

ABSTRACT

of the dissertation work for the degree of Doctor of Philosophy (PhD) specialization 6D010200 – «Pedagogy and methods of primary education» Aidarbekova Kulzhan on the topic «Formation of pre – service primary teachers' readiness for using digital educational resources»

General characteristics of the work. The dissertation research is devoted to the formation of readiness of future primary school teachers to use digital educational resources.

Relevance of the dissertation research. In the context of the modern digital era, the requirements imposed on the education system are undergoing fundamental changes. In particular, the purposeful pedagogical use of digital technologies in teachers' professional activity is becoming an important indicator of their professional competence. Within the organization of teaching and learning in an information and communication environment, the effective use of educational resources is regarded as a significant condition for improving the quality and effectiveness of education, enhancing students' cognitive activity, and supporting the formation of individualized educational trajectories.

Taking these requirements into account, we came to the conclusion that future primary school teachers should be trained through the use of digital educational resources, which are considered one of the key conditions for increasing the effectiveness of the educational process. The digitalization of education imposes new requirements on teachers' professional activity, emphasizing the need to master the skills of selecting, adapting, and integrating digital educational resources into the educational process. In this context, the formation of readiness among future primary school teachers to use digital educational resources can be regarded as one of the pressing issues of contemporary pedagogical science and practice.

This issue is also of strategic importance at the state level. Kassym-Jomart Tokayev, in his speeches at the Republican August Conference of Teachers and in his Addresses to the People of Kazakhstan, emphasized the importance of accelerating the digital transformation of the education system, noting that the introduction of digitalization and artificial intelligence tools contributes to improving the quality of education and reducing educational inequality. These strategic priorities are reflected in the Law of the Republic of Kazakhstan «On Education», the Law «On the Status of a Teacher», the State Mandatory Standards of Higher and Postgraduate Education, and the Concept for the Development of Education and Science of the Republic of Kazakhstan for 2023–2029, where priority is given to improving the quality of education, introducing modern technologies, developing digital competencies, and preparing competitive specialists, thereby emphasizing the need to form teachers' readiness for professional activity in a digital environment. Regulatory documents governing the organization of e-learning in secondary education institutions also define the pedagogical and didactic features of digital educational resources. Overall, the issues of digitalization of Kazakhstan's education system and the improvement of

professional teacher training are considered in interrelation at both strategic and regulatory levels. These requirements imply the necessity for teachers, including primary school teachers, to be prepared to use digital educational resources.

At the same time, despite the fact that the use of digital educational resources is envisaged within the educational process, the scientific and methodological foundations necessary to ensure an appropriate level of teacher preparation for implementing these requirements remain insufficiently developed. The active application of digital educational resources is considered an important mechanism for improving the quality of education, as reflected in the methodological recommendations of the Y. Altynsarin National Academy of Education. However, the problem of systematically preparing future teachers for their effective use has not yet received comprehensive scientific substantiation.

Thus, despite the fact that regulatory and methodological documents clearly define digital requirements for teachers, the necessity of using digital educational resources, as well as their content, structure, and pedagogical mechanisms for forming the readiness of future primary school teachers for their practical application in teacher training, remain insufficiently developed scientifically, which gives the researched problem particular relevance.

These regulatory prerequisites are further specified through the implementation of educational programs. Within the educational program 6B01301 «Pedagogy and Methodology of Primary Education», employers' requirements and labor market demands are identified annually through systematic surveys conducted by the university, as well as analytical materials aimed at a comprehensive assessment of training quality. The obtained data indicate that graduates demonstrate insufficiently developed skills in the pedagogically grounded use of digital educational resources, adaptation of educational materials to digital formats, and organization of learning activities considering students' individual characteristics. This points to an insufficient interrelation between theoretical training and practical skills within the system of teacher education.

In this regard, in the process of preparing future primary school teachers, the necessity of systematically developing not only theoretical knowledge but also practical skills and abilities for the effective use of digital educational resources in the educational process becomes especially relevant. One of the key factors ensuring the quality of primary education is the teacher's ability to select, adapt, and use digital resources in accordance with didactic objectives.

