SRSTI 14.01.21 DOI 10.53355/ZHU.2026.118.1.004

# RESEARCH CULTURE OF FUTURE PRIMARY EDUCATION TEACHERS

*M. Sözer* , *A. Alibayeva*[*]

*Gazi University, Turkey, Ankara*
[*]*e-mail: akif@gazi.edu.tr, alibaeva-1987@inbox.ru*

*Abstract. This article analyzes the current state of the research culture of future primary education teachers. This issue is relevant and is considered one of the emerging directions in today's education system. This is because specific methodologies and scientific foundations for developing students' research culture have not yet been thoroughly studied. The regulatory and legal acts in the field of education of the Republic of Kazakhstan state that a teacher must acquire subject-specific, pedagogical, methodological, digital, legal, and communication competencies necessary for professional activity. Based on philosophical, psychological, and pedagogical literature, the article reveals the essence of research culture and provides theoretical insights into its content.Moreover, the importance of developing research culture in future teachers is emphasized. It prepares students to successfully complete academic tasks such as theses, scientific articles, and projects, and equips them to make independent decisions, analyze problems, and identify optimal solutions in their professional practice. In this regard, the integration of STEM and project-based learning technologies is becoming increasingly important. The article also discusses the principles of organizing scientific research in higher education institutions, the structural components of research culture, its stages of development, and the learning process based on project methods. Additionally, effective mechanisms for developing a teacher's research culture are identified, and pedagogical conditions contributing to the formation of its technological component are defined. In the course of the study, theoretical methods (generalization, comparison, analysis, systematization, and review of scientific works) were applied. These approaches made it possible to comprehensively reveal the essence of research culture and to identify effective ways of preparing future teachers for professional practice.*

***Keywords:*** *research culture, project-based learning, STEM technologies, professional competence of teacher, organization of research activities.*

## Introduction

At present, the fourth industrial revolution is taking place worldwide: the rapid development of information, advanced digital technologies, and the growth of scientific projects are having a significant impact on all areas of human life. In short, possessing information alone is not enough – the ability to study, analyze, and innovate is equally important. A professional striving for success must constantly develop by combining the skills of an inventor, researcher, manager, and psychologist.

A teacher's professional competence is the set of knowledge, skills, and practical abilities that enables them to work effectively in educational activities. The Law of the Republic of Kazakhstan "On Education," the Law "On the Status of a Teacher," state compulsory standards of higher and postgraduate education, as well as other official documents, define the main duties and professional competencies of teachers. These documents require teachers to master subject-specific, pedagogical, methodological, digital, legal, and communicative competencies.

Chapter 7, Article 50 of the Law "On Education" defines "The status of a teacher in higher and/or postgraduate education institutions," while Article 51 sets out "Their rights, duties, and responsibilities."

For example:

- Continuous professional self-development by the teacher.
- Compliance with norms of pedagogical ethics.
- Conducting research, experimental-practical work, and introducing innovative methods into the educational process [1].

Article 15 of the Law of the Republic of Kazakhstan "On the Status of a Teacher" specifies the following duties of teachers:

- Mastering competencies required for professional activity.
- Adhering to pedagogical principles in teaching and upbringing, and ensuring the quality of education at a level not lower than the state standard.

- Continuously improving professional skills, including updating their qualification level at least once every five years.
- Complying with the rules of pedagogical ethics, among others [2].

Analyzing these normative documents, it is possible to highlight the following competences inherent in pedagogical staff: pedagogic-psychological, information and communication, legal, social, research and personal.

Researchers I.F. Isayev, V.A. Slastenin, E.N. Shiyanov et al. consider the concepts of «culture» and «vocational-pedagogical culture» as close. They emphasize the research culture in the structure of the professional-pedagogical culture. The research culture of the teacher is an indicator of his creativeness and research activities. The involvement of the teacher in scientific and pedagogical research opens the way to a deep understanding of the essence of pedagogical problems and the choice of ways of action according to specific conditions and objectives. According to scientists-researchers, the research process requires active inclusion of the teacher in the system of relations «science-technology-production» [3].

In pedagogy, there are many definitions of the concept of a «research teacher's culture»:

• A certain way and result of creative self-realization of the teacher in the process of innovation.

• The personal quality of the teacher and the level of mastery of methods and techniques for solving pedagogical tasks.

