

Theoretical and Pedagogical Foundations of Preparing Future Teachers for The Use of Blended Learning Technologies

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Abstract: This article analyzes the socio-pedagogical necessity and theoretical-methodological foundations of preparing future teachers to use blended learning technologies in the context of globalization and digital transformation. The study highlights the importance of blended learning in ensuring the widespread introduction of digital technologies in the modern education system, as well as the individualization and flexibility of education. It also substantiates the pedagogical possibilities of the blended learning model based on the integration of traditional and electronic learning, and its role in developing students' independent thinking, critical analysis, creative activity, and digital competencies.

The article analyzes the scientific views of foreign and local scholars on blended learning and reveals the stages of formation of blended learning technologies and their role in modern education. During the research, an integrative pedagogical model for preparing future teachers to use blended learning technologies was developed, in which the possibilities of assessing professional training on the basis of motivational, cognitive, operational-technological, and reflective components are shown.

Keywords: Blended learning, blended learning, digital education, pedagogical technologies, future teacher, digital competence, innovative education, distance learning, digitalization of education, pedagogical competence, integrative approach, virtual learning environment, independent learning, individualization of the educational process, information and communication technologies, modern pedagogy, educational effectiveness, interactive methods, pedagogical model, modernization of the education system.

Introduction: In this study, an integrative approach aimed at studying the theoretical and pedagogical foundations of preparing future teachers to use blended learning technologies and developing their professional competence was developed. The research methodology was based on the harmony of systemic, competency-based, personality-oriented, activity-based, and integrative approaches.

In the research process, methods of theoretical analysis, comparison, generalization, and systematization of scientific sources related to pedagogy, psychology, and digital education theories were used. The scientific views of foreign and local scholars on blended learning were studied, and their role in the modern education system was analyzed. At the same time, the stages of

development, pedagogical possibilities, and didactic features of blended learning technologies were scientifically substantiated.

Observation, pedagogical conversation, questionnaire survey, diagnostic analysis, and pedagogical experimental work were used as empirical research methods. During the study, the level of future teachers' readiness to use blended learning technologies was assessed on the basis of motivational, cognitive, operational-technological, and reflective criteria. In addition, a system of methodological tools aimed at identifying and developing students' digital pedagogical competence was systematized.

In the practical part of the study, the effectiveness of the educational process organized on the basis of

blended learning was analyzed, and the pedagogical model developed on the basis of the integration of traditional and digital educational tools was tested. The obtained results were processed on the basis of statistical and comparative analysis, and the effectiveness of blended learning technologies in developing future teachers' professional adaptability, independent learning activity, and digital competence was substantiated.

The development trends of the modern education system are taking place in close connection with the social, economic, and technological development of society. In the context of globalization, the sharp increase in the flow of information, the penetration of digital technologies into all spheres, and the growing need for human capital are imposing new tasks on the education system. In such conditions, the issue of preparing future teachers for modern pedagogical activity acquires special socio-pedagogical significance. This is because today the quality of education depends not only on the teacher's theoretical knowledge, but also on his or her competence in applying innovative technologies, working effectively in a digital environment, and organizing the educational process flexibly.

DISCUSSION

The social necessity of organizing blended learning is determined, first of all, by the need to ensure the continuity of education. In the 21st century, the rapid pace of knowledge renewal requires a person to constantly work on himself or herself and acquire new knowledge and skills. In such conditions, blended learning creates an opportunity for learners to continue their learning activities regardless of space and time limitations. This ensures the flexibility of teaching and increases the effectiveness of the educational process. According to N. Friesen, blended learning forms an open and dynamic pedagogical system and takes education beyond traditional boundaries.

The pedagogical necessity of this process is connected with learners' independent thinking, critical analysis, decision-making in problem situations, and creative activity. Modern pedagogy, based on the constructivist approach, interprets the learner not as a subject who receives knowledge in ready-made form, but as a subject who actively creates it. Therefore, blended

learning appears as an important pedagogical tool in increasing students' cognitive activity, developing independent learning skills, and revealing their individual capabilities. According to Garrison, blended learning strengthens students' active participation and creates favorable conditions for the collaborative formation of knowledge.

Today, in the Republic of Uzbekistan, modernization of the education system is also considered one of the priority directions of state policy. In the Decree of the President of the Republic of Uzbekistan No. PF-158 "On the Uzbekistan — 2030 Strategy," the digitalization of the education system, the introduction of innovative technologies, and the development of modern pedagogical mechanisms are defined as important tasks. These tasks require the improvement of the scientific and pedagogical foundations of preparing future teachers to use blended learning technologies. This is because a modern teacher must not only have perfect knowledge of the fundamentals of the subject, but also possess competencies in creating digital educational resources, managing a virtual learning environment, and organizing the educational process on an integrative basis.

