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## The system of methodological tools of forming the readiness of future teachers for the integrated teaching of primary schoolchildren

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### Abstract

**Relevance.** Globalization highlights the need for quality integrated education in Kazakhstan's secondary schools. Developing effective methods to prepare future teachers for an integrated approach is crucial for improving education and ensuring students' future competitiveness.

**Purpose.** The purpose of the article is to justify the need to implement a system of methodical means of forming the readiness of future teachers in universities of Kazakhstan as a guarantee of their ability to use integrative education of younger schoolchildren.

**Methodology.** The methodological approach of the research is based on: empirical methods: survey, experiment and methods of mathematical statistics; theoretical methods, processing of final indicators of formation of readiness of education seekers for integrated training.

**Results.** The content of the concepts "integration in education" and "readiness of future teachers for integrated education of younger schoolchildren" was defined; its features and peculiarities are revealed, the methodology of forming the readiness of future teachers for integrated learning in the context of their professional training is developed and implemented. During an experimental study at Pavlodar Pedagogical University named after A. Margulan, a methodological toolkit was developed to increase the readiness of future teachers for integrated education of junior high school students during professional training, namely: implementation of components and criteria of readiness with

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selected methods of their formation. Prospective directions for improving the methodology of forming the readiness of future teachers for the integrated education of younger schoolchildren through the formation of the components of the readiness of education seekers to carry out such activities have been determined.

**Conclusions.** The study demonstrated that implementing a system of methodical tools in teacher training programs significantly improved future teachers' readiness to use integrated learning approaches in primary education, highlighting the need for updated training methods in Kazakhstan's educational institutions.

**Keywords:** integrated education in primary school; training of future primary school teacher; integration of scientific knowledge; primary school; professional training.

## **Introduction**

The active process of informatization of the educational sector using the latest achievements in the field of information and digital technologies acts as a guarantee of innovative development of primary education in the Republic of Kazakhstan. There is a need to reform the primary education system, as one of the tasks of the Strategy "Kazakhstan – 2030", which was developed taking into account the requirements set by the President of the Republic of Kazakhstan N. A. Nazarbayev about the need to include the republic in the number of the 50 most competitive countries in the world [1].

The main task of education in the Republic of Kazakhstan is the process of harmonization with the system of the international educational environment. Education should be of high quality and continuous. That is why the key to the development of Kazakhstan's education system is the active implementation of modern teaching methods and programs, in particular in three languages: Kazakh, Russian and English, and ensuring a high level of teaching [2].

The latest priorities in the modern system of elementary education in Kazakhstan increasingly require specialists capable of implementing integrative forms of education for younger schoolchildren. Today, an important place in the training of highly qualified personnel belongs to the formation of the readiness of future teachers for the integrated education of younger schoolchildren. Such a process is determined by numerous factors, namely: the use of integrated forms in the educational process activates educational activities, increases informational and emotional perception of educational material, the possibility of consolidation of the information base, development of logic and flexibility of thinking. Modern trends in the development of primary education provide for the improvement of the professional training of future teachers, their education at a high level of individual and creative productivity [3].

D. Sun and Y. Li [4] studied the education system in Kazakhstan in numerous scientific works. Scientists found out that the country's education system was at the stage of transformation, the content and results of training at all levels have been updated. One of the conditions for improving the quality of professional training, which ensures the competitiveness of primary school teachers, according to scientists, is deepening knowledge about the processes of integration in the education of younger schoolchildren. The training of future teachers is designed to ensure the integrity and comprehension of knowledge, the formation of systemic thinking and a holistic perception of the world picture, understanding of future professional activity.

B. Zhekibayeva et al. [5] researching the issue of the development of pedagogical education in Kazakhstan, came to the opinion that the most important priority direction of bringing primary education to a new, innovative level was the provision of quality regulatory and legal support; computerization; use of the latest software tools; ensuring the automation of systems of monitoring sections, analysis and management of primary education institutions; training of pedagogical and managerial personnel. It is possible to agree with the opinion of the authors that the implementation of the outlined priority areas must be carried out through the qualitative formation of the readiness of future teachers, who will have the ability to harmoniously develop younger schoolchildren, the method of forming key and subject competencies in them, the ability to carry out integrated education.

