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Future Teachers' Preparation for Educational Activities in the Context of Digital Learning: Practical State

Jamaldinov Sarvar Azimjanovich
Head of the department for coordination of schools activities of the department of preschool and school education of Davlatobod district
sjamalitdinov@gmail.com

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Abstract: The rapid digital transformation of education has created new challenges and opportunities for the preparation of future teachers, particularly in the domain of educational activities. This study investigates the practical state of preparing pre-service teachers for their educational roles in the context of digital learning. The research highlights theoretical foundations, analyzes the legal and institutional framework in Uzbekistan, and evaluates the extent to which teacher education institutions integrate digital technologies into the process of pedagogical training. Data were collected through surveys of teacher training institutions, focus group discussions with pedagogical students, and statistical analysis of educational performance indicators. The findings demonstrate that while significant progress has been made in digital infrastructure and methodological support, challenges remain in developing students' pedagogical digital literacy, practical competence in applying educational technologies, and integration of digital platforms in real classroom management. The paper concludes with recommendations for improving training curricula, strengthening school–university collaboration, and advancing a holistic model of digital pedagogy.

Keys words: digital learning, teacher education, pre-service teachers, educational activities, pedagogical technologies.

Introduction. In the 21st century, digitalization has become a global trend influencing every sphere of human life, including education. The digital transformation of teaching and learning processes requires future teachers not only to master subject knowledge but also to acquire strong competencies in organizing educational activities within a technologically enriched environment. In Uzbekistan, educational reforms over the past decade—particularly the decrees of the President and government initiatives on digital education—have prioritized the integration of digital tools into pedagogical practice.

Preparing pre-service teachers for effective educational activities in digital conditions is therefore one of the most urgent tasks of modern pedagogy. Unlike traditional approaches, digital pedagogy requires a combination of theoretical knowledge, technological fluency, and practical application of innovations in real school settings. Research shows that effective teacher preparation in the digital era must cover three main dimensions: (1) pedagogical knowledge and skills, (2) digital competence, and (3) readiness for continuous professional development in an evolving educational environment.

Despite considerable efforts, there are still gaps in practice. Many teacher training institutions face difficulties in harmonizing theory with practice, as well as in ensuring that students gain sufficient hands-on experience with digital learning platforms, online assessment tools, and virtual classroom

management. This research aims to analyze the practical state of teacher preparation in Uzbekistan under digital learning conditions, with a special focus on the development of educational activities, their monitoring, and their effectiveness in real school practice.

Literature review. The development of future teachers' educational activity in the context of digital learning has become a significant topic in contemporary pedagogical research. The digitalization of education is not only a technical transformation but also a profound methodological shift that requires teachers to integrate technological competencies with their educational and moral functions (Kolyxmatov, 2021; Bezhanu et al., 2022).

One of the essential dimensions emphasized by researchers is the formation of professional and pedagogical competencies. Scholars argue that digital education demands a new set of pedagogical skills, particularly in the areas of classroom management, the ability to use educational technologies effectively, and the integration of values-based education into digital platforms (Zonova & Markova, 2022). The competence-based approach is widely recognized as the leading paradigm in modern teacher education, ensuring that future specialists are not only theoretically prepared but also capable of applying their knowledge in practice (European Commission, 2019).

Another line of research highlights the dual model of teacher preparation, which combines theoretical knowledge with direct practice in schools or educational organizations. Studies conducted in Germany, Austria, and Switzerland show that the dual system enables student-teachers to acquire 40% of their knowledge through theory and 60% through practice, thereby ensuring a balance between learning and doing (Deißinger, 2015). In Uzbekistan, similar approaches are being integrated through partnerships between universities and schools, supported by legal and regulatory frameworks on professional education (Ministry of Higher Education, 2021).

Digitalization has also transformed the forms and methods of educational activity. Several studies point out that the integration of digital platforms (such as Moodle, Google Classroom, and Microsoft Teams) has enhanced the efficiency of teaching but at the same time posed challenges for the educational and moral development of students (Anderson, 2019). While digital technologies facilitate access to information, they may reduce opportunities for personal interaction, which is critical for shaping students' values, emotional intelligence, and social responsibility. Thus, future teachers must be specially trained to harmonize digital instruction with educational upbringing.

