ANNOTATION

of the dissertation research submitted for the degree of Doctor of Philosophy (PhD) in the educational programme "8D01721 – Training of Foreign Language Teacher" by Aigerim Dauletkyzy Mendekenova on the topic "Scientific and Methodological Bases of the Formation of Professionally-Based Competence of Future Foreign Language Teachers through Using Digital Technologies"

Relevance of the research. Following Kazakhstan's independence and its integration into the global educational space, the intensive modernization of the Kazakhstani education system has begun in accordance with the global challenges of contemporary society. Digitalisation plays a key role in the modernization of education. Its importance is reflected in the Concept for the Development of Higher Education and Science in the Republic of Kazakhstan for 2023–2029 and the Concept for Digital Transformation, Development of the Information and Communication Technology Sector, and Cybersecurity for 2023–2029. These documents support the modernisation of teaching methods in higher education and promote greater access to digital education in the preparation of future teachers.

The issue of the professional training of future foreign language teachers has been widely addressed in Kazakhstan and abroad. The formation of the professional competence of future foreign language teachers has been investigated by domestic and international researchers, who generally agree that professional competence consists of a set of interrelated components. Thus, in the process of training future foreign language teachers, there is a need to identify a structural element of professional competence that reflects the ability to perform foreign language pedagogical activities. In this regard, there is a need to form the professionally-based competence of future foreign language teachers.

Today, education is undergoing an active digital transformation. The use of digital technologies in the teaching and learning process is becoming standard practice not only for more effective knowledge delivery but also for the formation of a range of professional competences. Due to the rapid development of modern technologies, the use of digital technologies in foreign language education is becoming increasingly relevant. A number of domestic and international researchers have examined the use of digital technologies in foreign language education. However, in foreign language teaching methodology, the integration of digital technology into the process of competence formation is often fragmented. In many cases, digital technologies are used as teaching tools, while insufficient attention is given to how they should be integrated into the methodology, what functions they perform, and how they influence the formation of specific competences. Therefore, in the context of the active integration of digital technologies and increasing requirements for the professional training of future foreign language teachers, there is a need to scrutinize the process of the

formation of the professionally-based competence of future foreign language teachers using digital technology.

Object of the research: the process of professional training of future foreign language teachers in higher education institutions.

Subject of the research: the methodology for the formation of the professionally-based competence of future foreign language teachers using digital technologies.

The aim of the research is to theoretically substantiate and develop a scientific and methodological system for the formation of the professionally-based competence of future foreign language teachers using digital technologies, as well as to experimentally verify its effectiveness.

Research objectives:

- to characterize the linguodidactic potential of digital technologies in the training of future foreign language teachers;
- to clarify the essence and structure of the professionally-based competence of future foreign language teachers and substantiate the role of TPACK in selecting digital technologies for its formation;
- to design a structural-content model for the formation of the professionally-based competence of future foreign language teachers using digital technologies;
- to develop a method for the formation of the professionally-based competence of future foreign language teachers through the Professionally-based Digital Practicum;
- to conduct and analyze experimental work on the formation of the professionally-based competence of future foreign language teachers using digital technologies.

Research hypothesis: The formation of the professionally-based competence will be more effective ***if*** the conceptual essence of the professionally-based competence of future foreign language teachers is revealed, its component structure, criteria, indicators, and level descriptors of its formation are determined, its model and methodology are developed, and digital technologies are used as the technologies for its formation, ***then*** the ability and readiness to perform foreign language pedagogical activities using digital technologies will be formed, ***because*** the foreign language educational process will be based on the interrelation of the competence-based, communicative-activity, and integrative approaches.

Research methods:

- Theoretical methods of analysis: critical analysis of the literature related to the research topic, analysis, synthesis, generalization, and modeling;
- Empirical methods: questionnaires, pre-testing and post-testing, and experimental teaching;
- Data processing methods: quantitative and qualitative analysis of the results of the experimental work, Cronbach's α coefficient, and methods of

mathematical statistics, including the calculation of the mean (M), standard deviation (SD), Student's t-test, and statistical significance level (p).

Research base: The experiment involved third-year students enrolled in the educational program 6B01705 – "Foreign Language: Two Foreign Languages" at I. Zhansugurov Zhetysu University NJSC.