Consequently, improving the content-related, methodological, and organizational approaches to forming the readiness of future primary school teachers to use digital educational resources, as well as ensuring practice-oriented training that meets employers' requirements, represents one of the urgent tasks of modern pedagogical science and educational practice.

Degree of scientific elaboration of the research problem. An analysis of psychological and pedagogical literature on the problem of forming the readiness of future primary school teachers to use digital educational resources makes it possible to identify their essential characteristics. Based on the conducted analysis,

the theoretical prerequisites of the study can conditionally be grouped into several scientific areas.

The first group includes studies by N.V. Kuzmina, V.A. Slastyonin, A.I.Shcherbakov, O.A. Abdullina, V.I. Zagvyazinsky, Z.G. Nigmatov, T.S.Yatsenko, N.D. Khmel, A.P. Seiteshev, M.A. Kudaikulov, S.T. Kargin, and others, which examine the theoretical and practical aspects of improving the professional training of future teachers and substantiate the integrity of the pedagogical process.

The second group includes the studies of S.I. Arkhangelsky, L.V. Zankov, Yu.K. Babansky, R.M. Koyanbayev, T.S. Sarybekov, M.N. Sarybekov, S.K.Abildina, Zh.I. Sardarova, K.M. Nagimzhanova, K.A. Sarbasova, A.O.Mukhametzhanova, and others, aimed at determining the foundations of professional training for future primary school teachers. These studies reveal methodological approaches and the features of teachers' professional development, as well as issues related to the development of pedagogical mastery and readiness to manage the pedagogical process.

The third group consists of the works of A.K. Mynbayev, K.Zh. Buzaubakova, A. Alshanskaya, V. Sadykov, R.M. Safunov, G.A. Bogdareva, and others, devoted to the training of teaching personnel under the conditions of educational digitalization.

The fourth group comprises foreign studies by Punya Mishra, Matthew Koehler, Christine Redecker, Yves Punie, Rune Krumsvik, and Jo Tondeur, which substantiate the problems of digital pedagogy and the formation of digital competence. These works systematically examine the issues of designing a digital educational environment, the didactic structuring of educational resources, and the development of teachers' digital competence.

The fifth group consists of studies devoted to the formation of a digital educational environment and the updating of requirements for students' educational and cognitive activities. In scientific literature, the use of digital educational resources is considered an independent field within which the theoretical-methodological and methodological foundations of their application in higher education, the activation of students' educational and cognitive activity through digital resources, as well as the features of the development and use of resources in distance learning conditions are investigated (E.V. Eliseeva, N.S.Radevskaya, O.V. Shteimark, N.V. Surova).

Studies of the sixth group substantiate the idea that a modern learner should not be limited only to reading, writing, and arithmetic skills, but should also master universal competencies related to working with data, searching for information, and selecting information. In this regard, special attention is paid to the need to adapt teachers' professional training to the requirements of the digital educational environment.

Methodological aspects of using Internet resources in primary school, issues related to the formation of students' information culture, the development of electronic and digital methodological systems, as well as the formation of younger schoolchildren's network readiness are considered in the works of G.B. Tautayeva,

D.Zh. Dzhusubaliyev, Sh.Kh. Kurmanalina, G.B. Akhmetova, A.I. Tazhigulova, E.Bidaibekov, A.K. Mynbayeva, Z.M. Sadvakasova, and others.

The seventh group includes PhD dissertation studies and the works of representatives of a new generation of scholars devoted to specific areas and aspects of digital technologies and digital didactics. Thus, N.S. Uteuliyeva's dissertation research reveals the pedagogical conditions for integrating digital tools into the content of education. N.T. Sartayeva's work examines issues related to the formation of motivation for younger schoolchildren's research activity based on information technologies. A.K. Oralbekova's dissertation analyzes the preparation of future primary school teachers for the use of information and communication technologies under inclusive education conditions.

At the same time, the analysis of these studies demonstrates that the problem of forming the readiness of future primary school teachers to use digital educational resources has not been considered as a holistic pedagogical system that includes the unity of structure, content, models, and mechanisms for implementing professional training.

