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© Г. С. Аяпбергенова, С. А. Нургалиева, Н. А. Бисембаева, М. П. Кабакова, М. Н. Койшибаев

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Развитие умений проектирования у будущих педагогов начальной школы в вузе

Г. С. Аяпбергенова (Павлодар, Казахстан), С. А. Нургалиева (Агры, Турция),
Н. А. Бисембаева (Павлодар, Казахстан), М. П. Кабакова (Алматы, Казахастан),
М. Н. Койшибаев (Кызылорда, Казахстан)

Проблема и цель. *Авторы исследуют проблему формирования специальных компетенций у будущих педагогов начальной школы на основе проектной деятельности в процессе профессиональной подготовки. Цель исследования – выявить уровень развития умений проектирования у будущих педагогов начальной школы и обобщить полученные в ходе эксперимента данные.*

Методология. *Исследование проведено методом психолого-педагогического эксперимента, проанализирован и обобщен эмпирический материал, полученный по итогам написания эссе, анкетирования студентов Карагандинского университета имени академика Е. А. Букетова и Павлодарского педагогического университета. Полученные данные проинтерпретированы и подвергнуты статистическому анализу с помощью t-критерия Стъюдента.*

Результаты. *Основные результаты заключаются в разработке авторских критериев и показателей развития проектировочных умений будущих педагогов с целью экспериментальной интерпретации их проектной деятельности. Выявление приоритетов студентов к выбору определенных видов проектной деятельности обусловило валидность авторской анкеты. С помощью частотного и процентного анализа выявлено, что уровень сформированности умений проектирования будущих педагогов начальной школы определен как недостаточный, в разрезе*

Аяпбергенова Гульсум Сагындыковна – старший преподаватель высшей школы педагогики, Павлодарский педагогический университет.
E-mail: gulsumas@mail.ru

Нургалиева Сания Айдархановна – кандидат педагогических наук, ассоциированный профессор, факультет естественных наук и литературы, университет имени Ибрагима Чечена, Агры, Турция (Agri Ibrahim Çeçen Üniversitesi).
E-mail: sanianur@mail.ru

Бисембаева Нагима Асанхановна – кандидат педагогических наук, старший преподаватель высшей школы педагогики, Павлодарский педагогический университет.
E-mail: Bisembaevanagima@mail.ru

Кабакова Майра Победовна – кандидат психологических наук, доцент, кафедра общей и прикладной психологии, факультет философии и политологии, Казахский национальный университет им. аль-Фараби.
E-mail: pobedovna_70@mail.ru

Койшибаев Махамбетжан Нахипбекович – кандидат филологических наук, старший преподаватель, кафедра педагогики и методики обучения, гуманитарно-педагогический институт, Кызылординский университет имени Коркыт Ата.
E-mail: mahat75.62@mail.ru

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компонентов: мотивационная составляющая формирования специальных компетенций сформирована недостаточно; когнитивная составляющая оценивается как неудовлетворительная; сформирована со средним и низким уровнем рефлексивная составляющая.

Заключение. *Результаты исследования показали, что студенты продемонстрировали в целом низкий уровень сформированности умений проектирования, что может существенно усложнить процесс повышения качества подготовки будущего педагога начальной школы нового типа, обладающего современными инструментарием проектной деятельности в будущей профессиональной деятельности.*

Ключевые слова: *проектная деятельность студентов; формирование умений проектирования; специальная компетенция; будущие учителя начальной школы; профессиональная подготовка; модернизация образования.*

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Gulsum Sagyndykovna Ayapbergenova
Senior Teacher,
Higher School of Pedagogy,
Pavlodar Pedagogical University, Pavlodar, Kazakhstan Republic.
ORCID ID: https://orcid.org/0000-0002-4952-3289
E-mail: gulsumas@mail.ru (Corresponding Author)

Saniya Aydarkhanovna Nurgaliyeva
Candidate of Pedagogical Sciences, Associate Professor,
Faculty of Natural Sciences and Literature,
Agri Ibrahim Chechen University, Agri, Turkey.
ORCID ID: https://orcid.org/0000-0002-7653-9454
E-mail: sanianur@mail.ru

Nagima Assankhanovna Bissembayeva
Candidate of Pedagogical Sciences, Senior Teacher,
Higher School of Pedagogy,
Pavlodar Pedagogical University, Pavlodar, Kazakhstan Republic.
ORCID ID: https://orcid.org/0000-0002-4369-3308
E-mail: Bisembaevanagima@mail.ru

Maira Pobedovna Kabakova
Candidate of Psychological Sciences, Associate Professor,
Department of General and Applied Psychology, Faculty of Philosophy and Political Science,
Kazakh National University named after Al-Farabi, Almaty, Kazakhstan Republic.
ORCID ID: https://orcid.org/0000-0002-5374-3305
E -mail: pobedovna_70@mail.ru

Makhabetzhan Nakhipbekovich Koyshibayev
Candidate of Philological Science, Senior Teacher,
Department of Pedagogy and Education Methodology, Humanitarian and Pedagogical Institute,
Kyzylorda University named after Korkyt Ata, Kyzylorda, Kazakhstan Republic.
ORCID ID: https://orcid.org/0000-0002-4650-8630
E -mail: mahat75.62@mail.ru