G. T. C. Nguyen et al. [6] investigating the process of introducing integrated content curricula into the primary education system of Kazakhstan, determined that educational institutions need a teacher who is able to adapt to new educational conditions, be ready to use the system of integrated education, actively use innovations in the field of primary education, have the ability to quickly respond to modern and promising processes of social and economic development of society. However, it is important to note that in the current conditions of the implementation of the educational component in general secondary education institutions of Kazakhstan, there is a lack of pedagogical staff ready to implement integrated education at a high level.

Studying the process of forming the readiness of future primary school teachers to use integrated forms of organization of the educational process, T. Lehmann [7] and E. Birsa [8] noted their important role in education in their works. Researchers believe that the use of integrative forms of education is not only able to activate educational activities, but also stimulates informational and emotional perception of educational material by younger schoolchildren, contributes to active perception of reality. The active use of integration in education allows you to consolidate the educational process, develops the ability to analyse, synthesize, evaluate and generalize, which contributes to the development of logical thinking and a systemic worldview.

The purpose of the research is theoretical substantiation and practical development of a system of methodical means of forming the readiness of future teachers for integrated education of younger schoolchildren. Objectives: justification of the relevance of developing a system of methodical means of forming the readiness of future teachers for integrated education of younger

schoolchildren. Finding ways to develop a system of methodical means of forming the readiness of future teachers for integrated education in primary school. Development of a system of methodical means of forming the readiness of future teachers for integrated education of younger schoolchildren.

The problem of the research is theoretical substantiation and development of a system of methodical means of forming the readiness of future teachers for integrated education of younger schoolchildren in accordance with the requirements of the modern primary education system. Solving the outlined problem will contribute to the effective formation of a set of professional competencies of future primary school teachers, as well as the development of professionally significant qualities in them for competitiveness in the labour market and solving the current tasks and problems of the country's socio-economic development.

### Materials and Methods

The research was carried out in two stages, namely: theoretical (analysis, comparison, systematization, questionnaire, classification, generalization of theoretical data) and practical (preparation of experimental materials, conducting the experiment, evaluation of its results using mathematical statistics).

A theoretical study of the problems of implementation of methodical means of formation of researched readiness was carried out. The methods used at this stage were as follows: analysis, comparison, systematization, survey, modelling. These methods were used to identify the initial level of students' readiness for integrated education in elementary school.

The practical stage consisted of an experimental study, which was conducted at the Pavlodar Pedagogical University named after A. Margulan. 242 future teachers were involved in the experiment. The control group included 120 respondents, and the experimental group included 122 participants. The experiment was conducted during the 2022-2023 academic years. In the process of conducting an experimental study, 102 women and 8 men of the control group were selected among the students who were involved in the experiment, and 107 women and 15 men were assigned to the experimental group.

During the ascertaining experiment, the following components of its organization were highlighted: motivational-value, scientific-theoretical and practical, and indicators: awareness of the importance of future professional activity based on integrated education in primary school, knowledge about integrated education of younger schoolchildren, skills and abilities of organizing integrated education in educational process of primary school. The levels of readiness of future teachers for integrated education of junior high school students were determined, which were fixed at medium and low. In this regard, a formative experiment was conducted, during which organizational and pedagogical conditions were developed for the qualitative formation of the readiness of future teachers for integrated education of younger schoolchildren:

- strengthening of the motivational sphere in the process of preparing future teachers of primary education for the implementation of integrated education of students;

- reorganization of the content component, forms and methods of professional training of future teachers;
- use of integrative methods and forms of learning in the educational process.

In order to increase the level of readiness of future teachers for integrated education of younger schoolchildren, we have developed a system of methodological tools, including:

- automated educational program “Scientific and theoretical foundations of integration in education”;
- massive open online course (MOOC) “Integrated learning in primary school”;
- electronic manual “Implementation of an integrated approach in the education of younger schoolchildren”.

After the end of the experiment, the obtained results were analysed, their generalization was made, conclusions were drawn, and prospects for further research were outlined.

