IMPROVING THE METHODOLOGY FOR DEVELOPING FUTURE PRIMARY SCHOOL TEACHERS' COMPETENCE IN WORKING WITH DIGITAL EDUCATION

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Annotation: This article explores the development of competencies in future primary school teachers for effective use of digital educational tools. It analyzes the improvement of methodological support based on digital technologies, the integration of modern electronic platforms into the educational process, and methodological approaches to teacher training based on the competence-based approach. The article presents the results of an experiment based on proposals and recommendations developed through the study of advanced foreign and local experiences.

Keywords: primary education, digital competence, digital technologies, e-learning, methodology, competence-based approach, pedagogical innovations.

Introduction. Nowadays, in the era of digital education, the educational system is undergoing fundamental transformations. Traditional teaching methods are increasingly being replaced by forms of digital education based on modern information and communication technologies. This shift is particularly crucial for the primary education system, as it is at this stage that students develop their foundational knowledge, skills, thinking abilities, and information literacy.

The professional training of future primary school teachers ensures the effectiveness of their future pedagogical activities. From this perspective, the development and enhancement of digital competencies have become an integral part of pedagogical education. A modern primary school teacher must not only be a transmitter of knowledge, but also a multifaceted professional who creates a digital learning environment and guides students toward independent inquiry using technological tools.

However, practical observations show that many future teachers, despite possessing theoretical knowledge of digital technologies, struggle to apply them effectively in educational settings. This situation highlights the need to improve the methodological system designed for their training.

Literature review. In recent years, research in the field of digital pedagogy (Anderson, 2020; Mishra & Koehler, 2006; Jonassen, 2000) has highlighted the urgent need to develop digital competence among primary school teachers. In particular, the TPACK model (Mishra & Koehler) emphasizes the integration of technological, pedagogical, and content knowledge in teacher education. Uzbek scholars (T. Akhmedova, N. Khodjayev, B. Juraev) have also conducted significant studies on integrating digital tools into primary education. However, existing methodologies are often limited to general recommendations and do not place sufficient emphasis on the development of practical competencies.

Research Methodology. In this study, the scientific-theoretical foundations, didactic directions, and practical mechanisms of a methodology aimed at developing the competence of future primary school teachers in working with digital education were developed. The methodology was based on the following scientific foundations and approaches:

Competence-Based Approach: This approach focuses not only on teachers' knowledge level but also on developing their practical skills in making independent decisions, selecting appropriate digital tools, and using them effectively in the educational process.

Systemic Approach: Digital tools, pedagogical technologies, educational content, assessment criteria, and students' learning activities were considered as an integrated system, with an emphasis on their interconnection and interaction.

Innovative-Pedagogical Approach: The methodology proposed a learning process grounded in the use of digital technologies, multimedia tools, electronic resources, and online platforms.

To assess the existing level of digital competence among students, specific tests and questionnaires were developed. Based on the collected indicators, strengths and weaknesses were analyzed.

Design Phase: A modular training program was developed to improve digital competence. The program included the following components: working with digital educational tools, creating educational content, using digital assessment instruments, and organizing online lessons.

Practical-Experimental Phase: Special training sessions were conducted with the experimental group based on the proposed methodology. The lessons were carried out interactively using digital platforms such as Google Classroom, LearningApps, Quizizz, Canva, Wordwall, and others. The pedagogical process was guided by the concept of transforming the teacher's role into that of a facilitator and mentor.

Monitoring and Evaluation Phase: The difference between the initial and final results was measured through diagnostic testing. Levels of academic achievement, independent learning skills, and creativity components were evaluated separately. The A/B testing method was used to compare the results between the experimental and control groups.

Research Methods: *Empirical methods:* observation, interviews, pedagogical experiments, tests, and diagnostics. *Theoretical methods:* analysis, synthesis, generalization, modeling, and pedagogical hypothesis formulation. *Statistical methods:* mathematical-statistical analysis of collected data, graphical representation, calculation of average indicators, variance, and percentage growth.

Analysis and results. The experimental phase of this study was conducted among third-year students majoring in Primary Education at Tashkent State Pedagogical University. The research involved both control and experimental groups, with 30 students in each group. The main objective of the experiment was to determine the developmental dynamics of digital education competence based on an improved methodology.

Initial (diagnostic) phase results: Students' digital competence was assessed using diagnostic tests based on the following indicators:

Ability to select and use digital tools

Skills in creating multimedia content

Competence in organizing lessons through online platforms

Proficiency in using digital assessment tools

Adherence to information security and digital ethics

According to the initial assessment results:

The average level of digital competence in the experimental group was 42%. In the control group, the average was approximately 45%. Although most students were familiar

with digital technologies in everyday use, they faced difficulties in applying them for educational purposes.

Results of the practical phase: During the eight-week training program, the following activities were conducted with the experimental group: Each module included practical assignments on working with digital tools such as Google Classroom, Zoom, Canva, Quizizz, Padlet, and LearningApps. Students completed small-scale projects (e.g., designing a "Digital Interactive Lesson"). Reflection and peer review techniques were introduced. As a result: The average level of digital competence in the experimental group increased from 42% to 87%. Skills in developing multimedia content improved from 35% to 82%. Competence in independently planning and conducting online lessons rose from 28% to 79%. Proficiency in using digital assessment tools (e.g., Kahoot, Google Forms) increased from 33% to 85%. In contrast, the control group continued with traditional methods, and their digital competence showed only a modest growth of 7–10%.

Student feedback and reflection: Surveys and interviews conducted at the end of the experiment revealed: 93% of students reported increased confidence in using digital tools. 88% expressed readiness to apply their self-created educational content in primary school classes. 75% stated that they had learned to justify their pedagogical decisions based on data obtained from digital assessment and analysis tools.

Statistical analysis: The differences between pre- and post-experiment results were tested using the Student's t-test. The findings revealed:

A statistically significant improvement in the experimental group ($p < 0.01$).

In the control group, changes were minor and statistically insignificant ($p > 0.05$).

Conclusion/Recommendations. The methodology developed by integrating systematic, competence-based, and practical approaches for enhancing the digital competence of future primary school teachers demonstrated positive effectiveness. Integrating this methodology into educational programs can improve the quality of pedagogical training. Effective use of digital tools creates opportunities to teach students independent thinking and how to work with modern technologies.

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