Developing project skills in future prımary school teachers within the university-based initial teacher education

Abstract

Introduction. *The authors investigate the problem of developing programme-specific competencies in future primary school teachers using project methodology in the process of initial teacher education. The purpose of the study is to assess the level of project skills in future primary school teachers and analyze the obtained empirical data.*

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Materials and Methods. *The research was conducted using the method of psychological and educational experiment. The empirical data included students' essays and questionnaires. The sample consisted of students of Karaganda university named after academician E. A. Buketov and Pavlodar pedagogical university. The obtained data were interpreted and subjected to statistical analysis using the Student's t-test.*

Results. *The authors have developed criteria and indicators for evaluating future teachers' project skills in order to experimentally interpret their project activities. The identification of students' priorities for the choice of certain types of project activities determined the validity of the questionnaire. Frequency and percentage analyses revealed the insufficient level of project skills in future primary school teachers related to the following components: (1) the motivational component of programme-specific competencies; (2) the cognitive component; (2) the reflexive component.*

Conclusions. *The results of the research showed that students demonstrated a low level of project skills, which can significantly complicate the process of improving the quality of initial teacher training for a new type of primary schools.*

Keywords

Project activity of students; Formation of design skills; Special competence; Future primary school teachers; Initial teacher education; Modernization of education.

Introduction

The development of research skills for many pedagogical professions commences in undergraduate education yet there is limited evidence regarding effective research teaching and learning approaches. According to (G. Rodríguez, N. Pérez, G. Núñez [1]; J. Topalov, B. Radić-Bojanić [2]) the main goal of recearch activity is to consolidate and to deepen knowledge which are received by students within the process of training, to acquire the necessary research skills. For most of this century, and increasingly in modern times, teacher educators have been impelled to consider ways in which a greater level of reflectivity, especially through enhancing research skills development, might be integrated into the teacher education program (T. Lovat, M. Davies, R. Plotnikoff [3]). One of the ultimate aims of teacher education programs is to equip prospective teachers with the necessary professional skills and dispositions so that they can build and maintain a philosophy of teaching and learning that is constantly reviewed based on an understanding of research and practices. Developing student teachers' inquiry skills by engaging them in research is one of the indispensable parts of teacher education programs since it provides the basis of their ongoing professional development (S. Kuter [4]). S. K. DebBurman suggests that the involvement of students in real research projects promotes interest and learning in complex scientific content, helps develop science experimental skills and enables students to gain familiarity with the science culture (S. K. DebBurman [5]). Qualters showed that students viewed this type of learning as a "connecting mechanism" both with other course content and more interestingly in a personal way with faculty (D. M. Qualters[1]). Enquiry based learning also develops key transferable skills needed for lifelong learning and Kahn and O' Rourke suggest that the leadership skills in managing these types of complex projects for example are very important in future

[1] Qualters D. M. Do students want to be active? *Journal of Scholarship of Teaching and Learning*, 2001, vol. 2 (1), pp. 51–60.

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employability (P. Kahn, K. O'Rourke [2] ; K. H. Yeoman, B. Zamorski [6].

In this work, we share the point of view of E. V. Dyrnaeva [3] that in the formation of a specialist of any profile, it is important to form all priority key competencies. However, given that in the framework of the competence-based approach the educational goals should be aimed at its applicability in the world of work, it is necessary for specialists of each profile to highlight the leading competence in the field of their work. In particular, first of all, it is necessary to form a highly developed special professional and pedagogical competence of a future primary school teacher.

V. A. Adolf [7], having considered the impact of the results of scientific and pedagogical research on the quality of pedagogical innovations in the practice of education and the quality of training of highly qualified personnel, concludes that "... at present there is a loss of fundamental characteristics of Russian vocational education, one of which was the tradition of early introduction of a student to scientific research of the graduating department by involving him or her in the joint development of scientific projects".

It must be emphasized that this problem is also relevant for Kazakhstani higher education. Of particular relevance is also the issue of modernizing the educational space of the Kazakhstani higher school[4] as an environment for future primary school teacher training in the context of the updated educational content of the Republic of Kazakhstan, which has modern tools for project activities in future professional activities, initiative in unfamiliar situations and the generation of new projects as ways of making professional decisions.

In psychological and pedagogical science, prerequisites have been created for studying the formation of special competencies of future primary school teachers on the basis of the project method in the process of vocational training.

B. Oskarsson's[5] position is suggested as the fundamental theoretical approach, who believes that special competence includes the ability to work effectively in a team, plan and problem solving, creativity, leadership, entrepreneurial behavior, and organizational vision and communication skills.

In the research of the genesis of the concept of "special competence" among researchers, many interpretations and definitions from various sources of scientific knowledge were identified, however we found the most acceptable work of J. Raven[6], the founder of the psychological theory of competence, who operates with the concept of "competence as a set of competencies", emphasizing them plurality. J. Raven, distinguishes two components in the structure of competence: general competence (values, motivations, behavior), and competence for

[2] Kahn P., O'Rourke K. Understanding enquiry-based learning. *Handbook of Enquiry & Problem Based Learning*, 2005, pp. 1–12.

