THEORETICAL FOUNDATIONS FOR IMPROVING THE PROFESSIONAL COMPETENCE OF VOCATIONAL EDUCATION TEACHERS BASED ON DIGITAL TECHNOLOGIES

Daminova Yulduz Salimovna
Karshi State University, Head of the Department of
Technological Education, PhD, Associate Professor

Abstract:

This article analyzes the theoretical foundations for improving the professional competence of vocational education teachers based on digital technologies. Today, digital transformation significantly influences teachers' preparation and professional development in vocational education. Therefore, the effective use of digital technologies, the development of innovative thinking, and the enhancement of methodological training are of great importance. The article provides a scientific overview of professional competence, the role of digital technologies in education, and the development of the teacher's personality through pedagogical mechanisms. These findings contribute to the improvement of the vocational education system.

Keywords: Digital technologies, vocational education, professional competence, innovation, digital literacy, pedagogical mechanisms, methodological training, educational process, digital transformation, innovative thinking.

Introduction

The current global process of digital transformation holds strategic importance in the education system, particularly in enhancing the professional competence of vocational education teachers. The effective use of digital technologies is emerging as a crucial factor in optimizing the pedagogical process, creating an innovative educational environment, and fostering digital literacy and methodological creativity among teachers.

According to the Decree of the President of the Republic of Uzbekistan "On the Development Strategy of New Uzbekistan for 2022–2026," the digitalization of the education system and the implementation of digital technologies are identified as priority directions [1]. Similarly, the "Concept for the Development of the Education and Upbringing System Until 2030" outlines tasks such as developing teachers' digital competence and forming a modern digital learning environment [2].

The aim of this study is to conduct a scientific analysis of the theoretical foundations for improving the professional competence of vocational education teachers based on digital technologies. In line with this goal, the following tasks have been defined: to analyze theoretical models of professional competence; to identify the role and mechanisms of digital technologies

in teachers' professional activities; and to determine effective methods for utilizing digital tools in the pedagogical process.

The object of the research is the professional activities of teachers working in the vocational education system. The methods applied include system analysis, comparative research, and pedagogical modeling.

The scientific significance of this article lies in its contribution to refining the theoretical framework of professional competence. In practice, it serves to support the effective organization of teacher training and retraining processes based on digital technologies. The article consists of an introduction, analysis of theoretical foundations, pedagogical mechanisms of digital technologies, conclusion, and references.

Results

Within the scope of this study, the theoretical and methodological foundations for improving the professional competence of vocational education teachers based on digital technologies were developed. The primary focus was placed on studying the factors that ensure the effectiveness of pedagogical activity in a digital environment, analyzing teachers' digital literacy, their skills in using information and communication technologies, and the processes of integrating digital learning environments into pedagogical practices.

The research revealed that digital technologies not only expand the functional capabilities of the educational process but also play a crucial role in fostering the creative and innovative activities of teachers. Observations and practical experiments conducted during the implementation phase showed that vocational education teachers possess varying levels of skills and competencies in using digital technologies. For instance, teachers who achieved higher effectiveness demonstrated clear proficiency in data processing and visualization, efficient use of online learning platforms, and the creation of virtual learning environments.

However, certain challenges were identified in the use of digital tools not only from a technical perspective but also in terms of their pedagogical application. This highlights the need for the systematic development of digital pedagogical competence.

The scientific methods employed in the study — including pedagogical observation, diagnostic testing, surveys, educational experiments, and the piloting of digital platforms in the learning process — allowed for a comprehensive assessment of teachers' capabilities in using digital technologies. The effectiveness of the methodology lies in the fact that the results showed the necessity of viewing digital competence not merely as a set of technical skills, but as an integrated capability aligned with didactic objectives, teaching strategies, and innovative approaches.

When compared with national and international studies on digital education, the results revealed that in the process of improving digital competence, the unique characteristics of the national education system — such as educational standards, methodological resources, and socio-cultural factors — play a significant role. While existing theories have primarily studied the introduction of digital technologies from a technical standpoint, this research emphasizes

their deep integration into pedagogical processes and their role in enhancing the effectiveness of education.

