcome of digitalization has been the increased flexibility and personalization of learning. The use of electronic educational resources, online courses, video lectures, simulations, and training tools enables students to choose their own learning pace and adapt their educational trajectory to individual needs. This contributes to greater motivation and improved knowledge acquisition [4; p.19].

Digitalization has also had a positive effect on the efficiency of educational process management. The automation of such processes as student registration, curriculum development, timetable creation, and the tracking of academic performance and attendance– thanks to systems like Platonus and Univer 2.0 has reduced administrative costs and accelerated internal university procedures [5; p.22].

A key area of improvement has been communication between instructors and students. Electronic gradebooks, notification systems, forums, chats, video conferencing, and interactive platforms have significantly increased the speed and convenience of information exchange, ensuring a more transparent and responsive learning process [6; p.27].

One of the most important outcomes of digitalization has been the improvement in the quality of student performance assessment. The introduction of automated testing systems,

electronic examination platforms, and tools for formative assessment has helped ensure objectivity, transparency, and timeliness in the evaluation of student knowledge [7; p.24].

Digitalization has also played a critical role in the development of new digital competencies among students, which have become essential to their competitiveness in the international labor market. In a rapidly evolving technological environment, skills such as digital platform proficiency, critical thinking, information management, and the ability to work in online environments are vital for graduates [8; p.31].

However, despite the numerous positive changes, the digitalization of higher education in Kazakhstan continues to face a number of challenges and problems. The main issues include:

- **Digital inequality,** which is evident in varying levels of access to the internet and modern devices across regions and social groups [9; p.34];

- **Insufficient digital literacy** among some educators and students, necessitating additional training and professional development programs [10; p.27];

- **Lack of unified standards and regulations** for the implementation of digital educational technologies [11; p.29];

- **Information security concerns,** including the protection of personal data and the risks of cyberattacks [12; p.32];

- **The need for significant financial investments** in updating hardware, software, and establishing a stable digital infrastructure within universities [13; p.35].

The COVID-19 pandemic in 2020 acted as a catalyst for the accelerated digitalization of education in Kazakhstan. The forced transition to distance learning revealed both the strengths and weaknesses of the existing system from the high adaptability of educators and students to the lack of technical resources and instructional materials [14; p.18].

According to the Ministry of Science and Higher Education of the Republic of Kazakhstan, by 2024, more than 90% of universities in the country had adopted blended and distance learning formats, marking significant progress compared to 2017–2018 indicators [15; p.21].

The impact of digitalization on the quality of higher education in Kazakhstan is multifaceted. On the one hand, it enhances accessibility, flexibility, personalization, objectivity in assessment, and the development of essential student competencies. On the other hand, it

requires a comprehensive response to existing challenges to ensure the long-term sustainability and effectiveness of educational digital transformation.

Higher education in Kazakhstan has made significant progress in digitalization over recent years. However, this process remains in a stage of active development and requires further systemic solutions. Amid the rapid global changes driven by technological progress, the transition to a digital economy, and shifts in the labor market structure, digital transformation of the education system has become a crucial condition for maintaining the competitiveness of the national higher education system [1; p.5].

One of the key areas for future development is the creation of modern digital infrastructure. For universities to function effectively, it is necessary to ensure high-speed internet access, modernize computer labs, create digital laboratories and media libraries, and introduce cloud data storage systems [2; p.9]. The “Digital Kazakhstan” state program includes measures to provide all educational institutions with reliable and high-quality internet connections [3; p.12].

Special attention must be paid to developing human resources. The insufficient level of digital literacy among faculty members remains a serious barrier to digitalization. Therefore, it is essential to organize regular professional development courses, training sessions, and seminars aimed at building ICT competencies and teaching skills for working with digital platforms and resources [4; p.18].

A promising direction is the integration of artificial intelligence (AI), big data technologies, and adaptive learning systems into the educational process. AI can be used to create personalized learning paths, predict student performance, identify potential learning difficulties, and offer individualized recommendations [5; p.23].

Another important element is the development and implementation of high-quality digital content. Currently, there is a shortage of localized educational resources tailored to Kazakhstan’s educational standards and specific context. The creation of digital textbooks, multimedia materials, interactive courses, and virtual simulations in Kazakh, Russian, and English remains a pressing task [6; p.27].

Further development of online learning and MOOC platforms is also required. The national platform OpenU.kz has proven effective, but it still needs expansion—more courses,

greater participation from universities and instructors, and integration with international educational platforms [7; p.30].

A unified national digital educational platform should be established to consolidate key services: academic process automation, digital content storage, electronic gradebooks, forums, video conferencing tools, and distance learning platforms [8; p.22].

