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DIGITAL ASSESSMENT SYSTEMS IN UZBEKISTAN AND DEVELOPED FOREIGN COUNTRIES: A COMPARATIVE ANALYSIS

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Abstract: This article analyzes the current state of implementation of digital assessment systems in higher and vocational education institutions in Uzbekistan and developed foreign countries, along with the advantages and challenges encountered in their practical application. Based on international best practices, ways to eliminate existing shortcomings and recommendations for further improvement of digital assessment systems are provided.
Keywords: digital assessment, pedagogical control, electronic testing, digital technologies, online examination, proctoring, authentic assessment, adaptive testing, digital platforms, blogging, education quality.

Today, digital technologies are fundamentally transforming the field of education in modern society. In particular, the digitization of assessment systems is becoming an important factor in improving the quality of education, ensuring transparency, and enhancing the efficiency of the learning process. In Uzbekistan, comprehensive reforms have been implemented in recent years to introduce digital education and assessment systems. At the same time, this process has advanced significantly in developed foreign countries, and their experience serves as an important object of comparative analysis and study for Uzbekistan.
This article presents a comparative analysis of the main features, advantages, and challenges of digital assessment systems in Uzbekistan and developed foreign countries. It also discusses the role of international experience in shaping effective digital assessment practices and the issues of adapting it to the national education system.
In Uzbekistan, the digitization of education has been elevated to the level of state policy. The "Digital Uzbekistan – 2030" strategy adopted in 2020 specifies issues such as the development of e-learning and, in particular, the rapid implementation of digital technologies and infrastructure in the educational process.
Modern digital assessment electronic platforms are being introduced and continuously improved in the higher and vocational education systems of Uzbekistan.

Digital assessment systems serve as an important means of ensuring transparency, objectivity, and promptness in the educational process, and the processes of digitizing education are rapidly developing in Uzbekistan. Digital assessment refers to the methods of checking and evaluating the knowledge and skills of learners through information technologies.
The process of digitization not only makes the interaction between students and teachers more interactive and efficient, but also provides opportunities to improve the quality of education and further individualize the educational process.
According to international research, digital assessment has a number of advantages over traditional methods; in particular, it increases objectivity and accuracy in knowledge testing and enables prompt feedback to students. For example, the analysis by Redecker and Johannessen (2013) emphasizes that digital assessment makes it possible to evaluate learners' results impartially and deliver feedback quickly. At the same time, the introduction of digital assessment brings certain challenges, including ensuring academic integrity, overcoming technical

difficulties, and addressing the insufficient levels of information-communication technology proficiency among teachers.

Studies by scholars including N.S.Kramarenko, A.Yu.Kvashin, S.D.Karakozova, A.Yu.Uvarova, and O.V.Akimova have shown that due to limited resources and insufficient digital literacy of educational staff, digital transformation has a delayed and uneven impact on educational institutions, and that educational reforms carried out in the past decade have been very challenging.

In recent years, the higher and vocational education system has been transitioning to a credit-module system and adapting assessment to international standards. The 2019 Concept for the Development of Higher Education emphasized the need to align the national assessment system with international standards and to develop forms of assessment that are conducted remotely (without direct contact with students). In addition, following Presidential Decree No. PF-158 of October 16, 2024, radical changes are being implemented in the digitization of the vocational education system.

For all state higher education institutions in our country, a centralized electronic data system called HEMIS has been introduced, which serves to record, online, students' admission and course performance results. Additionally, HEMIS is an information system for managing higher education processes, including modules such as "Administrative Management," "Educational Process," "Scientific Activity," and "Financial Management." In the vocational education system, the creation of the electronic platform prof.hemis.uz is also aimed at improving the quality of education and ensuring transparency and fairness in the assessment process. From the above, it is clear that implementing digital assessment models in education is relevant in both theoretical and practical terms. In this article, international and local experiences will be compared in order to analyze the methodological foundations and effectiveness of this process.

The first results indicate that using information systems and electronic platforms in the educational process can increase transparency and efficiency. In particular, the introduction of these electronic platforms in all higher education and vocational training institutions has enabled the recording of student data and grades in an electronic database. This, in turn, allows centralized monitoring of the assessment process and the ability to track each student's learning progress. It should be noted that conducting online test examinations is a widely used form of digital assessment.

In higher education, final control exams in many subjects are being organized as electronic tests. Some universities have developed special software and platforms for remote test examinations. In order to ensure the smooth conduct of such electronic examinations, video surveillance and proctoring technologies are being introduced on an experimental basis. However, the coverage of proctoring at present is limited; for example, nearly 63% of universities in the United States and Canada use online proctoring services for distance exams, whereas in Uzbek higher education institutions this figure remains relatively low. The implementation of digital assessment in practice has begun to change the experience of teachers and students as well. According to the results of a survey, more than 80% of teachers who used assessment through digital test examinations indicated that this method reduces the influence of human factors and decreases errors and subjectivity in assessment. Approximately 90% of students reported that being able to receive test results immediately provides them with quick feedback on their knowledge, which is noted as an important advantage of digital assessment.