• The abilities manifested in the professional-creative activity of the teacher, as well as the characteristics that reflect his consciousness and features of professional thinking.

• A factor that ensures the creative professional development of the teacher, is a source of new knowledge and skills and determines the desire for self-improvement.

Main requirements for modern teachers:

• Professional knowledge and competence
• Competitive
• Methodological skills
• Pedagogical skills
• Development of a research culture
• Continuous professional search.

The foundation of personality formation is laid in the work of the teacher. Today, the education system is undergoing significant changes and our country is taking steps towards a global educational space. This, first of all, places a great responsibility on the teachers. In this connection, there is a need to form a new model of vocational education aimed at developing the research culture of university students.

The following measures are proposed to address this challenge:

• Introduction of alternative educational programs in universities;

• Active use of modern pedagogical technologies;

• Strengthening of the practical orientation of education (scientific projects, research assignments, involvement of future teachers in research activities in the process of pedagogical practice).

In the article proposed by us, an attempt is made to theoretically substantiate the research culture of future primary education teachers from philosophical, psychological and pedagogical points of view, describe its structure and consider ways of forming a research culture by means of mathematics.

The research work of students is an activity based on creativity. The specific answer or solution may be undefined (except for experiments proving the laws of nature). In the process of such work, the student passes through the main stages characteristic of the research: defines the problem, considers the theories related to this problem, chooses the necessary method of investigation and applies it in a reasonable way, collects the necessary information, analyzes them and draws conclusions.

From the student's point of view, learning and research represent the full realization of one's creative potential. In the course of such work, the student is given an opportunity to demonstrate and apply his knowledge individually or in a group, as well as to present the results

of his work to a wide audience. In some cases, research work is aimed at solving interesting and meaningful problems for real life, proposed by the students themselves.

From a teacher's perspective, teaching and research is an integrated method of learning and education that develops and builds students' knowledge and skills related to research activities. This approach increases the students' activity and opens up possibilities for independent search.

*Research hypothesis.* If project-based learning technologies and STEM approaches are systematically implemented in the training process of future primary school teachers, and students are gradually involved in research activities, then the technological and personal-creative components of their research culture will develop, enabling them to make scientifically grounded decisions in their pedagogical practice.

**Materials and methods**

The study was conducted as a theoretical investigation. The materials of the research included normative legal documents regulating the education system of the Republic of Kazakhstan (the Law of the Republic of Kazakhstan "On Education", the Law "On the Status of a Teacher"), as well as domestic and international scholarly works devoted to pedagogical research culture, project-based learning, and STEM education.

The following scientific methods were applied in the study:

– *document analysis* – to identify the requirements for teachers' professional competencies and research activities;

– *comparative analysis* – to compare different scientific definitions of the concept of research culture;

– *generalization and systematization* – to determine the structural components of research culture;

– *conceptual modeling* – to justify the stages and pedagogical conditions for the formation of research culture among future teachers;

– *analytical review of scientific literature* – to analyze international experience.

Since this research is theoretical in nature, empirical data collection was not conducted. However, the proposed model is considered a conceptual framework that can be tested in future empirical studies.

The current state of research culture of future primary education teachers was studied using theoretical methods of investigation: generalization, comparison, analysis, dynamic examination, review of studies, etc. Thus, according to the Russian scholar-pedagogue I.S. Yakimanskaya: «A personality-oriented approach in learning promotes the development of independent thinking of students and students, increases their cognitive activity and forms research abilities». Yakimanskaya emphasizes that in the formation of research culture, teaching methods aimed at personal development are important [4].

Foreign scientist Howard Gardner notes: «When a student actively participates in the research process, he not only receives knowledge, but also reconstructs it, reaching a new level of understanding».He points out the effectiveness of applying the theory of multiple intelligence, design technology, the method of situational learning in the introduction to research activities. Gardner advises to use new pedagogical tools for the development of research skills [5].

Kazakh scientist M. Zumabayev in his work «Pedagogy» gives the following explanation: «Raising a child – from the cradle... The little child is like a young stick: as in the young years you bend it, so it cools down further». These lines emphasize that the teacher's research abilities, that is to say the ability to deeply study and understand the inner world of a child, are extremely important [6].