[3] Dyrnaeva E. V. *Formation of special competence of future agricultural engineering teachers in the process of professionally oriented teaching of Physics*. Diss. ... candidate of pedagogical sciences. Togliatti, 2008. 238 p. (In Russian)

[4] Nurgaliyeva S., Zeynolla S., Tulenova U., Zulkarnayeva Zh., Yespolova G. *Features of institutional autonomy of the Kazakhstan's universities*. 2018. Opción, Año 34, No. 85-2 302-336. ISBN: 18692885 18690459 EID: 2-s2.0-85058809830 URL: https://www.redalyc.org/jatsRepo/

[5] Oskarsson B. *Basic skills as a mandatory component of high-quality vocational education: Assessment of the quality of vocational education*. Report 5; (eds.) V. I. Baidenko, J. van Zantworth; European Training Foundation. DELPHI project. M., 2001. (In Russian)

[6] Raven J. *Competence in modern society: identification, development and implementation*. M.: Kogito-Center, 2002. 396 p. (In Russian)

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successful self-realization in society, regardless of vocational activity.

An interesting scientific approach for our study was G. Halazh [8], who considers special competencies as a response to the challenges facing Europe (preservation of a democratic open society, multilingualism, multiculturalism, new labor market requirements, development of complex organizations, economic changes).

In confirmation of this Th. N. Hopfenbeck [9] determines the category of competence "as a general ability based on knowledge, values, inclinations, which makes it possible to establish a connection between knowledge and a situation, to find a procedure (knowledge and action) suitable for a problem."

A number of leading foreign researchers (I. Drach, O. Slobodianiuk [10], P. A. Ianni [11], L. Leonard, B. Wibawa [12], etc.), claimed that special vocational competence is a combination of two components: vocational and technological readiness, meaning possession of technology, and a component necessary for every specialist – professionally significant personal qualities.

At the present stage, in the latest foreign works, the understanding of special competence is constantly developing, refined, for example, L. F. Gómez-Rodríguez [13] classifies knowledge, skills, abilities or characteristics associated with the performance of professional activities at a high level as a special competence. I. Walker[7] believes that this is problem solving, analytical thinking or leadership potential ("... a group of knowledge in a particular area, skills and attitudes that affect a significant part of professional activity (roles or areas of responsibility)." O. McGarr [14] notes in his research that "... special competence is "the ability to manage a situation (even an unforeseen one)."

In the context of our discussion, it is appropriate to refer to the study of E. K. Henner [15], who turned to the experience of foreign countries, primarily the European Union states, because it was their approach to competence-based higher education that was adopted as a model by the initiators of the reforms of Kazakhstani education.

E. K. Henner believes that the evolution of the competence-based approach to higher education in the European Union can be divided into two periods: before the start of the Tuning project, which made a decisive contribution to the current state of the issue under discussion, and its mature phase. Tuning of educational structures is a major European project that began in 2000 as a part of the reform of the European higher education system.

In line with the topic of our article, it is necessary to mention that already in the 90s of the XX century there were two kinds of ideas in the scientific and educational community:

– the concept of "competence", understood as a characteristic of activity (as opposed to "competency" – characteristics of a person), including knowledge, skills and abilities as its constituent elements;

– competence, which is, first of all, a behavioral characteristic causally related to the criteria for effective and / or successful action in professional or life situations.

There was also an approach that linked the concept of "competence" with knowledge and successful professional activity and interpreted this concept as a group of knowledge in a certain area, skills and attitudes that affect a significant part of professional activity.

As noted in the work of A. Demchuk, Y. Karavaeva, Y. Kovtun, S. Rodionova, that

[7] Walker I., Chan, D., Nagami, M., Bourguignon C. (eds.) *New Perspectives on the Development of Communicative and Related Competence in Foreign Language Education*. Berlin, Boston: De Gruyter Mouton, 2018. DOI: http://dx.doi.org/10.1515/9781501505034

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base on the analysis of documents and publications on the Tuning project, "in the European educational practice in recent years there is a widespread opinion that competence is a category that was previously understood to the employer and characterizes the professional activity of the specialist after graduation, directly at the workplace. In the course of mastering educational programs, a teacher does not deal with the formation of competencies themselves, but with planning and monitoring the achievement of specific learning outcomes for individual components of the curriculum" [8].

This trend is also consistent with the definition of the competence under analysis used in the "Academic policy" of Pavlodar Pedagogical University: "competence is the ability to use the knowledge, skills and abilities acquired in the learning process in the professional activity"[9].

It should be emphasized that the concepts of "competency" and "competence" act as synonyms in such works of foreign researchers as B. W. Leonard [12], Z. E. Davidson [16], D. M. Garyantes [17] and others. For instance, according to L. Adov [18] "... the competency of specialists is associated with the characteristics of qualifications, in the aggregate of necessary vocational knowledge." The author emphasizes that such a definition of competency reflects its essence in a person's ability to use scientific and practical knowledge in relation to vocational activities.

