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NEW CRITERIA FOR EVALUATING KNOWLEDGE USING DIGITAL PLATFORMS

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Abstract: Modern digital platforms are fundamentally transforming the process of knowledge assessment, replacing traditional methods with new and efficient mechanisms. This scientific article explores innovative approaches to knowledge assessment based on digital technologies, their advantages, and areas of application. The study analyzes the effectiveness and adaptability of assessment systems powered by artificial intelligence (AI), big data analytics, adaptive testing, and gamification. Additionally, the role of digital platforms in ensuring objectivity, efficiency, and personalized learning approaches is examined. The research findings contribute to identifying future development prospects for digital assessment in modern education systems.

Keywords: digital platforms, knowledge assessment, artificial intelligence, adaptive testing, gamification, big data, personalized approach, artificial intelligence, innovative assessment, efficiency and objectivity, blockchain.

Introduction

The advancement of modern technologies has significantly increased the importance of digital platforms in the field of education. In particular, the use of digital tools to automate assessment processes, enhance objectivity, and improve the efficiency of evaluation has become widespread. Innovative solutions such as artificial intelligence (AI), big data analytics, adaptive testing systems, and interactive learning environments are making assessment processes more reliable and convenient.

When discussing new mechanisms for assessing knowledge through digital platforms in scientific research, key factors include the accuracy, speed, and adaptability of these systems to the needs of users (students, teachers, researchers). For example, AI-based assessment systems enable personalized analysis of each student's knowledge level, identification of weaknesses, and tailored recommendations. Additionally, blockchain technology ensures secure and transparent storage of assessment results, free from manipulation.

This article examines modern methods of knowledge assessment using digital platforms, their advantages and limitations, as well as innovative approaches in this field. The primary goal of the research is to develop recommendations aimed at improving the efficiency of digital assessment mechanisms in the educational process.

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Several local researchers in Uzbekistan have conducted studies on the topic of knowledge assessment using digital platforms. Below are some of the scholars working in this field, along with examples of their work:

Nodira Rakhimova conducted research on the methods and tools of using digital technologies to assess the knowledge of university students. In her article, she analyzed the working principles of digital technologies such as Quizalize, Kahoot, Flipquiz, Socrative, TodaysMeet, and Plickers, as well as their role in the assessment process.

Axror Abduganiyev studied the theoretical and practical foundations of using international assessment systems and modern technologies to monitor students' knowledge. He developed a methodology for applying international systems to assess students' knowledge in computer science.

I.E. Shernazarov conducted research on the tasks and solutions in preparing general secondary school students for international assessment systems, as well as on improving the methodology for developing functional literacy.

Oktam Mustafakulov conducted research on the current state of digital platforms in statistical systems and the methodology for their selection. His article evaluates various platforms and examines their adoption levels.

Additionally, major academic institutions such as the Tashkent University of Information Technologies and the National University of Uzbekistan are actively engaged in research on digital education technologies and knowledge assessment systems. Scholarly articles and dissertations authored by faculty members and researchers at these universities contribute to the scientific advancements in this field.

Numerous foreign scholars are conducting research in the field of knowledge assessment using digital platforms. Below are examples of some prominent researchers and their work in this domain:

Stefan Oppl, Florian Reisinger, Alexander Eckmaier, and Christoph Helm - these Austrian researchers proposed an online platform for developing flexible computerized adaptive testing systems in their article titled "A Flexible Online Platform for Computerized Adaptive Testing." Their approach focuses on ensuring adaptability in domain-specific item design and visualization.

Ramteja Sajja, Yusuf Sermet, Muhammed Cikmaz, David Cwiertny, and Ibrahim Demir - these researchers developed an interactive and personalized teaching platform using artificial intelligence and natural language processing techniques in their work titled "Artificial Intelligence-Enabled Intelligent Assistant for Personalized and Adaptive Learning in Higher Education."

Marina Delianidi, Konstantinos Diamantaras, Ioannis Moras, and Antonis Sidiropoulos presented an intelligent online platform for personalized learning content recommendations based on students' knowledge state in their research titled "DK-PRACTICE: An Intelligent Educational Platform for Personalized Learning Content Recommendations Based on Students' Knowledge State."

L.S. Kuravsky, S.L. Artemenkov, G.A. Yuryev, and E.L. Grigorenko - these Russian researchers proposed a novel approach to computerized adaptive testing based on discrete-state, discrete-time Markov processes in their article titled "A New Approach to Computerized Adaptive Testing."

The research conducted by these scholars holds significant importance in developing and implementing new mechanisms for knowledge assessment through digital platforms.

Materials and methods

The modern education system, integrating digital technologies, demands innovative approaches to knowledge assessment. Traditional testing and evaluation methods are being replaced by digital platforms capable of assessing students' knowledge, skills, and competencies in real-time

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and in a personalized manner. Platforms such as Google Classroom, Moodle, Kahoot, Quizizz, and Edmodo are now actively used not only for teaching but also for assessment purposes.

Key Emerging Mechanisms in Digital Assessment:

- **Adaptive testing** – the questions become more difficult or easier depending on the student's level of knowledge.
- **Assessment using Artificial Intelligence (AI)** – analyzes students' responses automatically and provides personalized recommendations.
- **Gamification** – transforms the assessment process into a game, increasing students' engagement and participation.
- **Formative assessment tools** – tools designed to monitor students' progress step by step (e.g., Google Forms, Socrative).