The relevance of the study is determined by the following provisions:

- at the socio-pedagogical level - by the need to ensure the professional training of future teachers capable of effectively applying educational technologies under conditions of educational digitalization;

- at the scientific-theoretical level - by the need to clarify the theoretical foundations for the use of digital educational resources in the system of primary school teacher training.

Despite the significant number of studies devoted to the issues of educational digitalization and the professional training of teaching personnel, the problem of forming the readiness of future primary school teachers to use digital educational resources remains insufficiently developed in terms of its structural organization and methodological support.

The identified contradictions and scientific gaps substantiate the relevance of considering this problem as an independent object of pedagogical research. The generalization of the results of contemporary studies, the analysis of the needs of pedagogical practice, and the priorities of state policy under conditions of digital transformation of education made it possible to identify a number of stable scientific and pedagogical contradictions, namely:

- between the education system's need for a teacher capable of scientifically grounded use of digital educational resources in the primary school educational process under conditions of digitalization and the insufficient level of formation of such training among future teachers;

- between the necessity of preparing a teacher capable of scientifically grounded use of digital educational resources within professional training and the insufficient formation of this readiness among future teachers;

- between the necessity of theoretically substantiating the use of digital educational resources in the system of future teacher training and the insufficient development of the conceptual framework, structural-content characteristics, and methodological approaches to the formation of such readiness under conditions of

global digital transformation (including in the context of artificial intelligence implementation);

– between the necessity of developing a structural-content model and a didactic complex for forming future teachers' readiness to use digital educational resources and the absence of mechanisms for their systematic implementation and diagnostic support in pedagogical practice.

The resolution of these contradictions necessitated the study of the problem of forming the readiness of future primary school teachers to use digital educational resources and determined the choice of the dissertation topic: «*Formation of pre – service primary teachers' readiness for using digital educational resources*».

Object of the research: the pedagogical process of a higher educational institution

Subject of the research: the readiness of future teachers to use digital educational resources.

Purpose of the research: theoretical substantiation of the formation of the readiness of future primary school teachers to use digital educational resources and experimental verification of the effectiveness of the developed didactic complex.

Scientific hypothesis of the research: if a didactic framework aimed at forming readiness to use digital educational resources is introduced into the process of training future primary school teachers, the level of this readiness will increase, since it will ensure holistic, stage-by-stage, and practice-oriented mastery of the methods of selecting, adapting, and applying digital educational resources in professional activity.

The purpose and hypothesis of the study determined the formulation of the following objectives:

1. To reveal the theoretical foundations of preparing future primary school teachers for the use of digital educational resources and to clarify the essence of the concept of «readiness of future primary school teachers to use digital educational resources».

2. To identify the empirical prerequisites for the formation of readiness of future primary school teachers to use digital educational resources.

3. To develop a structural-content model for the formation of readiness of future primary school teachers to use digital educational resources and to determine the criteria, indicators, and levels of its formation.

4. To develop a didactic complex aimed at forming the readiness of future primary school teachers to use digital educational resources and to experimentally verify the effectiveness of the developed structural-content model and didactic complex in the pedagogical process of a higher education institution.

Leading idea of the research: the formation of readiness of future primary school teachers to use digital educational resources should be carried out as a holistic, stage-by-stage organized, and pedagogically grounded process that ensures the integration of digital educational resources into teachers' professional activities and contributes to improving the quality of primary education.

The theoretical and methodological foundation of the research is based on:

- studies in the field of digitalization of education and digital educational resources (E.V. Danilchuk, A.A. Verbitsky, E.S. Polat, I.V. Robert, A.V.Khutorskoy, K.M. Berkimbayev);

- concepts of informatization of education and the formation of the information and educational environment (A.P. Ershov, S.A. Beshenkov, S.D.Karakozov, A.Yu. Uvarov, I.G. Zakharova, G.K. Nurgaliyeva, E.Uaidullakyzy, A.K. Kusainov, G.O. Tazhgulova, P. Seiitkazy);

- theories of professional training and teachers' readiness (V.A. Slastenin, I.F.Isaev, E.N. Shiyarov, N.V. Kuzmina, A.K. Markova, L.M. Mitina, E.F. Zeer, A.K. Mynbayeva, G.K. Akhmetova, Zh.E. Sarsekeyeva);