### Results

According to today's requirements, a graduate of a higher education institution in Kazakhstan must possess creative and critical thinking, be aimed at constant development, self-organization of his activities aimed at creating an innovative product. The integration of the components of educational activity and scientific research, the harmonious construction of this synergy can become a mechanism of not only intellectual, emotional-behavioural, motivational, but also professional development of students. It should be based on the following approaches, namely: philosophical, synergistic, competence-based, personality-oriented and cultural [9].

At the current level of development of the primary education system in Kazakhstan, the state's entry into the global educational space is gaining importance. The educational component of the Republic of Kazakhstan is changing dynamically today. In order to implement the updated goals of primary education, it is necessary to educate a new teacher who must be able to carry out self-educational activities, organize the educational process with elements of integration and creativity [10].

The development of distance education significantly expands the possibilities of education. This approach allows for structuring educational material by subject, level of complexity, volume of educational workload using the principle of naturalness, taking into account the age category of the teacher [11].

An advanced means of innovative, anticipatory development of education in the Republic of Kazakhstan is the informatization of education, which is manifested in the updating of regulatory and legal support and software, computerization, creation of domestic digital educational resources, automation of monitoring systems, management of educational institutions, training of pedagogical and managerial personnel.

State policy in the context of the development of higher education plans to implement current education programs, alternative learning technologies and author's teaching methods. Based on this, the process of professional training of future primary school teachers for the integrated education of junior high school students should meet the new social demands of the society of Kazakhstan.

A survey was conducted to determine the real readiness of education seekers to implement integration. Its purpose is to reveal the level of awareness of future teachers with the method of organizing integrated education. 242 future teachers were involved in the survey. The control group included 120 respondents, and the experimental group – 122 participants. From the selected respondents, 102 women and 8 men of the control group, as well as 107 women and 15 men of the experimental group, were selected for the experimental study. The research was conducted on the basis of Pavlodar Pedagogical University named after A. Margulan. The results of experimental studies were evaluated at high, medium and low levels. The experiment was conducted during the 2022–2023 academic years.

At the stage of working with the questionnaire, the respondents were asked to give answers to the questions related to intersubject relationships in the content of primary school students' education and the role of the integration process in the educational process. The participants of the experiment were asked to give an assessment of the degree of mastery of new educational

technologies in the context of primary education. According to the results of the obtained data, 54% of the respondents at the middle and low level have basic concepts about integration in education, in particular at the primary level, but 46% of the respondents at the high level have information about the development and implementation of the author's integrated courses. Thus, according to the results of the survey, there is a need to update the training of those who study in the specialty “Elementary Education”.

At the first ascertaining stage of the experiment, students were surveyed according to the author's questionnaire. The results of the ascertaining experiment made it possible to distinguish three levels of formation of the desired readiness: high, medium and low. The statistical data of the survey showed that the criteria of students' readiness for the studied type of activity are at a low level (38.37 – 42.18 out of a maximum of 100). The reason for this was the insufficient methodical support for the formation of the desired readiness of students (Table 1).

**Table 1.** Survey results at the ascertainment stage of the research

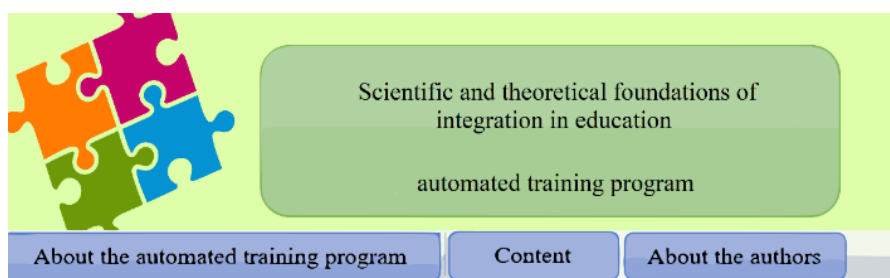
Level	Readiness criteria for future teachers					
	Awareness of the importance of future professional activity based on integrated education in primary school		Knowledge about integrated learning for primary schoolchildren		Skills and abilities of organizing integrated learning in the educational process of primary school	
	n	%	n	%	n	%
High	41	18.21	39	24.63	46	17.05
Middle	98	39.61	89	37.00	76	39.08
Low	103	42.18	114	38.37	120	43.87