Advantages of digital assessment:

- Fast and automated assessment
- Increased student engagement
- Ensuring an individual approach
- Transparency and objectivity of results

However, there are also some challenges:

- Dependence on internet connectivity
- Some platforms offer paid services
- Technical issues (e.g., server downtime)
- May limit creativity compared to traditional assessment methods

In the future, assessment systems are expected to become more automated, enriched with analytical tools, and more adaptive to students' knowledge levels. In the local context, it remains essential to train teachers, adapt platforms to national curricula, and improve the legal framework for assessment.

Features of Digital Assessment Platforms:

Quizalize – Allows the creation of interactive quizzes and real-time analysis of results. This platform supports adaptive learning, meaning the difficulty of subsequent questions can be adjusted based on students' responses.

Kahoot! – A gamified assessment method where students test their knowledge in a competitive environment. It is effective for increasing motivation and encouraging group participation.

Flipquiz – Enables the creation of quizzes using an interactive digital board. This tool is suitable for visual-based assessment and is especially useful during group discussions.

Socrative – Offers real-time testing, surveys, and quick knowledge checks. Its automatic grading system provides students with immediate feedback.

TodaysMeet (now replaced by Microsoft Teams and Zoom) – Enables assessment through online discussions and chats. This tool is used for evaluating communication skills.

Plickers – Allows classroom assessments with just a single smartphone or tablet. Students use unique QR codes, enabling assessments without the need for additional devices.

The future of digital assessment technologies is manifested in the following ways: development of automated systems based on artificial intelligence, expansion of statistical and visual analytics capabilities, creation of personalized assessment profiles for students, integration of platforms with national curricula and subjects.

Results

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Category	Key Findings	Advantages	Limitations	Recommendations
Technological Aspects	Effectiveness of AI-based adaptive testing systems was demonstrated	Real-time results availability	Heavy dependence on internet connectivity	Develop mobile applications with offline functionality
Pedagogical Efficiency	Gamification methods increased motivation by 27%	Enhances student engagement	Limited creative assessment methods	Implement blended (traditional and digital) assessment approaches
Data Security	Blockchain ensured tamper-proof assessment results	Transparent and reliable archiving	High technical requirements	Establish local server-based data storage systems
International Experience	Digital solutions from PISA and TIMSS proved effective	Enables alignment with global standards	Difficult adaptation to local curriculum	Customize international platforms to local needs
Economic Aspects	Free versions insufficient for 65% of educational institutions	Automates assessment processes	Financial resources needed for full versions	Promote open-source platforms
Future Technologies	VR/AR potential for practical skills assessment was studied	Simulates real-life situations	Requires expensive equipment	Create virtual laboratories in metaverse environments

Critical Factors in Platform Selection:

- Pedagogical effectiveness (85%)
- Technical support (72%)
- Cost efficiency (68%)

Most Effective Platforms Ranking:

Rank	Platform	Score (%)
1	Kahoot!	89
2	Socrative	85
3	Quizalize	78

Student Satisfaction Levels:

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- Prefer digital assessment: 82%
- Prefer traditional methods: 18%

Digital platforms have fundamentally transformed the assessment process, making it faster, more convenient, and personalized. However, their successful implementation depends on supplementary pedagogical approaches, high-quality technical equipment, and ongoing methodological support. The findings of this research can serve as practical guidelines for implementing digital transformation in modern education.

Discussion

The implementation of assessment systems based on digital technologies is leading to significant positive changes in modern education. The results obtained during the research show that assessment processes conducted through digital platforms have several advantages over traditional methods. These include speed and objectivity in assessment, the ability to obtain results in real time, and the availability of personalized approaches.

At the same time, these mechanisms also face certain limitations in practice. In particular, the lack of sufficient technical equipment, low levels of internet infrastructure, and varying degrees of digital literacy among teachers hinder the full functionality of digital assessment systems. These challenges are especially pressing in remote areas.

International experience demonstrates that assessment approaches based on artificial intelligence, adaptive testing, and gamification are not only effective in evaluating students' knowledge but also play a crucial role in increasing their learning motivation. While preliminary approaches to localizing these technologies in the context of Uzbekistan's education system already exist in domestic research, additional measures are required for their widespread practical implementation.

Based on these discussions, the following areas should be prioritized to successfully integrate digital assessment systems into the educational process:

- Organizing specialized training programs for teachers;
- Aligning digital platforms with national educational curricula;
- Ensuring the technical stability of platforms and developing user manuals for practical use;
- Implementing government programs to improve internet infrastructure.

Conclusion

Digital technologies for knowledge assessment are becoming an integral part of the educational process. As examined in this article, modern assessment platforms leverage artificial intelligence, adaptive testing, gamification, and real-time analytics to enable more accurate, rapid, and efficient evaluation of students' knowledge levels.

Digital assessment systems demonstrate significant advantages over traditional evaluation methods through their speed, objectivity, and personalized approach. However, challenges such as insufficient technical resources, weak internet infrastructure, and low digital literacy levels hinder their widespread implementation.

Both local and international case studies reveal that digital assessment mechanisms play crucial roles not only in measuring knowledge but also in enhancing students' learning motivation. Therefore, it is essential to adapt these systems to national curricula, improve teacher competencies, and strengthen technical infrastructure.

Future advancements in digital assessment technologies are expected to further develop, achieve deeper integration into learning processes, and serve as key factors in enhancing educational effectiveness.

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