In the context of the research, it is necessary to separate the two concepts of "competency" and "competence". So, "competence" (from the Latin competere to seek, comply, approach) in a broad sense is understood as knowledge, experience, awareness in any area, as well as the terms of reference of a certain body or official established by law, charter, standard or other act. "Competency" (from the Latin competentis capable) is understood as possession of competence, that is, knowledge, experience, allowing to judge something or possession of powers in resolving certain issues (U. Gensby [19], M. E. Nyström [20]).

Thus, the concept of special competence is reduced to determining the relationship between a person's knowledge and skills and their practical application in reality, in other words, to the relationship between theoretical knowledge and practical action. The presence of a person's theoretical knowledge on certain issues does not always mean the ability to use them in practice, i.e. we are not necessarily talking about a formed special competence, while competence without knowledge is unthinkable.

Training in design, design and innovation, design and research activity as a way of solving professional problems is one of the priority areas of modern education, as we can see by analyzing foreign experience in preparing students for project activities in a university (M. L. Brockmann [21], Z. Misbah [22], M. van Dinther [23]).

The problem of the formation of special competencies of future primary school teachers on the basis of the project method in the process of vocational training is revealed in the unity of the system (as a system with all its properties: structure, integrity, irreducibility of its properties to the properties of the constituent components of the system, in conjunction with subsystems and

[8] Demchuk A., Karavaeva Y., Kovtun Y., Rodionova S. Competencies, learning outcomes and forms of assessment: The use of Tuning Methodology in Russia. *Tuning Journal for Higher Education*, 2015, vol. 3 91), pp. 149–185. (In Russian) URL: http://www.tuningjournal.org/article/view/97/1089

[9] *Academic policy. Pavlodar State Pedagogical University*. 2018 (In Russian)

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supersystems) (I. A. Lipenskaya[10]), culturological (as a cultural process carried out in a culture-like environment, all components of which are filled with human meanings) (J. Schonrock-Adema [24]), activity (as a teacher's activity in the design of pedagogical objects) (M. T. Esteban Nuñez [25], personality-oriented (as an activity, the nature of which is determined by personal qualities) (L. N. Ponomarenko [26]), competence-based (S. Nijhuis [27]) approaches to education.

Speaking about the classification and systematization of the definitions of the studied concept that exist in Russian scientific knowledge, we conducted a content analysis of scientific sources, which allowed us to outline four groups of research areas (Figure 1), which are the main theoretical prerequisites for this study of the specifics of the formation of special competencies of future primary school teachers based on the project method in the vocational training process.