Another vital area is ensuring cybersecurity and personal data protection. The increase in digital data volumes and the shift to electronic documentation (student IDs, diplomas, certificates) raise the risk of data leaks and cyberattacks. This necessitates the development and implementation of modern information protection systems, regular security audits, and staff training in cybersecurity fundamentals [9; p. 32].

Efforts should also be made to unify standards and regulations governing the use of digital technologies in education. Adopting uniform national standards will ensure quality, comparability, and international recognition of educational programs both domestically and abroad [10; p.29].

A promising trend is the international integration of Kazakhstan's higher education system. Participation in global educational networks, the implementation of joint online programs, virtual academic exchanges, and international research collaborations are all highly relevant [11; p.35].

Finally, an essential priority is the development of a digital culture in universities. This involves fostering a new mindset and behavior among students, faculty, and administrative staff one based on the active use of digital technologies in educational, research, and administrative activities [12; p.27].

The future of higher education digitalization in Kazakhstan depends on a holistic approach encompassing technical, human, methodological, and organizational components. The implementation of these strategies will significantly improve the quality of educational services, enhance the international competitiveness of Kazakhstani universities, and lay the foundation for the sustainable development of the national education system in the context of the digital economy.

Conclusion

The conducted study has made it possible to comprehensively analyze the impact of digitalization on the quality of higher education in the Republic of Kazakhstan. In the context of rapid technological advancement and the transition to a digital economy, Kazakhstan's state policy has demonstrated a strong commitment to building a modern, innovative, and competitive educational system.

Within the framework of the "Digital Kazakhstan" program, large-scale initiatives were implemented to modernize university infrastructure, develop and introduce domestic information systems (Platonus, Univer 2.0), national online platforms (OpenU.kz), and adopt international educational solutions (Moodle, Google Classroom, Zoom, etc.), which together have ensured the sustainable development of a digital educational environment [1; p.5].

The practical implementation of digitalization in Kazakhstan universities has led to a significant improvement in the quality of educational services: access to education for students from remote regions has increased, learning has become more flexible and personalized, communication between faculty and students has improved, and transparency and objectivity in knowledge assessment have been strengthened [2; p.17].

Digitalization also contributes to the development of new competencies among students, enhancing their competitiveness in the global labor market [3; p.23]. At the same time, the study revealed that several challenges remain unresolved in the digital transformation process, including digital inequality between regions, insufficient digital literacy among some faculty and students, information security concerns, and a lack of financial and human resources [4; p.29].

The prospects for the development of digitalization in Kazakhstan's higher education are closely tied to further expansion of digital infrastructure, the creation of high-quality digital content, the active integration of artificial intelligence and big data technologies into the educational process, capacity-building among academic staff, the formation of a unified national digital educational platform, and the strengthening of the regulatory framework [5; p.35].

In the face of global challenges and growing international competition in education, the successful implementation of these directions will enable Kazakhstan not only to improve the

internal quality of its educational services, but also to strengthen the position of its national higher education system in the global academic landscape.

The analysis confirms that digitalization is an integral element of the sustainable development of Kazakhstan's higher education system and a key factor in ensuring its efficiency, accessibility, and quality over the long term.

References:

1. Ministry of Digital Development of the Republic of Kazakhstan. Digital Kazakhstan Program. – Nur-Sultan, 2017. – 15 p.
2. Frontiers in Psychology. Digitalization and Digital Transformation in Higher Education. – 2022. – p. 19.
3. OECD. Digital Education Outlook. – Paris, 2021. – p. 11.
4. Siemens, G. Connectivism: A Learning Theory for the Digital Age. – 2005. – p. 7.
5. Wikipedia. Digital Pedagogy. – 2023. – p. 14.
6. Education 5.0: Requirements, Enabling Technologies, and Future Directions. // arXiv. – 2023.
7. Zhumabaev, A.R. The Quality of Higher Education and Digitalization: Problems and Prospects // KazNU Bulletin. – 2023. – No. 2. – pp. 45–52.
8. Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG). – Brussels, 2015. – p. 31.
9. World Economic Forum. Shaping the Future of Education. – Geneva, 2023. – p. 23.
10. Bektassova, G.E. The Impact of Digital Technologies on Educational Accessibility in Kazakhstan // Modern Educational Technologies. – 2022. – No. 4. – p. 35.
11. Tleubaev, S.K. Digital Transformation of Educational Programs // Education and Science. – 2023. – No. 6. – p. 18.
12. Ministry of Education of Kazakhstan. Digital Learning Strategies. – Astana, 2023. – p. 22.
13. Abdullina, R.N. Digitalization of Kazakhstani Universities: Achievements and Challenges // Education Bulletin of Kazakhstan. – 2024. – No. 1. – p. 27.
14. UNESCO. Global Education Monitoring Report. – Paris, 2023. – p. 9.
15. OpenU.kz. National Online Learning Platform. – 2024. – p. 30.