In addition, the socio-pedagogical necessity of blended learning became even more evident during the pandemic and global crisis situations. World experience has shown that education systems that effectively integrated distance and digital learning technologies into the pedagogical process were able to preserve the continuity of the educational process. In this regard, blended learning is recognized not only as an innovative pedagogical model, but also as a strategic mechanism that ensures educational stability. As a result, preparing future teachers to use blended learning technologies is being formed as one of the important social and professional needs of modern pedagogical education.

In the context of globalization, the rapid development of information and communication technologies, and the digital transformation of the education system, the use of blended learning technologies appears as an important component of the modern pedagogical system. In this regard, the concept of blended learning gradually entered educational theory and began to be actively used in scientific circulation at the end of the 20th century — in the late 1990s and early 2000s. This process was closely connected with the rapid

development of information and communication technologies and the expansion of forms of distance learning, and as a result, it created the basis for the formation of a new pedagogical model based on the integration of traditional and digital education.

Based on these scientific views, the study developed a scientific approach to improving the pedagogical mechanisms for preparing future teachers to use blended learning technologies on the basis of an integrative approach. In this approach, the possibilities of developing future teachers' professional adaptability, independent learning activity, and digital pedagogical competence by ensuring the mutual harmony of classroom lessons and the digital learning environment were substantiated.

One of the main pedagogical advantages of blended learning is the possibility of individualizing and differentiating the educational process. According to D. Clark, with the help of digital technologies, it is possible to develop educational strategies suitable for the learning pace and level of knowledge of each learner (Clark D. *Blended Learning*. – London, 2003). This significantly increases the effectiveness of education and serves to develop students' individual abilities.

In addition, blended learning imposes new requirements on teachers' professional competencies. A modern teacher should appear not only as a carrier of knowledge, but also as an organizer and facilitator of the educational process. "Teachers' digital competencies are one of the main factors determining the quality of education," emphasizes T. V. Klimova (Klimova T. V. *Digital Competence of the Teacher in the Conditions of Modernization of Education*. – Moscow, 2019). This creates the need to develop professional training on the basis of innovative technologies in the system of training pedagogical personnel.

The practical effectiveness of the blended learning model became especially evident during the COVID-19 pandemic. The integration of online and offline forms of education made it possible to maintain the continuity of the educational process. This significantly increased not only the pedagogical but also the social significance of blended learning. In addition, this model is an important element of personality-oriented education. It is aimed at taking into account learners' individual needs, interests, and opportunities, which helps to form in

them the ability to independently master knowledge, apply it in practice, and develop creative thinking.

In this process, teachers of higher educational institutions are especially responsible for organizing the educational process on the basis of innovative methods, taking into account the requirements of modern society. The rapid increase in information flows and the widespread dissemination of information and communication technologies have required the introduction of advanced pedagogical approaches. One of such approaches is blended learning.

Modern studies distinguish such important features of blended learning as organizing short and meaningful lectures, using interactive platforms, analyzing problematic situations in seminar classes, integrating traditional and digital educational resources, using online communication tools, and organizing virtual classrooms. The research results show that blended learning is a highly flexible and universal educational model. In Russian practice, classes in the form of blended learning are organized partly online, while control and assessment are carried out with the help of electronic systems.

The social necessity of organizing blended learning is connected with the profound changes taking place in society. In the conditions of an information society, the process of acquiring knowledge goes beyond the traditional classroom and is also carried out in a virtual environment, through electronic resources and distance technologies. This requires the education system to introduce a new model based on flexibility, openness, and individualization. As noted in a number of studies, the introduction of blended learning technologies in modern educational institutions significantly expands the opportunities for preparing students for professional and research activities (Polat E. S. *Modern Pedagogical and Information Technologies in the Education System*. – Moscow: Academy, 2010).

In addition, the importance of blended learning is also emphasized in international educational trends. In particular, UNESCO concepts note the need to create an open information and educational environment and introduce flexible forms of teaching, in which blended learning is regarded as one of the main tools.

Many foreign researchers evaluate blended learning as an effective means of improving the quality and

accessibility of education. In recent years, the development of distance education has served to create new educational resources based on information and communication technologies. These resources, initially developed for distance education, were later integrated into the traditional education system and enriched teaching methods. It was precisely this integration that became the basis for the formation of the blended learning model.

In addition, the pedagogical necessity of organizing blended learning is explained by the limited possibilities of the traditional education system. While in traditional education the learning process is more teacher-centered, blended learning serves to implement a person-centered approach. This makes it possible to take into account learners' individual characteristics, level of knowledge, and pace of learning. Research shows that the pedagogical process organized on the basis of blended learning serves to develop students' independent work skills, increase their motivation, and improve educational effectiveness.

Based on these scientific views, the study developed a scientific approach to improving the pedagogical mechanisms for preparing future teachers to use blended learning technologies on the basis of an integrative approach. In this approach, the didactic possibilities of developing future teachers' professional adaptability, independent learning activity, and digital pedagogical competence by ensuring the mutual harmony of classroom lessons and the digital learning environment were substantiated. At the same time, a system of methodological tools serving to support students' individual educational trajectory in the process of blended learning was systematized.