- studies on the problems of forming teachers' professional competence (V.A.Adolf, L.M. Mitina, I.A. Zimnyaya, A.V. Khutorskoy, Yu.G. Tatur, V.I.Baydenko, J. Raven, V.D. Shadrikov, G.M. Kodzhaspirova, A.Yu.Kodzhaspirov, B.A. Turgynbayeva, S. Nurzhanova, Sh.T. Taubayeva, N.D.Khmel, M. Mukasheva, A.E.Abilkassymova);

- studies on teachers' digital and ICT competence (O.B. Zaitseva, L.L.Bosova, A.G. Kuznetsova, N.V. Sofronova, O.N. Shilova, O.Yu. Zaslavskaya, M.A. Goryunova, T.N. Noskova, O.V. Yakovleva, S.Papadakis, M. Kalogiannakis, N. Zaranis, P. Mishra, M. J. Koehler, R. Krumsvik, G.B. Sarzhanova);

- concepts of primary school teacher training (N.F. Vinogradova, L.E.Zhurova, S.V. Ivanov, M.I. Moro, M.A. Bantova, G.V. Belyukova, A.A.Pleshakov, V.P. Kanakina, V.G. Goretsky, L.F. Klimanova, T.G. Ramzaeva, L.G. Peterson, N.B. Istomina, S. Zhuzeyev, M. Zhailauova, G.Y. Utyupova, K.Tastanbekova);

- theories of the use of digital technologies in primary school (T.A.Rudchenko, E.I. Bulin-Sokolova, A. L. Semyonov, M.S. Tsvetkova, N.V.Matveeva, E.N. Chelak, O.A. Kozlov, Zh.A. Karayev, Zh.I. Sardarova);

- studies on teachers' readiness to use digital educational technologies (T.V.Nikulina, E.B. Starichenko, N.I. Isupova, O.F. Bryksina, M.N. Mokhova, I.V.Simonova, N.L. Karavayev, M.I. Ragulina, A.N. Privalov, N.N. Titova, B.K.Shayakhmetova, G.B. Shayakhmetova, A.A. Beisenbayeva, M.T.Tazhgulova);

- problems of designing and using electronic educational resources (S.G.Grigoryev, V.V. Grinshkun, A.A. Telegin, A.I. Azevich, L.Kh. Zainutdinova, O.I. Sokolova, N.V. Makarova, M. B. Lebedeva, V.P. Demkin, G.V. Mozhayeva, G.K. Nurgaliyeva);

- problems of distance and e-learning in teacher training, as well as updating the content and technologies of pedagogical education under conditions of digitalization (A.A. Andreyev, V.I. Soldatkin, M.V. Moiseyeva, V.P. Tikhomirov, N.V. Grechushkina, M.E. Vaindorf-Sysoyeva, E. D. Patarakin, B.T. Kenzhebaeva, A. I. Tazhgulova, Zh. Z. Zhantasova, L.A. Shkutina);

- concepts and theories of instructional design and digital educational content development (R. Gagné, M. Merrill, C. Reigeluth, J. van Merriënboer, R. Clark, R.Mayer, P. Ya. Galperin, N. F. Talyzina, E.A. Solonina, V.M. Kukharenko, T.O.Balykbayev, R.S. Alimkulov, A.D. Kakimova);

- psychological and pedagogical studies of the motivational and value-based foundations of teacher professional training, determining the motivational attitude of the individual toward educational and professional activity (V.G. Aseyev, E.I. Rogov, N.V. Bordovskaya, A.A. Rean, E.P. Ilyin, V.A. Yakunin, R.S. Nемов, T.I. Shamova, S.M. Zhakypov);

- the systems approach (V.G. Afanasyev, I.V. Blauberg, V.N. Sadovsky, E.G. Yudin), which makes it possible to consider the readiness of future primary school teachers to use digital educational resources as an integral system of interrelated structural components;

- the competency-based approach (I.A. Zimnyaya, A.V. Khutorskoy, V.I. Baydenko, Yu. G. Tatur, V.D. Shadrikov), focused on the formation of future teachers' digital competence;

- the activity-based approach (L.S. Vygotsky, A.N. Leontyev, S.L. Rubinstein, P. Ya. Galperin), ensuring the active mastery of digital educational resources by future primary school teachers and their application in professional activity through practice-oriented training;

- the learner-centered approach (I.S. Yakimanskaya, V.V. Serikov, E.V. Bondarevskaya), which implies consideration of individual characteristics, educational needs, and individual trajectories of professional development of future primary school teachers;

- the technological approach (V.P. Bepalko, G.K. Selevko, M.V. Klarin, V.M. Monakhov), determining the logic of designing the process of forming readiness to use digital educational resources.