**Source:** compiled by the authors.

In the course of the ascertaining experiment, it was found that the content of methodological support does not fully contribute to the formation of theoretical knowledge about integrated education. The elimination of this problem is possible only in the process of purposeful work of the teaching staff of the higher educational institution in this direction, through the implementation of a system of methodical means of forming the readiness of future teachers for integrated education in elementary school. The basis for approbation of the system of methodological tools was the results of the ascertaining experiment. To increase the level of readiness of future teachers for integrated education of younger schoolchildren a system of methodical tools, including:

- automated educational program “Scientific and theoretical foundations of integration in education”;
- massive open online course (MOOC) “Integrated learning in primary school”;
- electronic manual “Implementation of an integrated approach in the education of younger schoolchildren”.

The main goal of the automated educational program “Scientific and theoretical foundations of integration in education” is the formation of knowledge about the foundations of integrated education in elementary school. A screenshot of the automated tutorial is shown in Figure 1.



**About the automated training program**

The automated training program includes theoretical foundations, a system of practical tasks that can be successfully used in the pedagogical process of the university, in the process of forming the professional readiness of future primary education teachers for integrated learning. The program consists of 5 topics, 10 practical tasks for self-control of acquired knowledge. Studying one topic involves working out practical tasks, where it is necessary to answer at least 6 questions positively. The content of the automated training program reveals the basics and characteristics of the integration process in philosophical, psychological and pedagogical science.

**Figure 1.** Screenshot of the automated training program “Scientific and theoretical foundations of integration in education”

Source: [5].

The presented automated training program consists of theoretical material and practical tasks for self-monitoring of acquired knowledge on each topic. The study of topics involves the development of practical tasks, where it is necessary to give answers to at least 6 questions. The content of the automated curriculum reveals the basics and features and characteristics of the integrated learning process in elementary school.

MOOC “Integrated learning in elementary school” is one of the key links in the process of training future teachers for integrated learning of younger schoolchildren. The study proves that MOOCs are designed for students of different levels and can be used as additional material when studying a certain discipline. When developing the MOOC, the research took into account the following provisions:

- MOOC should be related to the cycle of basic and specialized disciplines of the state standard of higher education;
- before studying the MOOC, students should familiarize themselves with the teaching methods of primary school subjects;
- MOOC aims to systematize knowledge, develop the skills of future teachers to implement integrated education in primary school.

The content of the MOOC educational material is reflected in 20 theoretical topics and is designed to ensure the continuity of the methodical training of future teachers for integrated learning, as well as to provide the

educational process with the integrity of the acquired knowledge.

The electronic textbook “Implementation of an integrated approach in the education of junior high school students” was developed with the aim of forming practical skills of organizing an integrated approach in the education of junior high school students. The methodological tool presented in the study consists of a theoretical and practical block, the development of integrated lesson plans for students of grades 1–4 of primary school. In the content of the electronic textbook, the regulatory and legal foundations of the integrated approach to the education of younger schoolchildren are disclosed; the use of an integrated approach in the education of junior high school students is characterized, the method of implementing an integrated approach in the education of junior high school students of foreign countries is presented (the experience of Finland, Korea, Germany, England), practical means of integrating educational branches into the content of primary education are disclosed.

Thus, in the process of the formative stage of the experiment, the system of methodical tools was approved, which contributed to the enrichment of the professional and pedagogical experience of future teachers, the formation of the ability to analyse and systematize, and to adjust their pedagogical experience. After approbation of the system of methodological tools, a repeated survey of students was conducted, the results were obtained and processed (Table 2).

**Table 2.** Survey results at the ascertainment stage of the research

Level	Readiness criteria for future teachers					
	Awareness of the importance of future professional activity based on integrated education in primary school		Knowledge about integrated learning for primary schoolchildren		Skills and abilities of organizing integrated learning in the educational process of primary school	
	n	%	n	%	n	%

High	136	78.26	132	72.00	133	77.87
Middle	84	19.63	96	26.04	91	17.96
Low	22	2.11	14	1.96	18	4.17

Source: compiled by the authors.