Scientific novelty of the research:

- the content of the concept of "professionally-based competence" has been clarified;
- digital technologies for the formation of the professionally-based competence of future foreign language teachers have been selected based on TPACK;
- a structural-content model for the formation of the professionally-based competence of future foreign language teachers using digital technologies has been developed;
- a aethod for the formation of the professionally-based competence of future foreign language teachers using digital technologies has been developed;
- the Professionally-based Digital Practicum for the formation of the professionally-based competence of future foreign language teachers has been presented; it was developed based on ADDIE and consists of digital educational content in the form of a system of exercises and tasks.

The theoretical significance of the research lies in the fact that the theoretical provisions and conclusions obtained in the course of the research will contribute to the methodology of foreign language education. The developed model and methods for the formation of the professionally-based competence of future foreign language teachers using digital technologies will contribute to improving their professional qualities in the context of digitalization. The research findings may serve as a theoretical basis for further investigation of the issue.

The practical significance of the research lies in the development of a model and method for the formation of the professionally-based competence of future foreign language teachers using digital technologies. The developed model and method can be used in the system of training future foreign language teachers and in higher pedagogical education practice, as well as in the system of teacher training and professional development.

Main provisions submitted for defense:

1. Digital technologies have linguodidactic potential in the training of future foreign language teachers, as they provide opportunities for foreign language interaction, access to authentic materials, adaptation of linguistic and speech materials to learners' levels and needs, modeling of the sociocultural context, acquisition of a foreign language in relation to culture, and the formation of foreign language consciousness.

2. Professionally-based competence is the ability and readiness of future foreign language teachers to perform foreign language pedagogical activities, represented by the unity of the identified subcompetences (information-analytical, discourse-communicative, and problem-situational). The formation of the professionally-based competence is based on the competence-based, communicative-activity, and integrative approaches and involves the organization of foreign language pedagogical activities of future foreign language teachers. TPACK serves as the theoretical basis for the methodologically grounded selection of digital technologies within the formation of the professionally-based competence.

3. The structural-content model for the formation of the professionally-based competence of future foreign language teachers using digital technologies is presented as a system of interconnected target, conceptual, subject-process, technological, and result-oriented blocks. The model reflects its aim, subcompetences of the professionally-based competence, approaches, principles, linguodidactic conditions, subject content, digital practicum, methods, digital technologies, stages of the formation of the professionally-based competence, as well as the criteria, indicators, level descriptors of the formation of the professionally-based competence, and statistical methods for evaluating the results.

4. The method for the formation of the professionally-based competence of future foreign language teachers ensures the implementation of a methodological system of foreign language teaching through the coordinated use of the stages of the formation of the professionally-based competence, corresponding teaching methods, digital technologies, and digital educational content in the form of exercises and tasks that ensure the sequential formation of the information-analytical, discourse-communicative, and problem-situational subcompetences. The practical implementation of the methods is carried out through the Professionally-based Digital Practicum, which serves as a means of creating a digital foreign language educational environment.

5. The effectiveness of the developed methods was confirmed by the positive dynamics of the formation of the professionally-based competence indicators in the experimental group. The reliability of the diagnostic instruments was confirmed using Cronbach's α coefficient. The comparison of pre-test and post-test results was conducted based on the mean values (M), standard deviation (SD), Student's t-test, and significance level (p). The statistically significant improvement in the results for the information-analytical, discourse-communicative, and problem-situational subcompetences in the experimental group confirms the effectiveness of the developed methodology.

Research approbation

The research findings have been disseminated through 12 scientific and methodological works, including 1 research article published in a journal indexed in the Scopus database, 4 research articles published in journals recommended by

the Committee for Quality Assurance in Science and Higher Education of the Ministry of Science and Higher Education of the Republic of Kazakhstan, 5 research articles published in the proceedings of international scientific and practical conferences, as well as 2 original scientific and methodological developments for which certificates of state registration of copyright have been obtained:

1. Beyond the Hype: AI Outperforms VR/AR and Gamification in Foreign Language Education // Journal of Information Technology Education: Innovations in Practice. – 2025. – Vol. 24. – Article 29. – DOI: 10.28945/5665 CiteScore 3.3, 66% in Education. Author's contribution: formulation of the study's conceptual framework, analysis and interpretation of the results, and preparation of the article text (first author).