The sources of the research include: official state materials and regulatory legal documents of the Republic of Kazakhstan in the field of education; philosophical, psychological, and pedagogical works of Kazakhstani and foreign (near and far abroad) scholars revealing the essence and content of the researched problem; philosophical, psychological-pedagogical, and encyclopedic dictionaries and reference books; materials of scientific and practical conferences at various levels; educational and instructional-methodological literature on the research topic, as well as the author's pedagogical and research experience.

Research methods: to achieve the purpose and objectives of the research, a set of theoretical, empirical, and mathematical-statistical methods was employed:

- theoretical methods (analysis, comparison, and generalization of philosophical, psychological-pedagogical, and scientific-methodological literature on the research problem; analysis of regulatory legal documents related to the digitalization of education and the use of digital educational resources; analysis of educational programs and curricula of higher pedagogical education institutions);

- empirical methods (pedagogical observation, questionnaires, interviews, pedagogical experiment, analysis, and generalization of the results of experimental work);

- mathematical-statistical methods (quantitative and qualitative processing of the data obtained during the research and determination of the reliability of the results).

Research bases: NLC «Buketov Karaganda National Research University», NLC «Pavlodar Pedagogical University named after Alkey Margulan».

Stages of the research:

The first stage (2018–2021) – the theoretical stage. At this stage, psychological-pedagogical and scientific-methodological literature of domestic and foreign scholars, as well as regulatory legal documents, were analyzed; the conceptual framework of the research was defined; the object and subject of the study were specified; the purpose, objectives, and research hypothesis were formulated. A diagnostic experiment was conducted to identify the initial level of readiness of future primary school teachers to use digital educational resources.

The second stage (2021–2023) – the formative stage. During this stage, a didactic complex aimed at developing the readiness of future primary school teachers to use digital educational resources was implemented; experimental work was carried out in experimental and control groups to develop the components of this readiness.

The third stage (2024–2025) – the control and generalizing stage. In order to verify the effectiveness of the implemented model and didactic complex, a final assessment was conducted; the obtained results were statistically processed and interpreted, compared with the research hypothesis, summarized, and presented in the form of a completed dissertation.

Scientific novelty and theoretical significance of the research:

1. The concept of «readiness of future primary school teachers to use digital educational resources» has been clarified; the components, levels, criteria, and indicators of the researched type of activity have been determined.

2. The empirical prerequisites for the formation of readiness of future primary school teachers to use digital educational resources have been identified.

3. A structural-content model for the formation of readiness of future primary school teachers to use digital educational resources has been scientifically substantiated and developed, including motivational, cognitive, operational-technological, communicative-ethical, and reflective-evaluative components.

4. A didactic complex of instructional and methodological materials aimed at forming the readiness of future primary school teachers to use digital educational resources has been developed.

Practical significance of the research:

The practical significance of the research is determined by the possibility of using the obtained results in the process of preparing future primary school teachers for the use of digital educational resources, as well as by the approbation of the didactic complex intended for their integration into the educational process. The research results can be used in the educational process of higher pedagogical education institutions, during teaching practice, and in the instructional process of primary school.