The survey at the formative stage of the experiment was conducted by the questionnaire method and revealed a significant increase in the share of students with average and high levels of preparation by 54% and 14%, respectively. There was a 40% reduction in the low level. The given percentage data talk about a significant quantitative increase of higher education applicants with a high level of readiness, provided that the developed author's system of methodical tools is used, which contributes to the effective readiness of students for the integrated education of junior high school students and can be implemented in the practice of education at universities.

To calculate the reliability of the presented statistical data and determine their accuracy, the formula of Ryulon and Alf Cronbach was used. After processing the received

data, the following indicators were obtained: reliability – stability 0.933 and 0.925; reliability and accuracy were 0.931. A repeated survey, conducted by the questionnaire method, showed a significant increase in the share of students with average and high levels of preparation, which increased by 54% and 14%, respectively. There was a 40% reduction in the low level. The given percentage to talk about a significant quantitative increase of future teachers with a high level of readiness, provided that the developed system of methodological tools is implemented, which contributes to the effective readiness of future teachers for the integrated education of junior high school students and can be implemented in the practice of teaching at universities. The obtained results of the experimental data are presented in Figure 2.

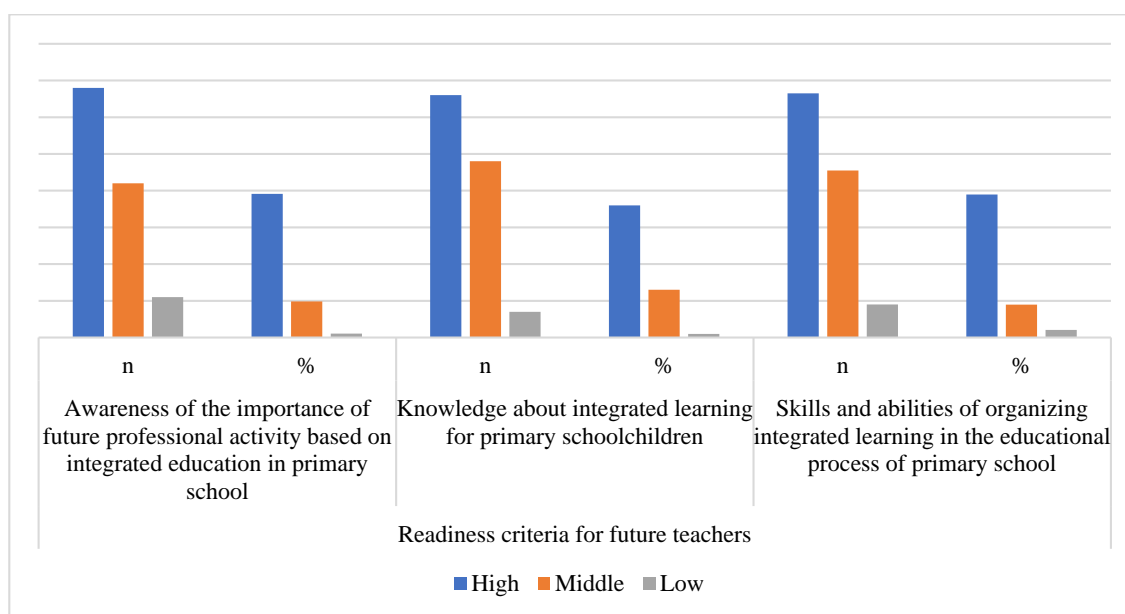


Figure 2. Results of diagnostics of the levels of formation of the components of the readiness of future teachers for the integrated education of junior high school students in the process of experimental research

Source: compiled by the authors.

The results of the approbation of the system of methodological tools allow to state that the consistent activity of forming the readiness of students for the integrated education of junior high school students ensured the consistency and meaningfulness of the assimilation of theoretical knowledge and practical abilities and skills. In the process of conducting an experimental study, the organizational and pedagogical conditions for the qualitative formation of the readiness of future teachers for the integrated education of younger schoolchildren were fully realized:

1. Strengthening of the motivational sphere in the process of preparing future teachers of primary education for the implementation of integrated education of students. The need to implement the outlined conditions arose due

to insufficient orientation of the majority of students, future teachers in activities of an integrated nature. The implementation of the condition is aimed at the formation of a favourable psychological and emotional atmosphere in classes, the formation of motives for carrying out professional activities, the understanding of the goals and integrability of the future profession, the study of problems related to the renewal of the content component of primary education.