The opinion of a great philosopher on the method of research is the methodological basis of our work. Al-Farabi argued that on the basis of initial knowledge known premises are formed, and then through testing, research, study and training sciences arise. What a person aspires to through research and learning is initially unknown. But if one studies and achieves it, it becomes a goal. And if as a result of such research and training the person is formed belief, worldview or knowledge, then they become a conclusion [7].

According to V.V. Kraevsky, a modern teacher should not only engage in educational tasks, but also be a researcher-practitioner. He notes that the pedagogical research culture is being

formed in stages. If there are value orientations, theoretical knowledge, practical skills and abilities in a certain system, as well as the personal qualities of the teacher, traditional and innovative methods become the result of successful research [8].

S.T. Taubayeva the content of the step-by-step formation of the research culture of the teacher is presented in the form of the following scheme: «teacher-student – creative teacher – innovative teacher – master – teacher – innovator» [9].

In the process of forming a research culture of future specialists in higher education, the following principles of organization of research work are used:

• The principle of objectivity, which involves the use by the researcher of a set of research methods, which allows to compare the data of own study with others.

• The principle of activity, according to which the activity is the basis for the formation of personality.

• The principle of systematicity, which involves revealing the integrity of the object of research as a single process.

• The principle of technological excellence, aimed at specifying objectives.

• The principle of humanization, oriented to the conviction in the great possibilities of self-improvement of the person and its self-activation.

• The principle of self-organization, which includes taking into account the individual characteristics of students.

• The principle of efficiency, characterized by high performance.

In modern psychological-pedagogical studies the following interpretations of research culture are offered. Thus, I.V. Nosaeva defines the research culture as a complex dynamic knowledge with which man solves important tasks by methods of scientific cognition [10].

From the above views of the authors, it can be seen that future specialists initially form a theoretical knowledge base rather than pedagogical research. Hence the conclusion: it is necessary to direct students to form a scientific hypothesis.

A study conducted in Spain applied a special teaching module aimed at developing pre-service primary school teachers' understanding of the Nature of Scientific Inquiry (NOSI). As a result, it was found that students' research skills improved significantly and their scientific literacy increased. This experience demonstrates the effectiveness of purposeful and systematic programs in fostering research culture among future teachers [11]. A similar approach can also be applied in the context of Kazakhstan. For instance, to develop the research abilities of pre-service primary school teachers, we propose the use of project-based learning technology.

Because currently the main instrument of globalization are technologies, students of the specialty «Pedagogy and methodology of primary education» for a deeper study of the discipline «Theoretical foundations of mathematics and methodology of teaching mathematics» I offer the technology of project training.

The theoretical foundation of project training was laid by such Russian scientists as V.P.Bespalko, V.V. Davydov, V.K. Dyachenko, L.V. Zankov, P.J. Galperin, N.V. Kuzmina and others, as well as on the basis of practical experience of methodists E.N.Ilyina, S.N. Lysenkova, V.F. Shatalov et al.

The traditional concept of «design» in encyclopedic dictionaries, in engineering, construction and other production areas is understood as a set of documents - drawings, calculations, etc., necessary to create a certain product or build a building.

Project activity is a targeted activity that involves making changes to a certain system, with clearly defined order of execution and purpose, with the necessary means, equipment, time and costs calculated in advance. This definition is given by F.Peregudov, characterizing design as a specifically planned and structured activity.

W. Kilpatrick views project work as a goal-oriented and collaborative learning process. In his opinion, if a certain activity is carried out in a group, highly organized, and based on learners' independent performance, it can be regarded as a complete project.

Continuing these perspectives, John Dewey describes project work as an approach closely connected with social life and aimed at solving real-life problems. According to him, project work is not only a tool for mastering learning content but also an effective way to adapt learners to real-life situations.

Project learning technology is one way to implement the idea of productive learning in practice. In the process of project work, the student independently searches for knowledge, finds necessary information, starts working on a project on a certain topic and builds the logic of the path from beginning to end. In other words, future professionals develop research activities and practical skills.

Scientist J. Dowletbekova emphasizes that the technology of project training creates opportunities for development of a number of abilities of students: creative, exploratory, cognitive, creative and cultural-communicative [12].

The effective implementation of the project-based learning method should be based on teaching 21st-century skills, learner-centeredness, and the development of strong, personal relationships between teachers and students [13]. This means that project-based learning is not only a tool for mastering educational content but also a universal method aimed at fostering students' independence, enhancing their critical thinking, encouraging creativity, and developing their collaboration skills.