Within the framework of the research, a didactic complex was developed and tested in the higher education process, including the following instructional and methodological materials:

- the elective course program «Methodology for the Use of Digital Educational Resources in Primary School»;
- additions to the disciplines «Theory and Practice of the Educational Area «Language and Literature»», «Methods of Teaching Mathematics in Primary School», «Methods of Teaching the Subject «Kazakh (Russian) Language» Methods of teaching the subject «Literary reading» in primary school in Primary School», «Methods of teaching the subject «Literary reading» in primary school», «Methods of teaching the subject «Alphabet, Native language»» and «Innovative Technologies in Organizing the School Educational Process»;
- additions to the practice programs: «Industrial (Pedagogical) Practice» and «Pedagogical (Educational) Practice»;
- the electronic textbook «Theory and Practice of the Educational Area «Language and Literature»» (certificate of state registration of intellectual property object No. 2177 dated November 17, 2021);
- Computer programs:
 - «Supplementary Literacy Teaching Manual» (Parts 1–2) (certificate of state registration of intellectual property object (No. 3892 dated June 6, 2019; No.10411 dated June 1, 2020);
 - «Supplementary Mathematics Manual» (Grade 2) (certificate of state registration of intellectual property object No. 18218 dated June 1, 2021);
 - «Supplementary Literary Reading Manual» (Grade 4) (certificate of state registration of intellectual property object No. 21578 dated November 10, 2021);
 - «Supplementary Kazakh Language Manual» (Grade 3) (certificate of state registration of intellectual property object No. 24994 dated April 12, 2022);
 - methodological recommendations «Guidelines for the Use of Digital Educational Resources in Primary School»;
 - «Digital Primary» – a collection of tasks for future primary school teachers;
 - «Development of Functional Literacy of Primary School Students in the Context of Education Digitalization» – a collective monograph;
 - «Bilim_way – Bilim jolyndagy KÖMEK» – an authorial digital instructional and didactic resource;
 - «Pedagogy in the Era of Digitalization» – a methodological week program;
 - «The Importance of Forming the Readiness of Future Primary School Teachers to Use Digital Educational Resources» – a methodological seminar program;
 - «Digital Educational Resources as a Means of Improving the Quality of Primary Education» – a round table program;
 - Smart Learning Club – a student club program.

Main provisions of the research submitted for defense:

Provision 1. The readiness of future primary school teachers to use digital educational resources possesses significant pedagogical potential for improving the quality of primary education. Based on the analysis of psychological-pedagogical scientific works of domestic and foreign researchers, the following concept has been clarified and specified: the «readiness of future primary school teachers to use digital educational resources» is considered as a professional position and a value-

based and motivational orientation of students, based on the awareness of the importance of using digital educational resources in the educational process of primary school, as well as a system of knowledge, skills, abilities, and reflective capacities, including the selection of digital educational resources, their didactic structuring, integration into the lesson structure, adaptation and development of content, and assessment of learning outcomes through the use of digital tools. In the context of our research, this concept is interpreted as an integrative personal-professional formation that includes motivational, cognitive, operational-technological, communicative-ethical, and reflective-evaluative components formed in the process of professional training in higher education institutions.

Provision 2. During the analysis of scientific and methodological works of domestic and foreign scholars, the empirical prerequisites for the formation of readiness were identified, and it was established that the process of preparing future teachers for the use of digital educational resources lacks a sufficiently systematic character. This is manifested in the limited practice-oriented methodological support for the process of forming the readiness of future primary school teachers to use digital educational resources and emphasizes the need for purposeful work in this direction.

The results of the analysis of the educational programs «6B01301 – Pedagogy and Methods of Primary Education», implemented at a number of leading universities in Kazakhstan, determine the need to develop a didactic complex aimed at forming the readiness of future primary school teachers to use digital educational resources. It was found that, despite the availability of content-based and organizational-methodological instructional materials focused on the use of digital technologies, the training process remains fragmented and does not ensure the holistic formation of readiness for the pedagogically appropriate use of digital educational resources.

Provision 3. A structural-content model for the formation of readiness of future primary school teachers to use digital educational resources has been scientifically substantiated and developed. The methodological basis of the model is formed through the integration of competency-based, activity-based, learner-centered, systems, integrative, and reflective approaches, as well as the principles of digital didactics and the principles of professional orientation, learner-centered instruction, reflexivity, and pedagogical appropriateness in the use of digital educational resources. This ensures its scientific validity, reproducibility, and compliance with the requirements of the digitalization of primary education.

The system of criteria and indicators for each component provides an objective diagnosis of the levels of readiness formation of future teachers for the use of digital educational resources. The assessment of the readiness formation of future primary school teachers is considered appropriate on the basis of a three-level scale (low, medium, high), which makes it possible to monitor, analyze, and adjust the levels of its formation throughout the process of professional training.