2. Reorganization of the content component, forms and methods of professional training of future teachers. The process of implementation of the condition aims to reflect the methodological, theoretical and methodical problems of integration in the system of primary education. The condition provides for the improvement of the training of

future primary school teachers by filling existing modules of educational disciplines with integrated content.

3. Use of integrative methods and forms of learning in the educational process. The process of complex implementation in Kazakhstan's higher education institutions of pedagogical conditions outlined in the study, components of future teachers' readiness for integrated education of junior high school students and indicators made it possible to form a system of the required amount of knowledge and ideas regarding the implementation of integration and motivation to implement integrated education among students; formation of abilities and skills to design integrated lessons, methods and forms of learning that are used during the educational process.

Therefore, the active implementation of the system of methodical means of forming the readiness of future teachers for the integrated primary education system contributes to the informational enrichment, perception, thinking and creation of a positive emotional sphere of younger schoolchildren through the use of qualitatively integrated material with the help of which it is possible to realize the formation of the necessary competencies. That is why the issue of the specifics of the organization of integrated classes in primary school, which should be implemented by well-trained primary school teachers who have professional knowledge and practical skills in planning and conducting integrated lessons, selecting and distributing appropriate didactic material, is gaining relevance.

## Discussion

Today, the system of professional training of future primary school teachers needs transformation and improvement as a guarantee for the activation of the anticipatory step of changes in primary education. The most important innovation in elementary school today is the implementation of the ideas of interdisciplinary integrated education. Kazakhstan's primary education system is influenced by new educational priorities, which requires the active implementation of integrated learning technologies. The primary school teacher of the new generation must be able to think in a new way, use various methods of mental activity, self-management, the ability to find one's own style in solving pedagogical situations, the use of unique methods, techniques and approaches to each student, the ability to achieve high results in the field of professional activity in the field of primary education, the ability to generate new ideas and teach the younger generation using integrated learning methods, to have a modern style of pedagogical thinking [3].

N. T. T. Hang et al. [12] conducting research on the implementation of integrated learning in education, noted that learning with integrative elements has an important role in the educational process of training future teachers. Integrative learning is aimed at developing thinking skills related to synthesis, analysis, generalization and abstraction. With regard to the results obtained in this study, the use of the proposed approach in elementary school may be appropriate, as it requires a thorough preparation from the teacher, which allows him to comfortably adapt to pedagogical innovations.

Numerous studies have covered various aspects of teacher training, including S. K. Getenet and K. Beswick

[13] whose investigated the impact of an integrated mathematics and science curriculum on the achievement of elementary school students in Kazakhstan. Evidence from a pilot study showed significant improvement in academic performance based on learning outcomes.

The results described above with this, since for the effective organization of integrated education, teachers must be ready for the integration of scientific knowledge from the moment of studying in institutions of higher education. However, the realities of pedagogical activity show that most teachers do not fully possess all the possibilities of integrated learning. The reason for this is the lack of theoretical knowledge on the development of integrated lessons, as well as practical experience for the effective organization of the educational process [14].

According to the research of J. M. Jovanov et al. [15] the integrative connection between the components of educational subjects increases the interest of younger schoolchildren. Research results agree with this opinion, since an integrated lesson requires detailed and creative planning.

According to the results of experimental studies conducted by Indian scientists M. Basu et al. [16] on various ways of integrating scientific knowledge, it was found that during horizontal integration, two or more faculties merged their educational programs; with vertical integration, there is an interpenetration of elements of several educational programs on one key topic. Research has highlighted four main components of integrated learning, namely: integration of experience, social integration, integration of knowledge, integration as a curriculum.

According to the research of M. K. Kim and M. K. Cho [17], methodological support for teachers can not only improve the quality of their teaching, but also facilitate the process of formation of readiness for the start of a professional career, which can later lead to effective teaching on an integration basis. The outlined results with this, since education organized on the basis of an integrated curriculum is flexible and holistic for students. It is important that the teacher can not only develop the content of an integrated lesson, but also have teaching tools that allow students to be flexible in completing a variety of tasks.