Furthermore, research on educational technologies emphasizes the importance of interactive methods—such as project-based learning, case studies, gamification, and digital storytelling—for strengthening the upbringing component of digital education (Johnson et al., 2020). Scholars underline that these methods not only improve students' engagement but also contribute to the development of critical thinking, collaboration, and moral values.

In the context of Uzbekistan, recent reforms in the education system, including the "Digital Uzbekistan – 2030" strategy, stress the necessity of preparing teachers who can adapt to rapidly changing technological environments while maintaining their responsibility as educators and role models. National and international experts agree that the integration of theory and practice, along with the development of pedagogical and digital competencies, is key to training effective teachers capable of fulfilling both instructional and educational missions in a digital era.

Methodology. This study investigates the practical state of preparing future teachers for educational activity in the context of digital learning. The methodology is based on a mixed-methods approach, combining quantitative and qualitative research tools to provide a comprehensive understanding of the problem.

The research is structured around three main stages:

- **Diagnostic stage**: identifying the current level of readiness of future teachers for educational activity in digital environments.

- **Formative stage**: implementing experimental methods and digital technologies aimed at enhancing students' competencies.
- **Evaluative stage**: measuring the effectiveness of the applied technologies through monitoring, feedback, and statistical analysis.

The study was conducted among bachelor's and master's degree students of pedagogical faculties in Uzbekistan. A total of **120 respondents** participated, including:

80 bachelor's students (future primary school teachers),

30 master's students (pedagogy and psychology majors),

10 teacher-mentors from partner schools.

3. Data Collection Methods

The following instruments were used for data collection:

Questionnaires assessing digital competence, pedagogical knowledge, and educational readiness.

Observation of teaching practices in digital and blended learning environments.

Interviews with teacher-mentors and students regarding challenges and opportunities of digital upbringing.

Document analysis of national education policies and curricula related to digital education.

Quantitative data were analyzed using descriptive statistics (percentage, mean values, standard deviation) and comparative analysis. Qualitative data were processed through thematic coding to identify recurring challenges and best practices.

Table 1. Readiness of Future Teachers for Educational Activity in Digital Learning (N=120)

Indicators of Readiness	High (%)	Medium (%)	Low (%)
Digital Competence (ICT skills)	35	45	20
Pedagogical Knowledge	40	42	18
Educational/Moral Competence	32	50	18
Ability to Integrate Theory and Practice	28	47	25
Communication and Collaboration Skills	37	46	17

Interpretation: The results show that while most students demonstrate a medium level of readiness across all indicators, a significant gap remains in the ability to integrate theoretical knowledge with practical educational activity in digital contexts.

Results and Discussion. The study aimed to examine the current state of future teachers' readiness for educational activity in the conditions of digital learning. The analysis of diagnostic data revealed both strengths and weaknesses in students' preparation.

The survey results indicated that 35% of respondents demonstrated high-level ICT competence, while 45% had a medium level, and 20% showed low-level skills. Although most students are capable of using basic digital tools, advanced integration into pedagogical practice is still limited.

Results showed that 40% of students possessed strong pedagogical foundations, while 42% had moderate knowledge, and 18% required significant improvement. The findings suggest that digital learning environments do not automatically guarantee pedagogical excellence; rather, deliberate pedagogical training remains essential.

Only 32% of respondents demonstrated strong educational and moral competence, while 50% fell in the medium category. This indicates the need for deeper integration of moral-educational aspects into digital teaching practice.

A major gap was identified in the ability to connect theoretical knowledge with practice: only 28% of respondents showed high readiness, compared to 47% medium and 25% low. This proves that dual approaches (theory + practice) in digital education must be reinforced.

Future teachers generally demonstrated relatively good communication skills, with 37% at a high level and 46% at a medium level. This reflects the effectiveness of interactive digital tools, though further enhancement of collaborative pedagogical projects is needed.

Discussion. The results highlight that future teacher in Uzbekistan are moderately prepared for digital educational activity, with stronger ICT skills than theoretical-practical integration. The main challenges identified are:

- ✓ insufficient ability to merge theoretical knowledge with practical teaching;
- ✓ limited incorporation of moral-educational values into digital contexts;
- ✓ a need for more structured cooperation between universities and schools to support applied digital pedagogy.

Therefore, a technology-enhanced model of training should emphasize blended learning, mentoring, and dual education principles to balance theory and practice.

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