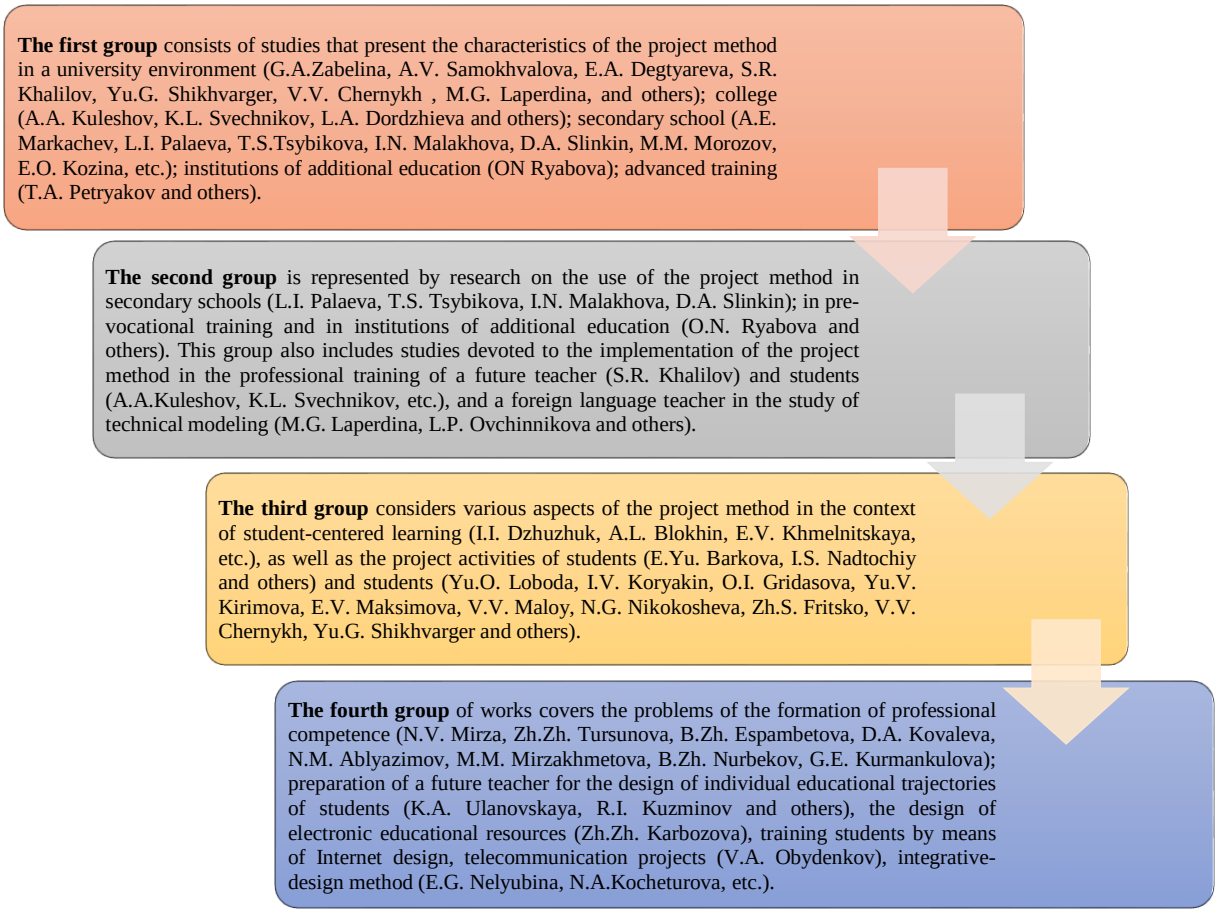

Fig. 1. *Theoretical prerequisites for the study of the specifics of the formation of special competence of a future teacher*

[10] Lipenskaya I. A. *The Formation of Special Compretence of Bachelors (profile "Primary education")*: diss. ... candidate of pedagogical sciences. Samara, 2014. p. 197.

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An analysis of the works of Kazakhstani researchers showed that the concept of "special competence" in Kazakhstani scientific discourse is relatively new and rather rare, complex studies in the light of modernization of education have not been carried out, although the development of the problem under study is gaining an increasingly important place in Kazakhstan.

We designate several scientific approaches to the problem under consideration at present among domestic researchers, such as: the countryss personnel potential as the main factor in the successful implementation of an inclusive education system (L. A. Shkutina, A. R. Rymkhanova, N. V. Mirza, Zh. A. Karmanova[11]); socio-pedagogical support of the process of forming project competence of students in the system of university education (M. Özbaş, D. Mukhatayeva, A. Aitbayeva, G. Kassen[12]), K. Bakhytkul [28], B. Bokayev [29], etc.).

Thus, even a slight digression into the materials devoted to the analysis of the concept under the research allows us to draw conclusions:

– firstly, about the absence of a single clear definition of this concept;

– secondly, about the similarity of understanding of its essence in the works of various foreign, Russian and domestic scientists.

Summarizing the above, on the basis of a detailed analysis and synthesis of scientific literature and the above approaches, we interpret special competence as a component of professional competence, and the project activities of future primary school teachers from the means of expanding the horizons of students in various fields of knowledge into a means of forming special competencies.

The analysis of scientific and pedagogical sources and pedagogical practice on the research problem indicates not only the relevance of involving students in project activities as an important means of forming special competence, but also the impossibility of using a universal approach to its solution.

The aim of the study is to identify the level of development of project skills of future primary school teachers and to analyze the data obtained during the experiment.

Methods

The empirical study was carried out on the basis of two higher educational institutions: Karaganda University named after academician E. A. Buketov (Karaganda, Kazakhstan) and Pavlodar Pedagogical University (Pavlodar, Kazakhstan). The research involved 180 people, of whom 60 teachers and 120 students participated in the pilot study.

The following research methods were used:

– general scientific methods: theoretical analysis of the literature on the research problem;

– empirical methods: interviews, questionnaires, essays;

– mathematical and statistical methods: Spearman's rank correlation coefficient. The calculations were performed using the SPSS Statistics 17.0 software package.

Using the questionnaire method a high level of study mass was obtained with the lowest cost. Anonymity can be called a feature of this method (the identity of the respondent is not recorded, only their answers are recorded). In our example,

[11] Shkutina L. A., Rymkhanova A. R., Myrza N. B., Karmanova Zh. A. The content structure of the vocational competence of teachers in the conditions of inclusive education. *Scientific Review. Pedagogical Sciences*, 2017, no. 3, pp. 130–136.

[12] Özbaş M., Mukhatayeva D., Aitbayeva A., Kassen G. The structural composition of the projective competence. *Erzincan Üniversitesi Eğitim Fakültesi Dergisi. Turkey*, 2019, no. 2, pp.108–118.

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there are two arrays of questionnaires, for two groups of recipients: students and teachers. Moreover, the arrays had different volumes (students – 120, and teachers – 60). Due to the fact that the limiting component of the correlation analysis was the array of teachers (as the smallest), it became necessary to create arrays of students equivalent in number.

For this, from the named groups, by the method of randomization, a representative sample was extracted, equal in number to the sample of teachers. Thus, two samples of recipients, equal in number, were formed. For these purposes, in our case, the Microsoft Excel analysis package, a random number generator, was used.

If questionnaires were prepared for different groups of recipients that had a dissimilar scale of measurement (total scores lie in different ranges of numerical values), then before starting further processing of the results obtained, it was necessary to standardize the data. In our case, Z-scores were calculated with the SPSS statistical package[13].

Then, using the statistical package SPSS Statistics 17.0, a nonparametric cross-correlation was calculated between two samples of respondents. Spearman's correlation coefficient was used as an indicator[14].