At the same time, local experience has revealed a number of problems. First, in many cases, electronic assessment is limited to test examinations, that is, the tasks are mainly in closed format (multiple-choice), which cannot fully assess students' analytical or creative abilities. In surveys, over 70% of teachers expressed concern about this very issue. Second, during remote

examinations there is the problem of controlling academic conduct; 60% of teachers believe that the risk of students' illegal use of open information sources, in other words cheating and copying, increases. The third problem is the instability of technical support: about half of the students reported experiencing internet disconnections or software errors during online examinations. To solve these problems, it is necessary to further improve technical infrastructure in our country, ensure stable internet connectivity in all regions, and develop new methodologies to maintain fairness in digital assessment.

World experience includes many advanced practices for introducing digital assessment into education systems. Many universities in developed countries have made electronic assessment an integral part of the educational process. For example, at the University of Leeds in the United Kingdom, digital assessment has been implemented as a "de facto" standard, a decision driven by factors such as creating an inclusive learning environment and increasing efficiency and fairness in assessment. Through digital platforms, assessment materials are presented taking into account the diverse needs of students, and there is an opportunity to monitor results quickly and transparently. In addition, digital marking has been introduced to enable real-time monitoring of student performance by each faculty or department. As a result, it is noted that the workload of professors is eased and it becomes easier to control the quality of assessment.

In foreign universities, forms of digital assessment are also diverse: test examinations, online quizzes, electronic portfolios, assignments in the form of projects and presentations, assessment via forums and blogs, and even innovative methods such as assessing practical skills using virtual reality technologies are being applied. For example, analyses conducted within the European Union have pointed out the necessity of moving away from traditional approaches to assessing 21st century skills toward authentic assessment using information technologies (i.e., assessing students' ability to apply their knowledge in real-life situations). To this end, some educational institutions have introduced programming-based adaptive testing systems, which adjust the complexity of questions according to the student's responses. Initial studies have shown that such adaptive examinations allow for a more accurate assessment of students' knowledge levels and increase their satisfaction with the test-taking process.

Furthermore, a number of foreign experiences report that transitioning to electronic assessment has increased students' motivation to learn and improved overall academic outcomes. For example, a study on the introduction of digital assessment tools in colleges in Saudi Arabia found that online self-assessment tools significantly improved students' performance in physics. In addition, practice quizzes and automated feedback systems that help students prepare are also noted in the literature to have a positive impact on the quality of education.

In the United States, Europe, and Asian countries, which are considered leaders in the field of digital assessment, special attention is paid to ensuring academic integrity. Many universities use special proctoring programs to monitor students' behavior during exams online. For example, it is known that more than 60% of universities in the United States and Canada have implemented various online proctoring services. Some higher education institutions make extensive use of software like Respondus, ProctorU, and Proctorio; their advantages include the ability to securely administer tests for various courses remotely and to conduct pre-diploma examinations in a distance format. At the same time, Western experts note that there are debates about the ethical aspects of such proctoring tools and the stress burden they place on students. Thus, the foreign experience shows that digital assessment involves not only the adoption of technology but also its pedagogical and ethical adaptation for effective use.

A general analysis of foreign studies shows that digital assessment usually has a positive impact on the educational process. Firstly, it speeds up assessment and ensures that results are provided

in a timely manner. Secondly, it allows for the creation and analysis of a large database of students' grades, which helps to identify which aspects of the educational system need attention. Thirdly, digital platforms help to create equal opportunities for all students; for example, accommodations such as enlarging fonts or reading tests aloud for students with disabilities are possible, which is an important factor for inclusive education. For this reason, in European universities the transition to digital assessment systems is considered an integral part of implementing a "learner-centered" approach. Of course, each country or institution has its own conditions and experience. But the overall trend is that by introducing assessment models based on digital technologies in education, improvements in quality and efficiency are being achieved.

A comparative analysis of Uzbekistan's and foreign experience shows that there are certain similarities and differences in the implementation of digital assessment systems. First of all, in both cases it is emphasized that the main purpose of transitioning to digital assessment is to improve the quality of education and the fairness of assessment. Assessment through digital technologies reduces the influence of human factors, produces results quickly and accurately, and also improves pedagogical oversight — principles that are recognized by both local and foreign experts. For example, Uzbek researcher Z.T. Makhkamova notes that digital assessment methods ensure fast and impartial evaluation in real-time and facilitate individualized approaches for each learner. These conclusions are also supported by international researchers, who note that digital assessment increases transparency in education and creates new opportunities for assessing 21st century skills. For this reason, both Uzbek and foreign educational institutions consider digital assessment to be an integral part of innovative development.