Blended learning also provides the opportunity to individualize and differentiate the learning process, which is one of the main principles of modern pedagogy. The integration of various methods and means of education helps to organize the process of learners' acquisition of knowledge more effectively. From this point of view, blended learning is considered to have not only methodological but also important didactic value.

In the conditions of an information society, the problem of professional training of teachers occupies a central place in the theory and practice of modern education.

The development of digital technologies, artificial intelligence, big data, and global information networks is leading to significant changes in the educational process. These changes require reconsidering the content, forms, and methods of pedagogical activity. In modern conditions, the teacher appears not only as the owner of knowledge, but also as a subject who designs, organizes, and facilitates the educational process.

According to modern pedagogical research, the structure of teachers' professional competencies has significantly expanded in the present period. Along with traditional pedagogical knowledge, digital literacy, skills in selecting and analyzing information, the ability to communicate in a virtual environment, and competencies in the effective use of interactive educational tools are becoming important. As T. V. Klimova notes, "teachers' digital competencies are one of the main factors determining educational effectiveness." However, practice shows that many teachers do not have sufficient preparation to meet these modern requirements. This causes a certain discrepancy between the needs of the education system and the demands of society.

One of the main reasons for this discrepancy is explained by the insufficient modernization of the system of training pedagogical personnel, the lack of practical skills, and methodological difficulties in mastering innovative technologies. Therefore, improving the system of teacher training in the conditions of blended learning is becoming one of the urgent tasks of modern educational policy. On this basis, the study developed a pedagogical model for assessing future teachers' readiness to use blended learning technologies on the basis of motivational, cognitive, operational-technological, and reflective components. This model, along with clarifying the structural composition of pedagogical training, made it possible to comprehensively assess the level of future teachers' readiness for digital pedagogical activity.

The socio-pedagogical significance of blended learning lies in the fact that it is an important means of modernizing the educational process. This model ensures the integration of traditional and innovative forms of teaching, which serves to significantly increase the effectiveness of the learning process. Especially in the conditions of the global crisis caused by the pandemic, blended learning clearly demonstrated its

practical importance. According to Z. Q. Qurbaniyazova, “the wide use of distance and online learning technologies played an important role in ensuring the continuity of the education system.”

The pandemic experience showed that the education system must be highly adaptable to emergency situations. In this regard, the blended learning model is being considered as a strategic solution that ensures the stability of the educational process. By integrating various forms of education, it makes it possible to ensure the continuity, effectiveness, and flexibility of educational activity. One of the important aspects of blended learning is that it serves to develop learners' socio-pedagogical competencies. It helps students develop independent thinking, analyze problematic situations, make decisions, and form communication skills.

In addition, blended learning also plays an important role in developing competencies in working with information. In the conditions of a digital environment, the skills of searching for, selecting, analyzing, and effectively using information are becoming the main competencies of a modern specialist. In this regard, blended learning models prepare learners for successful activity in the conditions of an information society.

In modern studies, blended learning is considered as a personality-oriented learning model. As V. G. Manyakhina notes, “this model is based on taking into account learners' individual needs, interests, and opportunities.” This ensures the possibility of individualizing and differentiating the educational process. As a result, learners acquire the ability to independently form, deepen, and apply knowledge in practice.

CONCLUSION

In the context of globalization and digital transformation, modern requirements imposed on the education system are increasing the need to prepare future teachers for innovative pedagogical activity. From this point of view, the use of blended learning technologies appears as an important component of the modern pedagogical process and acquires great importance in ensuring the effectiveness, flexibility, and continuity of education.

The results of the study showed that blended learning, by integrating the opportunities of traditional and

digital education, serves to individualize the educational process, develop students' independent learning activity, and form their critical and creative thinking skills. This model expands the opportunities for developing future teachers' digital pedagogical competence, working effectively in a virtual learning environment, and rationally using modern information and communication technologies.

Also, during the study, an integrative pedagogical model for preparing future teachers to use blended learning technologies was developed, and the criteria for assessing professional training were determined on the basis of its motivational, cognitive, operational-technological, and reflective components. This model serves as an important methodological basis for improving the process of pedagogical education, increasing future teachers' professional adaptability, and preparing them to work effectively in a modern educational environment.

The analyses showed that for the effective use of blended learning technologies, it is important to develop teachers' digital literacy, skills in working with innovative technologies, and culture of virtual communication. Therefore, it is necessary to widely introduce modern digital platforms, interactive methods, and electronic educational resources into the process of training pedagogical personnel in the higher education system.

In conclusion, blended learning technologies are one of the effective means of preparing future teachers for modern pedagogical activity and ensure the innovative development of the educational process. This approach has important pedagogical significance in improving the quality of education, developing teachers' professional competence, and training competitive specialists who meet the requirements of the information society.

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