Results, Discussion

1. In the course of the interviews with primary school teachers on the question: "Do you think that a modern school needs purposeful and organized actions to develop special competencies based on the project method?" the majority of respondents, that is, 68.6 %, consider it necessary, 19.4 % – very necessary, 8.7 % – necessary but not obligatory, and 3.3 % – showed that it is difficult to give any answer.

In other words, the overwhelming majority of respondents (88 %) believe that purposeful and organized activities of educational institutions are necessary for the formation of special competencies of primary school teachers based on a project methodology.

The opinion of the respondents about the organization and implementation of work on the formation of special competencies of primary school teachers based on the project methodology was as follows: organization of work on the formation of special competencies of primary school teachers based on the project methodology – 100 %; the system of work on the formation of special competencies for primary school teachers – 79 %; organization of infrastructure – organization of advanced training for primary school teachers in order to master the project methodology – 20 %; all directions together – 1 %.

Thus, the overwhelming majority of primary education workers ask the question: "Is it necessary for a modern school to take purposeful and organized actions to develop special competencies based on the project method?" Most of them (71 %) supported the organization of infrastructure for the study of school subjects based on a project-based methodology.

As for the second question: "Is the school, where you work, involoved in the formation of special competencies for primary school teachers on a project basis?", 23 % of the respondents answered "yes"; 9 % "sometimes", 59 % "not at all"; 9 % found it difficult to answer.

Regarding the point "Assess your experience and skills in developing special

[13] Kisselyova T. V. *SPSS: Foundations of Sociological Data Analysis*: Textbook. Ivanovo: Ivanovo State Power Engineering University named after V. I. Lenin, 2008. 154 p. (In Russian)

[14] Anastasi A. *Psychological testing: Book 1: trans. from English* / K. M. Gurevich, V. I. Lubovsky (eds.). Moscow: Pedagogy, 1982. 320 p. (In Russian)

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competencies on a project basis", 33 % of primary school teachers have sufficient experience and skills to organize the process of developing special competencies on a project basis; 17 % pointed 'I can organize project work'; 11 % – develop methodological measures for the formation of special competencies based on the project methodology; 39 % stated that they lack the experience and skills to develop special competencies based on the project method.

To the question "Do you think that the formation of special competencies of primary school teachers based on the project methodology is a necessary element of their development?" 21 % of respondents answered 'yes'; 23 % – 'possibly'; 43 % – 'no'; 13 % answered that they found it difficult to answer.

The question "What knowledge and skills do you lack in the area of project development of special competencies for primary school teachers?". 23 % – in terms of special competencies, 21 % – in terms of the specifics of project activities; 19 % – requirements for the design of the content of subjects taught in primary school; 37 % – lack of knowledge in the field of building the educational process.

32 % of respondents, in response to the question "Is it necessary to develop a regulatory framework for organizing and carrying out work on the formation of special competencies based on the design methodology?" developed clear science-based criteria for the regulatory framework; Issuance of an order from the Department of Education on the organization and implementation of work on the formation of special competencies based on the design methodology – 46 %; 9 % – development of teaching guidelines; 13 % – believe that this is not necessary.

Thus, the above data indicate that teachers lack a clear understanding of the specifics and methods of forming special competencies based on the project methodology, which makes it difficult for them to choose the content, methods and techniques of work when developing the necessary methodology.

According to primary school teachers' opinion, the reasons for the difficulties in the development and implementation of new, non-standard project-based learning activities are lack of methodology, lack of purposeful and consistent special training in higher education and, as a consequence, insufficient competence in these issues. It was noted that the solution of issues related to the development of programs and activities for primary school teachers, as well as the study of subject topics on a project basis, is carried out mainly at the level of everyday empirical practice. Primary school teachers use outdated lesson designs and activities already used in schools. The content of these lessons and activities is not regularly discussed with university professors. Although there have recently been publications on the Internet on digital educational resources, pedagogical publications with plans, presentations and summaries of project-based learning topics that help to facilitate the solution of the problem, however, such material is very insignificant and requires improvement. The respondents' answers indicate that the methods of coordinating the formation of special competencies on the basis of the project method in the pedagogical process of the school have not been determined, the regulatory and legal framework for the school's activities on a project basis has not been developed.

2. Monitoring the students' participation in the discussion of issues, analysis of their opinions made it possible to make a conclusion on the formal attitude of students to the task, subjective assessment of the project; lack of practical skills and planning skills among the majority of students, inability of students to work

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independently, inability to select theoretical and methodological material in close connection, to give their own examples; low level of interest in the formation of their special competencies based on the design methodology. Most future primary school teachers do not understand the importance of the formation of special competencies based on the project method in their future professional activities.

Thus, the results of the analysis show that the motivational component of the formation of special competencies of future primary school teachers based on the project method is not sufficiently formed (table 1).

Table 1

Levels of the motivational component of the formation of special competencies of future primary school teachers based on the project methodology (initial section)

Groups	Number of students	Low level		Intermediate level		High level	
		number	%	number			number
CG	28	26	92,86	2	CG	28	26
EG-1	29	28	96,55	1	EG-1	29	28
EG-2	33	30	93,6	2	EG-2	33	30
EG-3	30	27	90	3	EG-3	30	27

The table shows that future primary school teachers agree in terms of the level of formation of the first indicator in the control and experimental groups. In general, according to the first indicator, from 90 % to 96.5 % of future primary school teachers are at a low level, and from 3.44 to 10 % are at an average level, and a high level is not reflected at all.