Second, there are differences in pedagogical approach and content. In foreign universities and vocational schools, a wide range of tools have been developed for electronic assessment not only including tests but also observations, portfolios, projects, peer assessment, and the like. In our country, however, electronic assessment is mostly limited to tests and automated tasks, while interactive methods aimed at assessing creative and critical thinking are applied less frequently. For example, in the USA or Europe, learners may be assessed through blogging or group online discussions, whereas this is not yet widespread here. The reasons for this include, on the one hand, the time required to train teachers in such new formats, and on the other hand, the need to define clear criteria for assessing such types of activities in an automated way.

From this perspective, methodological support and the professional development of staff should be priority tasks in introducing digital assessment in Uzbekistan. In particular, foreign experience shows that before introducing any new digital system, it is necessary to conduct training for faculty so that they are taught to work on the platforms and use the new assessment tools. This is equally true in local conditions. After all, only when a teacher has thoroughly mastered a new technology can they objectively assess knowledge using it. Students also need to be familiarized with the rules and requirements of electronic assessment. This ensures that they are psychologically prepared and able to use the technologies correctly.

Third, the avoidance of abusing assessment results and the preservation of academic honesty are addressed differently in the two systems. Abroad, as mentioned above, various automated proctoring tools, plagiarism detection software, and other control methods have been implemented. This issue is also relevant in Uzbekistan; in some universities, proctoring is applied in the form of trials, and Antiplagiat checks have been introduced for graduation theses, although not as a comprehensive system. So far, the main focus has been on ensuring that students and teachers consciously adhere to honesty. There are many aspects that could be learned from foreign experience in this area — for example, in Japan, shortening the exam time and making each student's exam different (random test generation) prevents cheating. In European universities, students' internet access during exams is restricted, and special browsers

are used to ensure that test tasks are completed securely. It is advisable to thoroughly consider and adapt such methods to local conditions.

Based on the above analysis, it can be stated that the following general conditions are important for the successful implementation of digital assessment systems both in Uzbekistan and abroad: having sufficient technological infrastructure (computers, servers, internet), educators and students possessing the necessary digital competencies, the reliability and security of assessment platforms, and clearly and comprehensibly defined assessment criteria. If these conditions are met, the digital assessment system can have a significant positive impact on the quality of education.

Based on the research results, the following conclusions are drawn:

1.Digital assessment is an integral component of modern education. With the rapid introduction of digital technologies in higher and vocational education systems, the methods of assessing students' knowledge and skills are fundamentally changing. It has been determined that electronic assessment tools play an important role in saving time, ensuring objectivity, and supporting the continuity of the educational process. International experience confirms the potential to improve educational outcomes through digital assessment.

2.Reforms to introduce digital assessment in Uzbekistan are yielding results, but continuity is necessary. Information systems and online platforms such as HEMIS and prof.emis.uz have been implemented in our country's higher and vocational education institutions, and the assessment mechanism is being modernized within the framework of the credit-module system. Although initial results have shown increased transparency and speed, especially in vocational education institutions it is required to further strengthen technical resources and methodological support. It is also a decisive factor for the success of this process to create high-speed internet access in all regions and to provide every higher and vocational education institution with modern computer technology.

3.The example of developed foreign countries shows that a comprehensive approach is necessary when introducing digital assessment. Along with implementing the platforms and software, it is necessary to train professors, conduct explanatory work with students, and improve the content of assessments. For example, including not only tests but also various assignments such as essays, projects, portfolios provide the opportunity for a comprehensive assessment of the competence-based educational model.

4.Practical Recommendations**.** The following practical steps are recommended for the successful implementation of digital assessment models in Uzbekistan's higher and vocational education system:

- **Improving staff qualifications:** holding special seminars and training sessions on digital assessment for the faculty members and vocational training masters of every higher and vocational education institution, and teaching them to work on modern platforms;
- **Improving infrastructure:** providing higher and vocational education institutions with high-speed internet, server equipment, and backup technical tools;
- **Preparing methodological manuals:** developing methodological recommendations and guidelines covering various forms of digital assessment and delivering them to all educational institutions;
- **Cooperation and exchange of experience:** conducting seminars in collaboration with foreign higher and vocational education institutions, implementing advanced practices, including localizing assessment platforms that have been tested abroad;
- **Analysis and monitoring:** continuously analyzing the effectiveness of the implemented digital assessment system, with relevant ministries, departments, and institutions evaluating its efficiency and refining it.

In conclusion, it can be emphasized that the introduction of assessment models based on digital technologies is an objective necessity observed in the world's education systems. If Uzbekistan's efforts in this direction continue in accordance with international experience, in the coming years the quality and efficiency of assessment in the higher and vocational education system will reach a new level. By implementing a digital assessment system with the right methodological approach, it is possible to achieve high efficiency in impartially evaluating educational outcomes, individualizing the learning process, and preparing talented personnel.

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