We considered it appropriate to use the project-based approach and STEM technology, which fosters interdisciplinary connections. The term STEM was first introduced in 1990 by the American bacteriologist R. Colwell; however, the concept only became widely used after the 2000s. As a result of various studies, new variations of the concept emerged, known as STEAM and STREAM [14]. In Kazakhstan, active steps have been taken to develop STEM education. This is evidenced by the transition to an updated secondary education curriculum within the framework of the State Program for the Development of Education and Science of the Republic of Kazakhstan for 2016-2019. The idea is based on teaching students by integrating four subject areas (S – Science, T – Technology, E – Engineering, M – Mathematics) and transforming them into a holistic educational paradigm grounded in real-world problems. STEM can be defined as a technology based on an interdisciplinary approach, aimed at solving concrete problems. The main reason for the emergence of this technology was the increasing global demand for highly qualified specialists who can master new technologies, think independently, make decisions, and solve vital real-life problems, while possessing 21st-century competencies. Such considerations are also reflected in many international studies. According to scholars, future professionals need not only academic knowledge but also technical and professional skills, which allow them to successfully operate in the global labor market. STEM education is not only an effective way of adapting graduates to the labor market but also plays a crucial role in developing human creativity and intellectual potential [15].

The main features of STEM projects can be described as follows:

1. STEM projects are implemented in accordance with the specific educational curriculum. These projects integrate knowledge from science, technology, engineering, and mathematics, and are aimed at designing products and their initial models (prototypes) characteristic of modern scientific and technical industries.

2. STEM projects are based on step-by-step technical processes and include a systematic sequence of concrete actions. The implementation of such a project begins with the actualization of interdisciplinary knowledge, continues with instructional guidance, and concludes with students creating prototypes of real industrial products, introducing them into practice, and testing them.

3. STEM project-based technology can be applied by any teacher who has mastered this approach. In other words, this method is adapted for universal use in pedagogical practice.

4. The outcome of a STEM project is a tangible product that is connected to real life, either designed or modeled. Thus, the project process provides a concrete foundation for achieving the planned goal [16].

Looking at historical works, it becomes evident that Y. Altynsarin, Zh. Aimauytov, A. Baitursynov, P.P. Blonsky, M. Zhumabayev, N.K. Krupskaya, A.V. Lunacharsky, A.S.Makarenko, S.T. Shatsky, V.A. Sukhomlinsky, and others paid special attention to the role of teachers and emphasized in their works that a skilled teacher must possess a research culture. According to the

concept of I.F. Isaev, research culture has the characteristics of professiona l-pedagogical culture, that is, its structure includes axiological, technological, and personal-creative components. The dialectical relationship between the research process and the innovation process serves as the basis for distinguishing the innovative component within the structure of research culture [17].

Table 1 – Structural components of research culture

| **Structural components of research culture** | | | |
|---|---|---|---|
| Axiological component | Technological component | Personal-creative component | Innovative component |
| A set of pedagogical values created by humanity. | A set of methods and techniques for carrying out activities. | Mastering the culture and implementing it creatively | Aimed at creating new goals and means for their implementation. |

The purpose of the axiological component is to ensure that the teacher's professional activity is carried out on the basis of moral and spiritual values. It consists of understanding and accepting pedagogical values, evaluating the significance of research outcomes, and a sense of professional responsibility. For example, when a teacher tests the effectiveness of a particular method, they pay attention not only to the result but also to its impact on the student's personality. This reflects the teacher's axiological position.The purpose of the technological component is to equip the teacher with the methodological foundations of research activity. It consists of research methods, pedagogical design and reflection, as well as methods of processing and analyzing information. For example, a teacher introduces a new method in the learning process, collects data on its effectiveness, and analyzes them.The purpose of the personal-creative component is to encourage creative inquiry and pedagogical innovation. It consists of creative thinking and initiative, openness to innovation, and the reconstruction and improvement of personal experience. For example, a teacher proposes a new pedagogical product (such as a learning platform, program, or methodology).

These three components are closely interconnected. For instance, a teacher guided by values (axiological component) can plan research appropriately (technological component) and implement it creatively (personal-creative component).