Diagnosis of the special competencies in terms of the second component (cognitive)

Diagnostics of the special competencies in terms of the cognitive component was carried out using the project method, test assignments, questionnaires, diagnostic didactic cards, analysis of students' creative products, and personal interviews.

Within the questionnaire to determine the level of the cognitive component of special competencies based on the project methodology there was a question "What do you think about educational projects? What forms do you use?". The overwhelming majority of respondents said that the content of the lesson was developed (88 %), although the forms of developing the content of the lesson were not given special attention (12 %).

To the question: "What design methods are you familiar with when developing special competencies?" the subjects turned to collective, paired, group (78 %), subject and interdisciplinary forms, and research, creativity, types of information were completely ignored.

To the questions "What conditions do you consider the most important for the formation of special competencies based on the project methodology?" the answers were given on the exact knowledge of the goals and objectives of the formation of special competencies based on the project method (53 %), knowledge of the organizational forms of the formation of special competencies based on the project method (16 %), consultations with good methodologists (15 %), time density and workload on based on the design method (16 %).

To the question: "How and where to learn about the formation of special competencies based on the project methodology" the answers were voiced: from colleagues (27 %), university (8 %), press, television (44 %), Internet (21 %).

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"What activities are held in your educational institutions to develop special competencies based on the project methodology?" Respondents indicated the absence of special lectures, thematic conferences, only some of them pointed to refresher courses (87 %).

To further determine the level of the cognitive component of special competencies of future primary school teachers, a diagnostic and didactic map was used on the basis of the project methodology.

1. "Competence", "Special competence", "Project". Describe the concept of "project method".

2. Describe the features of studying the topic "Methods of teaching natural science", "Methods of teaching mathematics" based on the project methodology.

3. How do you rate your willingness to teach project subjects in primary school?

4. Imagine yourself as an elementary school teacher. Do you think that psychological, pedagogical, technological, special methodological knowledge is necessary in the formation of special competencies based on a project methodology?

5. What do you think about the number of participants in the project on educational work in primary school?

6. Describe the features of the activity of a teacher and a primary school student in the formation of special competencies of future primary school teachers based on the project methodology.

The study of the results of the diagnostic and didactic map made it possible to reveal the following contradiction: the need for scientific, systematic work to form special competencies in future primary school teachers based on project methods and the lack of organization of adequate specific scientific and pedagogical forms of work in the university, available to future primary school teachers. The initial state of the cognitive component of training future primary school teachers in the educational process based on the project methodology can be assessed as generally unsatisfactory.

Diagnosis of special competencies in terms of the third component (reflexive)

1. Diagnosis of special competencies for the reflective component was carried out by writing an essay on the topic "What do I need to learn in order to develop my specific competencies based on the project method?" The results of the essays of both test groups are similar in content: special competencies can be formed on the basis of the project method and solve the problems of quality learning. According to the students' opinion, the formation of special competencies based on the project methodology is a special problem not only for schools, but also for the state, here are several episodes of the essay: "... the formation of special competencies based on the project method should be supported by the state, since development of intellectual potential"; "...the development of special competencies for primary school teachers based on the project methodology is not an easy task, since it must solve not only educational, but also social problems"; "... I believe that not only certified teachers should work, but also specially trained teachers".

There are other opinions of students in the essay, for example: "... if the issue of the formation of special competencies based on the project methodology is relevant, why not consider this issue when preparing future primary school teachers at a university?"; "... I believe that the formation of special competencies based on the project methodology should be carried out not in ordinary schools, but in "advanced "schools"; "... the question of the formation of special competencies on the basis of the project

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methodology should concern only teachers of methodological subjects".

Thus, the data obtained, of course, cause concern not only with the attitude of future primary school teachers to the problem under study, but also with an unsatisfactory level of readiness to carry out pedagogical activities in accordance with periodic changes in the education system. According to the survey results, many future primary school teachers are positive about the need to develop their special competencies on a project basis, but most of them are less active in gaining relevant experience. Future primary school teachers have little understanding of how to apply the appropriate approaches in professional teaching practice. In particular, although some of them have information about the system of measures aimed at the formation of special competencies based on the project method, on the contrary, the overwhelming majority of respondents do not consider it necessary to use the methodology of special competencies based on the project method.

Thus, the results of the analysis of the essays showed that future primary school teachers understand the importance of the correct organization of educational activities in the formation of their special competencies based on project methods and the need to create their own model of self-development and self-education. The diagnostic results are presented in table 2.

Table 2

Levels of the reflexive component of the formation of special competencies of future primary school teachers based on the project methodology (initial section)

Groups	Number of students	Low level		Intermediate level		High level	
		number	%	number	%	number	%
CG	28	24	85,72	2	7,14	0	0.00
EG-1	29	23	79,31	6	20,7	0	0.00
EG-2	33	29	87,87	4	12,13	0	0.00
EG-3	30	27	90	2	6,7	0	0.00

In general, the diagnostic data show the level of readiness of future primary school teachers for the formation of special competencies based on the project methodology according to the indicators of the reflective component – they allow us to draw the following conclusions: from 79.31 % to 90 % of future primary school teachers in the experimental groups; 6.7 % to 20.7 % at the average level; high level is not detected.

