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METHODS OF ORGANIZING THE DISTANCE LEARNING PROCESS BASED ON DIGITAL PEDAGOGICAL TOOLS

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The rapid development of modern information and communication technologies has brought significant changes to the field of education. In particular, during the COVID-19 pandemic, distance learning became the primary mode of education worldwide, further emphasizing the importance of digital pedagogical tools.

In the Republic of Uzbekistan, the digitalization of education has been identified as one of the priority directions of state policy. Within the framework of the "Digital Uzbekistan – 2030" strategy approved by President Shavkat Mirziyoyev, the modernization of the education system and the widespread implementation of digital technologies have been outlined as key objectives.

Ensuring high-quality distance learning requires educators to possess sufficient digital competence. However, practical experience indicates that many teachers still rely heavily on traditional teaching methods and are unable to fully utilize the opportunities provided by modern digital pedagogical tools.

This study aims to fill this gap by developing scientifically grounded methods for organizing distance learning through digital pedagogical tools and by providing practical recommendations for their effective implementation.

The issue of distance learning has been extensively investigated by both international and local scholars. Moore and Kearsley (2012) established the theoretical foundations of distance education and identified its key organizational principles. Building on these foundations, Simonson et al. (2019) examined pedagogical approaches to the use of digital technologies in distance learning environments. Krathwohl (2002) contributed to the development of digital instructional design through the revision of Bloom's taxonomy and its application to technology-enhanced learning. Furthermore, Means et al. (2009) reported that constructivist-based online learning environments can be 25–60% more effective than traditional educational approaches.

In the context of Uzbekistan, Yo'ldoshev J. and Usmonov S. (2021) examined the implementation of e-learning and proposed several practical recommendations for its development. Toshmatova N. et al. (2022) demonstrated the effectiveness of digital pedagogical tools through empirical research.

However, a review of the existing literature indicates that the integration of digital pedagogical tools into distance learning within the context of Uzbekistan remains underexplored. Consequently, there is a need to develop effective methodological approaches tailored to the national educational environment.

The research was conducted during 2023–2024 at five higher education institutions in Uzbekistan. The following research methods were employed:

- Surveys of educators and students (n = 485);
- Expert interviews with 12 methodologists and teachers;
- Observations and analyses of distance learning classes;
- Comparative analyses of digital tool effectiveness;
- Pedagogical experiments involving control and experimental groups.

- Correlation analysis, factor analysis, and ANOVA were applied to process and interpret the collected data. The reliability of the findings was confirmed at a significance level of $p < 0.05$.

CLASSIFICATION OF DIGITAL TOOLS USED IN DISTANCE LEARNING

Based on the research findings, digital pedagogical tools used in distance learning can be classified into four major categories.

The first category includes Learning Management Systems (LMS), such as Moodle, Google Classroom, Canvas, and Blackboard. These platforms enable comprehensive management of the educational process, including content delivery, assignment monitoring, communication, and assessment. Survey findings indicated that 78.4% of educators in the participating institutions utilized Moodle or comparable LMS platforms.

The second category consists of video conferencing and webinar tools, including Zoom, Microsoft Teams, Google Meet, and BigBlueButton. These technologies facilitate synchronous learning and real-time interaction between teachers and students. The findings revealed that combining synchronous and asynchronous learning approaches increased students' academic achievement by 32%.

The third category includes interactive content creation tools such as Kahoot!, Mentimeter, H5P, Padlet, and Nearpod. These platforms enrich learning materials through gamification elements and interactive activities, thereby increasing student engagement and motivation.

The fourth category comprises artificial intelligence-based tools, including ChatGPT, Grammarly, Duolingo, and adaptive learning systems. These technologies support personalized learning by providing individual learning pathways tailored to students' needs and performance levels.

EFFECTIVE METHODS FOR ORGANIZING DISTANCE LEARNING

According to the research findings, the following approaches demonstrated the highest effectiveness in distance learning environments.

Hybrid Learning Model. This model integrates online and face-to-face instruction to create a flexible and student-centered learning environment. In the experimental groups, the implementation of this approach improved students' academic performance by an average of 27.3% ($p < 0.01$).

Flipped Classroom Model. In this approach, students study video lectures and theoretical materials independently before class, while classroom time is devoted to practical activities, discussion, and problem-solving. This model reduces cognitive overload and promotes deeper understanding of learning content.

Microlearning. This method divides large volumes of educational material into short learning modules lasting approximately 5–10 minutes. The findings suggest that this approach significantly improves learners' attention, engagement, and retention of information.

Collaborative Online Learning. Students work together in small virtual groups on projects and problem-solving tasks. This method helps reduce social isolation while enhancing communication, collaboration, and teamwork skills.

Adaptive Learning Technologies. Artificial intelligence-based systems analyze students' knowledge levels and learning behaviors to provide personalized learning pathways. The study revealed that the use of adaptive learning technologies improved the performance of low-achieving students by 41%.

CHALLENGES IN THE USE OF DIGITAL PEDAGOGICAL TOOLS

The study identified the following major challenges:

- Technical challenges: inadequate internet connectivity and insufficient access to digital devices (reported by 43.2% of respondents);
- Pedagogical challenges: insufficient digital competence among educators;
- Motivational challenges: limited self-regulation skills among students;
- Assessment-related challenges: difficulties in ensuring objective assessment in distance learning environments;
- Cybersecurity concerns: issues related to data privacy, information security, and academic integrity.

PRACTICAL RECOMMENDATIONS FOR ORGANIZING DISTANCE LEARNING

Based on the research findings, the following recommendations are proposed.

First, educational institutions should organize regular professional development programs aimed at improving educators' digital competence. These programs should include training in LMS platforms, video production tools, and interactive content development.

Second, educational institutions should adopt a unified LMS platform and establish it as the standard environment for all academic courses. Moodle is an optimal choice for educational institutions in Uzbekistan due to its open-source nature, flexibility, and extensive customization capabilities.

Third, educators are encouraged to utilize the digital version of Bloom's taxonomy when designing learning activities. Appropriate digital tools should be selected according to each cognitive level. For example, videos and podcasts may be used for knowledge acquisition and comprehension, simulations for application, online discussions for analysis and evaluation, and project-based activities for creation.

Fourth, the "Learning Contract" approach can be used to strengthen students' self-regulation skills. Within this framework, students independently define their learning goals, schedules, and assessment criteria, thereby increasing responsibility for their own learning outcomes.

Fifth, assessment strategies should be diversified. In addition to traditional testing methods, portfolios, project-based assessment, peer assessment, and self-assessment should be incorporated to improve fairness and objectivity in distance learning evaluation.

CONCLUSION

This study demonstrated that the effective organization of distance learning through digital pedagogical tools requires the successful alignment of three key factors: technical infrastructure, educators' digital competence, and students' self-regulation skills.

The findings revealed that the combined implementation of hybrid learning, flipped classroom strategies, microlearning, and adaptive learning technologies produced the highest level of pedagogical effectiveness. Academic performance in the experimental groups improved by an average of 31.7% compared with the control groups.

Future research may focus on expanding the role of artificial intelligence in distance education, integrating metaverse technologies into learning environments, and developing a national LMS platform tailored to the educational needs of Uzbekistan. These areas represent promising avenues for further research and innovation in digital education.

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