2. Сандық технологияларды қолдану арқылы ЖОО-ның білім беру үдерісінде кәсіби-негізделетін құзыреттілікті қалыптастыру // Абай атындағы ҚазҰПУ Хабаршысы. «Педагогика ғылымдары» сериясы. – 2024. – № 2 (82). – Б. 227-235. – DOI: 10.51889/29595762.2024.82.2.020. Author's contribution: development of the research idea, analysis of scientific literature, description of methodological foundations, preparation of the article text (first author).

3. Сандық технологияларды қолдану арқылы шетел тілі мұғалімдерінің кәсіби-негізделетін құзыреттілігін қалыптастыру // Ясауи Университетінің Хабаршысы. – 2023. – № 3 (129). – Б. 387-399. – DOI: 10.47526/2023-3/2664-0686.29. Author's contribution: independent formulation of the problem, literature analysis, development of the research content, formulation of conclusions, and preparation of the article text (sole author).

4. Methods for the formation of professionally-based competence using digital technologies // AL-Farabi Kazakh National University Journal of Educational Sciences. – 2023. – №1 (74). – P. 46-57. – DOI: 10.26577/JES.2023.v74.i1.05. Author's contribution: development of the research structure, analysis of theoretical sources, description of the methods for the formation of the professionally-based competence, preparation of the article text (first author).

5. Digital technologies for the formation of professionally-based competence of future foreign language teachers // Kazakh Ablai khan UIRandWL Journal of Educational Sciences. – 2022. – №4 (67). – C. 34-43. – DOI: 10.48371/PEDS.2022.67.4.003. Author's contribution: identification the focus of the study, analysis of scientific literature, substantiation of the role of digital technologies, preparation of the article text (first author).

6. Artificial intelligence in science education: pedagogy in the modern era // Modern Science: Actual problems : Proceedings of the XIX International Scientific and Practical Conference, Manchester, United Kingdom, April 29-30, 2025. – Manchester, 2025. – P. 84-89. Author's contribution: scientific supervision of the co-author, refinement of the research concept, participation in

editing the manuscript, interpretation of the results, and preparation of the article for publication (second author).

7. Digital technologies as a tool for the formation of professionally-based competence // Proceedings of the X International Scientific Conference, Tokyo, Japan, April 18-19, 2024. – Tokyo, 2024. – P. 82-85. Author’s contribution: formulation of the problem, development of the main content of the study, literature analysis, preparation of the article text (first author).

8. The use of digital technologies in professional foreign language education // Theoretical and Practical Perspectives of Modern Science : Proceedings of the VIII International Scientific and Practical Conference, Stockholm, Sweden, April 03-04, 2024. – Stockholm, 2025. – P. 76-78. Author’s contribution: development of the publication idea, analysis of theoretical sources, generalization of scientific provisions, preparation of the article text (first author).

9. Использование цифровых технологий в процессе формирования профессионально-базируемой компетенции будущих учителей иностранного языка // Национальные модели экономики, культуры и образования в новой реальности : материалы международной научно-практической конференции, Астрахань, 14 ноября 2022 г. – Астрахань : Издатель Забродина Н. В., 2022. – С. 201-210. Author’s contribution: determination of the aim and objectives of the study, analysis of scientific literature, systematization of the material, preparation of the article text (first author).

10. The use of digital technologies in professionally-based foreign language teaching // Подготовка профессиональных кадров в условиях цифровизации образования – проблемы и перспективы : сборник материалов международного круглого стола, посвященного 75-летию доктора педагогических наук, профессора Джусубалиевой Дины Муфтаховны, Алматы, 21 сентября 2022 г. – 2022. – С. 132-134. Author’s contribution: development of the publication topic, literature analysis, generalization of the main provisions of the study, preparation of the article for publication (first author).

11. Manual for Using the Professionally-based Digital Practicum : свидетельство о государственной регистрации прав на объект авторского права № 79195 от 02.10.2026. Author's contribution: Development of the content and structure of the methodological manual and preparation of methodological guidelines for using the Professionally-based Digital Practicum (sole author).

12. Professionally-based Digital Practicum. Documented PDF Version of the Online Practicum Developed on the Google Sites Platform : свидетельство о государственной регистрации прав на объект авторского права № 79580 от 09.10.2026. Author's contribution: Development of the structure and content of the Professionally-based Digital Practicum, creation of digital exercises and tasks, and publication of the practicum on the Google Sites platform (sole author).