K. Kurt and M. Pehlivan [18], conducting research and experimental work, established that the active participation of the primary school teacher in the implementation of the educational process with integration affected motivation and creativity during the performance of artistic tasks, preservation of artistic content and concepts, understanding of the problem of art in the context of everyday life. However, supporting the opinion of the researcher, it is believed that a carefully selected strategy of interdisciplinary integration contributes to the successful acquisition of sustainable and integrated artistic skills.

J. Ponomariovienė and D. Jakavonytė-Staškuvienė [19] point out that integrated lessons should be built on a conceptual theme that contains knowledge from different subject areas, which can later be expanded to ensure natural integration into the real world. Integrated learning should not be limited to the simple study of individual

topics and sections, but should lead to a broader understanding of other related subjects.

Zh. Ospanova [20] conducting a study of the diversity and methods of implementing integrated forms of organization of the educational process, noted that the most important in the educational process should include: integrated lessons (teaching educational topics similar in content and logically interconnected); integrated days (include a series of lessons with a common goal and tasks); project work. The results described above with this and to determine that highly educated teaching staff in the field of primary education must be trained according to new standards and programs. A primary school teacher must be able to organize the educational process on the basis of digitization, integration, creative approach, and interactivity. That is why ensuring the high professionalism and skill of a modern primary school teacher is the primary task facing Kazakhstan's higher education institutions.

Since the use of integration in education is a factor in the development of educational systems, the process and result of the interaction of structural elements of the content of education, integrated education should be based on a comprehensive approach.

Thus, the formulation of the concept of "integration in education" was carried out, which means the systematic growth of competences of students of lower grades by adapting and combining separate elements into a single whole, provided that they are of the same type.

Based on the analysis of the above-mentioned studies, the concept of "readiness of future teachers for the integrated education of younger schoolchildren" is understood as the readiness of teachers for integrative activities within the limits of their professional activities. Readiness, as a result of training, in the study consists of the following structural components, namely:

- motivational and value – consists in reflecting value orientations, needs, interests, motives, goals, beliefs, which are designed to ensure the desire of future teachers to use integrated forms of organization of the educational process in primary school;

- scientific and theoretical – ensures the formation of systems of psychological-pedagogical and subject-methodical knowledge regarding modern integration trends and processes in primary education; understanding the concepts of "integration", "pedagogical integration", "integrated organizational forms"; algorithms for implementation of integration in the content of primary education; types of integrated forms of organization of education of junior high school students, search for methods of their implementation, research of functions and results of education on an integrated basis;

- practical – consists in mastering skills that are aimed at the successful use of integrated forms of educational organization, namely: gnostic-diagnostic, content-constructive, and evaluation-prognostic [21].

In the process of conducting an experimental study, the need to create organizational and pedagogical conditions for the qualitative formation of the readiness of future teachers for the integrated education of younger schoolchildren was substantiated:

- strengthening of the motivational sphere in the process of preparing future teachers of primary education for the implementation of integrated education of students;
- reorganization of the content component, forms and methods of professional training of future teachers;
- use of integrative methods and forms of learning in the educational process.

Today, in the higher education system of Kazakhstan, there is a risk associated with the personnel potential of teachers whose key universal competences are at the initial level of development, and even with a clearly formed methodical support for the training of future teachers, it will take time, systematic work to support pedagogical workers in education.

Undoubtedly, the development of methodical support for the process of forming the readiness of future teachers for integrated education of junior high school students is considered one of the most relevant in the higher education of Kazakhstan.

## **Conclusions**

In the course of the study, the conclusions were made that the quality professional training of future teachers for the use of integrated in higher educational institutions of Kazakhstan should be based on a system of methodical means for the implementation of which it is necessary to forecast the effective component of the content.

The application of integrated learning in education requires careful preparation from the teacher, which allows them to adapt to pedagogical innovations. The study proved that knowledge of the theoretical and practical foundations of integration will increase students' readiness for future professional activities in the field of primary education. The necessity of using integration in the education of younger schoolchildren has been proven, which will contribute to the further expansion of the holistic perception of the surrounding reality. Primary school teachers should be trained not only in the use of methodical tools, but also in the methods of using them to improve students' learning skills.