Provision 4. The results of the experimental verification of the effectiveness of the structural-content model and the approbation of the didactic complex aimed at forming the readiness of future primary school teachers to use digital educational

resources are presented through the implementation of instructional and methodological materials structured as an integrated system of interconnected instructional-methodological, digital, and organizational-pedagogical means. This system includes additions to the content of educational program disciplines, a special training course and seminars, an authorial digital instructional and didactic resource, methodological recommendations, and assignments for pedagogical practice.

The implementation of the didactic complex ensures the integration of practice-oriented instructional and methodological materials related to the use of digital educational resources and the reflective evaluation of their results into the professional training of future teachers. This is confirmed by the positive dynamics in the indicators of the levels of readiness formation of future primary school teachers for the researched type of activity. The effectiveness of the developed didactic complex and the validity of the proposed hypothesis were confirmed by the experimental results.

The reliability and validity of the research results and conclusions are ensured by the initial theoretical and methodological foundations of the study; the sufficient duration and systematic organization of the research work; the internal logic of the research framework; the implementation of a set of scientific research methods in pedagogy; qualitative and quantitative analysis of experimental data; the positive dynamics in the levels of readiness formation of future primary school teachers to use digital educational resources among the participants of the experiment; as well as the correspondence of the content of the experimental work to the purpose, objectives, and scientific hypothesis of the research.

Approbation and implementation of the research results were carried out:

1. The research was carried out within the framework of studies in the field of education and science under Direction 8 through grant funding for the project AP14870561 «Modernization of Public Consciousness in Kazakhstan as a Condition for the Formation of the Moral Culture of the Younger Generation», Direction 8.1 «Fundamental, Applied, and Interdisciplinary Research on Problems of Education, Science, Culture, and Sports in the 21st Century», subparagraph 8.1.1 «Current Problems in the Development of Research in Science and Technology».

2. During the experimental work, the research results were discussed and published at international and republican scientific-theoretical and scientific-practical conferences. In particular, the research materials were published in the proceedings of international scientific-practical conferences held in the cities of the United Kingdom (Sheffield), the Czech Republic (Prague), Bulgaria (Sofia), Finland (Helsinki), and Kazakhstan (Karaganda, Almaty, Astana) during 2018–2024. Articles were published in journals indexed in the Scopus and Web of Science databases: World Journal on Educational Technology (2021) and International Journal of Society Culture and Language (2025); as well as in scientific journals included in the list of publications 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: Science and Life

of Kazakhstan (2018), Bulletin of the Kazakh National Women's Teacher Training University (2019, 2021), Bulletin of Karaganda University. Pedagogy Series (2023, 2024), and Bulletin of Ablai Khan Kazakh University of International Relations and World Languages, series «Pedagogical Sciences» (2024). In addition, 1 collective monograph, 1 electronic textbook, 5 computer programs, 1 methodological manual, and 1 collection of tasks were published.

Structure of the dissertation:

The dissertation consists of an introduction, two sections, a conclusion, and appendices.

The introduction substantiates the relevance of the research, presents its scientific framework (object, subject, purpose, hypothesis, objectives, and leading idea), defines the methodological foundations and stages of the research, identifies the scientific novelty, theoretical and practical significance, and formulates the main provisions submitted for defense.

The first section, «Scientific Foundations for the Formation of Readiness of Future Primary School Teachers to Use Digital Educational Resources», reveals the essence of the key concepts, substantiates the content characteristics of readiness, identifies the empirical prerequisites for the formation of readiness for this type of activity, and proposes a structural-content model for the formation of the studied readiness.

The second section, «Experimental Work on the Formation of Readiness of Future Primary School Teachers to Use Digital Educational Resources», describes the content of the developed didactic complex and presents the process and results of the experimental work aimed at verifying the effectiveness of the proposed model and didactic complex.

The conclusion summarizes the results of the theoretical and experimental stages of the research and formulates scientific conclusions and practical recommendations.

The appendices contain materials used and developed during the research, methodological recommendations, assignments, and other related documents.