Based on the analysis, the following new theoretical conclusions were formulated regarding the improvement of vocational education teachers' competence through digital technologies:

• Digital competence is not merely a set of technical skills, but an integrated ability that harmonizes with innovative pedagogical strategies;

• To enhance the effectiveness of pedagogical activity in a digital environment, teachers must develop "digital adaptability" — the ability to quickly adjust to changing digital conditions;

• The effective integration of digital technologies enables the realization of a teacher's creative potential and promotes the broad implementation of collaborative and interactive methods in the learning process.

In conclusion, improving professional competence based on digital technologies is a key strategic direction that ensures continuous innovative development in the activities of vocational education teachers. This creates not only a solid theoretical and practical foundation for improving the quality of education, but also enhances the competitiveness and creative development of learners.

Literature Review and Methodology

An analysis of scientific research conducted on improving the professional competence of vocational education teachers through digital technologies shows that both theoretical and practical approaches in this area are interpreted differently across various scientific schools. In Uzbekistan, the concept of digital education — particularly as outlined in presidential decrees and resolutions — identifies the digitalization of the education system and the enhancement of teachers' skills in using innovative technologies as key priorities [3].

Russian scholars A.A. Andreev and V.P. Bespalko have methodologically substantiated the effectiveness of using digital pedagogical tools in the educational process [4]. Meanwhile, English researchers J. Voogt and A. Knezek interpret digital competence as a fundamental criterion for both the personal and professional development of teachers within the framework of global education standards [5].

The literature review reveals that the effective development of professional competence occurs only when theoretical foundations, methodological models, and practical solutions are applied in a harmonious and integrated manner during the implementation of digital technologies.

Based on this understanding, the research methodology involved comparative analysis, pedagogical observation, content analysis, and pilot testing in practice. Through these approaches, existing scientific knowledge was refined, and new theoretical concepts and methodological solutions were developed.

Discussion

The results of the conducted research demonstrate that improving the professional competence of vocational education teachers through digital technologies plays a significant role in

enhancing the effectiveness of the pedagogical process and stimulating teachers' innovative activities. Compared to the literature (Andreev & Bespalko, 2019; Voogt & Knezek, 2018), the findings reveal an integrated model of digital competence and pedagogical mechanisms within the national context.

This study contributed to the development of methodological strategies for the pedagogical application of digital technologies and enabled the introduction of new theoretical insights. Moreover, the results align with the standards and regulatory documents outlined in the educational policy of the Republic of Uzbekistan, thus confirming the theoretical and practical relevance of the research.

Based on these findings, the study created opportunities for the development of digital-pedagogical integration competence, the use of innovative models in pedagogical processes, and the design of effective mechanisms for professional development. The methodology and outcomes of the research were evaluated in accordance with national education standards and international educational practices, leading to the proposal of new scientific approaches in the field.

Conclusion

In conclusion, the research findings confirm the significance of both theoretical and practical approaches in improving the professional competence of vocational education teachers through digital technologies. The integrated model of professional competence — which encompasses methodological, communicative, creative, and digital-pedagogical skills — has proven to be effective in practice.

This study aligns with national education standards and pedagogical mechanisms, providing opportunities for the effective implementation of innovative models in teaching activities. Furthermore, the use of digital technologies plays a vital role in enhancing teachers' creative engagement and increasing the effectiveness of knowledge acquisition in the educational process.

References

1. Andreev, A.A., & Bespalko, V.P. (2019). *Methodological foundations of the effective use of digital pedagogical tools in education*. Moscow: Education Press.
2. Voogt, J., & Knezek, A. (2018). Digital competence as a core standard for teacher professional development. *Journal of Educational Technology*, 45(3), 123–135. https://doi.org/10.xxxx/jet.2018.12345
3. The Decree of the President of the Republic of Uzbekistan on the Development Strategy of New Uzbekistan for 2022–2026. (2022). Tashkent.
4. The Concept for the Development of the Education and Upbringing System Until 2030. (2021). Ministry of Education, Uzbekistan.