The results of the experiment indicate significant positive changes in the level of readiness of future teachers to use integrated learning, which proves the effectiveness of the developed system of methodological tools.

The theoretical analysis of the scientific literature made it possible to systematize the concept of integrated education in primary school and to determine the main ways of formation of the studied readiness. The presented methodical support for the formation of the readiness of future teachers for the integrated education of younger schoolchildren is defined as a professional necessity in the future activity of the teacher.

Prospective directions for improving the readiness of future teachers for integrated education of junior high school students during professional training have been formed. In the process of conducting the experiment, it was established that the levels of readiness of future teachers for the implementation of integrated education during professional training were at a low and medium level. It was determined that such a trend required the creation of the necessary methodical toolkit, which contributed to increasing the level of training of future specialists.

In the course of the study, motivational-value, scientific-theoretical and practical indicators are distinguished: awareness of the importance of future professional activity based on integrated learning in primary school, knowledge about integrated learning of younger schoolchildren, skills and abilities of organizing integrated learning in the educational process of primary school; organizational and pedagogical conditions have been developed for the qualitative formation of the readiness of future teachers for the integrated education of younger schoolchildren:

- strengthening of the motivational sphere in the process of preparing future teachers of primary education for the implementation of integrated education of students;
- reorganization of the content component, forms and methods of professional training of future teachers;
- use of integrative methods and forms of learning in the educational process.

The obtained data of the results of the experiment after applying the proposed methodology conclusions about the effectiveness of the implementation of the methodological tools. In this regard, the policy of educational institutions of Kazakhstan should be aimed at updating the methods of training future teachers for the implementation of integrated education.

The obtained primary results require the expansion and deepening of the problem being developed, therefore, the development of a wider complex of scientific and methodological support will ensure the formation of systematic knowledge about the future professional and pedagogical activity of future teachers, as well as the development of skills and the ability to use them in practice. The data obtained as a result of the research can be considered as a tool for improving the readiness of future teachers for the integrated education of younger schoolchildren.

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### Conflict of Interest

None.

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## **Система методичних засобів формування готовності майбутніх учителів до інтегрованого навчання молодших школярів**

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## **Анотація**

**Актуальність.** Глобалізація підкреслює необхідність якісної інтегрованої освіти в середніх школах Казахстану. Розробка ефективних методів підготовки майбутніх учителів до інтегрованого підходу має вирішальне значення для покращення освіти та забезпечення майбутньої конкурентоспроможності учнів.

**Мета.** Мета статті полягає в обґрунтуванні необхідності впровадження системи методичних засобів формування готовності майбутніх учителів в університетах Казахстану як запоруки їх здатності до використання інтегративного навчання молодших школярів.

**Методологія.** Методологічний підхід дослідження ґрунтується на: емпіричних методах: опитування, експеримент та методи математичної статистики; теоретичних методах, обробка підсумкових показників сформованості готовності здобувачів освіти до інтегрованого навчання.

**Результати.** Визначено зміст понять “інтеграція в освіті” та “готовність майбутніх учителів до інтегрованого навчання молодших школярів”, розкрито її ознаки та особливості, розроблено та впроваджено методику формування готовності майбутніх учителів до інтегрованого навчання в контексті їх професійної підготовки. У ході експериментального дослідження в Павлодарському педагогічному університеті ім. А. Маргулана розроблено методичний інструментарій підвищення готовності майбутніх учителів до інтегрованого навчання молодших школярів у процесі професійної підготовки, а саме: реалізація компонентів і критеріїв готовності з обраними методами їх формування. Визначено перспективні напрями вдосконалення методики формування готовності майбутніх учителів до інтегрованого навчання молодших школярів через формування компонентів готовності здобувачів освіти до здійснення такої діяльності.

**Висновки.** Дослідження продемонструвало, що впровадження системи методичних інструментів у програми підготовки вчителів значно підвищило готовність майбутніх вчителів до використання інтегрованих підходів до навчання в початковій школі, підкресливши необхідність оновлення методів навчання в казахстанських освітніх установах.

**Ключові слова:** інтегроване навчання в початковій школі; підготовка майбутнього вчителя початкової школи; інтеграція наукових знань; початкова школа; професійна підготовка.