Further, we present the results of the distribution of the readiness levels of future primary school teachers for the formation of special competencies based on the project methodology (Table 3 and Figure 1).

Table 3

Distribution of readiness levels of future primary school teachers for the formation of special competencies based on project methods (initial section)

Groups	***Levels***		
	low	medium	high
	%	%	%
CG	90,99	8,99	0.00
EG-1	87,8	12,20	0.00
EG-2	90,06	9,94	0.00
EG-3	85,83	14	0.00

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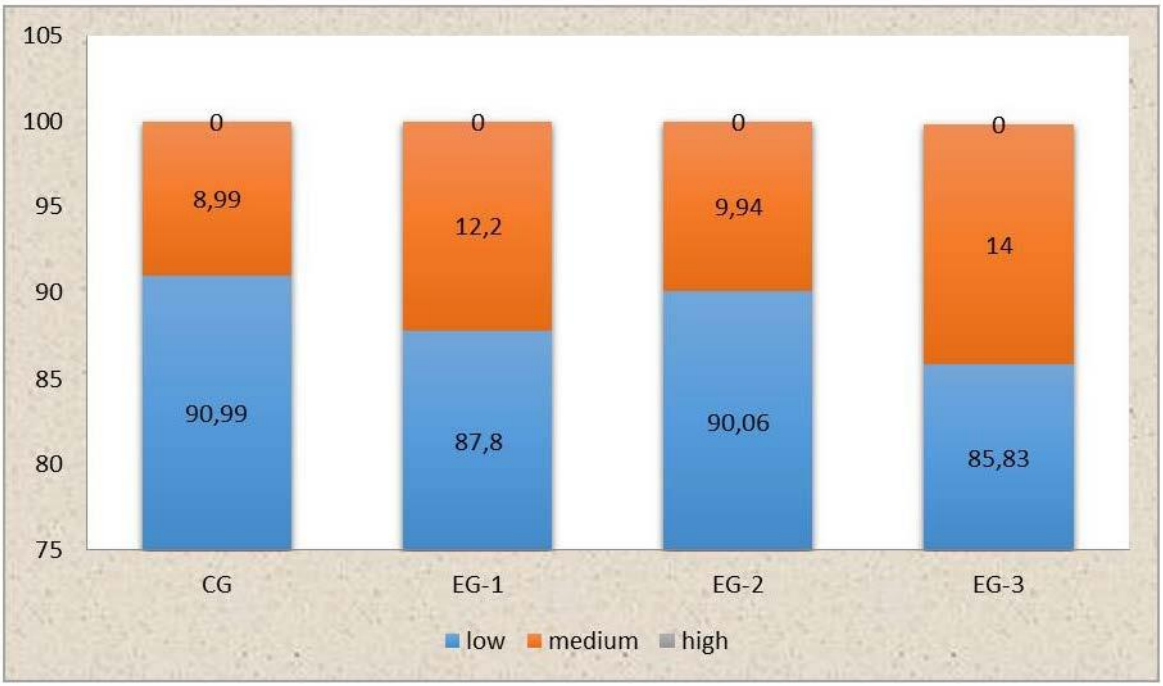

Fig. 2. *Distribution of the readiness levels of future primary school teachers for the formation of special competencies based on project methods (initial section)*

To compare the above results, the obtained data on the distribution of readiness levels (initial section) for the formation of special competencies of future primary school teachers based on the project methodology are presented: on average 87.24 % of future primary school teachers at a low level, 19 % at an average level, high level – not found.

The conducted research allows us to formulate the main problems that arise during the implementation of project activities: (1) – the absence of preparation, special training in project in most cases; (2) – students' difficulties in posing a problem and in finding information. It is necessary to note that students are trying to find information for projects mainly on the Internet, and the skills of working with reference literature are not developed; (3) – there is a low degree of independence in the preparation of projects. Consequently, the project activity in the universities of Kazakhstan does not solve its main task – the formation of special competencies based on the project methodology. Students' actions are reduced to obtaining information on the topic of the project and preparing a speech (presentation), and in some cases by rote memorization of the report.

Conclusions

The given research was aimed at identifying the level of development of project skills of future primary school teachers. Analysis of the data obtained during the experiment revealed a low level of development of project skills of future primary school teachers, which can significantly complicate the process of improving the quality of training of future primary teachers of a new type in the context of the updated content of education in the Republic of Kazakhstan, which has modern tools for project activities in future professional activities.

Thus, a contradiction arises between the increased requirements of society for the quality of training of qualified pedagogical personnel of a new type with a high level of professional training, capable of using the tools of project

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activities in future professional activities, and insufficient focusing of students' attention on the problem of project activities as an important means of developing special competence of future primary school teachers.

This problem determines our further research, which will consist in finding ways aimed at the formation and development of special competencies of future primary school teachers based on the project method in the process of vocational training in the context of the updated educational content of the Republic of Kazakhstan.

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