In determining the stages of forming students' research culture, N.F. Smorgunova's approach is very appealing, as she proposes three stages [18].

The above ideas are graphically represented below (Table 2).

Table 2 – Stages of formation of the research culture of students in N.F. Smorgunova

| Preparatory phase | Basic or diagnostic phase | Final phase |
|---|---|---|

Involving students in research activities begins from the first year of study. In other words, the initial stage of the learning process is the preparatory stage. At this stage, students develop the ability to formulate problems, make hypotheses, clarify the goals and objectives of research, and acquire skills in working independently with scientific literature. They also improve their note-taking abilities, practice speaking and presenting during practical classes, and write small scientific papers on selected topics.

In the main or applied-diagnostic stage (2nd–3rd years), students acquire theoretical knowledge in research methodology, learn to model professional and cognitive problems, and develop the ability to analyze achieved results. They also develop skills in describing data and, during educational and industrial practice or within the framework of student scientific societies,

workshops, and sections, learn to apply diagnostic methods. In the fourth year, students actively participate in scientific-practical conferences, demonstrating the results of their research activities through coursework. In the final stage, the process of conducting independent research, the obtained results, conclusions, and recommendations are comprehensively examined. Based on this stage, it can be concluded that for students to be prepared for scientific research, it is crucial that they first develop an internal need for learning. At this point, the role of the academic supervisor is of particular importance.

During the learning process, practical classes in theoretical and professional disciplines should be enriched with research-oriented and creative content. Such activities do not require additional time but instead become an integral and essential part of practical classes. In addition, scientific work introduced into the educational process includes practical or laboratory assignments with a research character, coursework projects, and tasks containing elements of real scientific research.

Table 3 – Model of formation of the technological component of the teacher's research culture [19].

| | | | |
|---|---|---|---|
| **Purpose:** To develop a technological component of the teacher's research culture | | | |
| **Objective:** Formation of the integrity of the structure of the teacher's research culture and improvement of pedagogical activity | | | |
| **Principles**<br>•Systemic<br>• Innovative<br>• Complementarity<br>• Individual trajectory | **Stages**<br>• Formative: learning the fundamentals of research<br>• Preliminary: diagnostic and analytical activities, identification of the research problem<br>• Creative: development of an individual (author) research project | **Content**<br>• Analytical problem solving<br>• Solving new technological challenges<br>• Solving technological challenges<br>• Solution of methodological problems | **Result**<br>• Development of research skills and teacher skills, development of research culture<br>• Improvement of pedagogical activities and professional knowledge<br>• Development of an individual (author) research project |
| **Levels of the technological component of the teacher's research culture** | | | |
| Occupational reproductive | Professionally adapted | Professional creative | Individual creative |

This table describes step by step the ways of formation of technological component of research culture of teacher. In other words, it presents the process of becoming a teacher not only as a carrier of knowledge, but also as a creative person able to conduct research and propose new ideas. This model clearly and systematically reflects the path of development of a teacher from a simple performer to a professional, thinking innovatively, research-oriented and with high creative potential.

For professional improvement the teacher needs:

• Acquisition of research skills.

• Clearly defined tasks and methodological support at each stage.

• As a result – the formation of its own methodological system and the achievement of a level at which the teacher is able to introduce new approaches and solutions.

**Results and discussion**

Currently, special attention in educational practice is given to innovative processes that require the activity and readiness of teachers to solve educational tasks both at a professional and scientific level. Previous studies by I.M. Grushko, L.G. Kvitkina, L.F. Avdeeva, N.S. Amelia, V.B. Bondarevsky, V.M. Vergasova, V.I. Krutov, and others have considered the scientific

foundations of organizing research activities. The development of students' creative potential in the process of interaction between teaching and research activities is highlighted in the works of Z.I. Klychnikova, V.N. Namazova, V.A. Artemova, M.A. Baidana, E.V. Belkina, and others.

Analysis of psychological and pedagogical literature shows that the essence and structure of future specialists' readiness for research activities are insufficiently studied. There is no developed model of its formation, nor is there comprehensive didactic and methodological support for its implementation. In this study, previously presented tables (Tables 1-3) are used to illustrate the structural components and stages of research culture formation. These tables help to organize theoretical knowledge systematically and provide a visual understanding of the interplay between axiological, technological, and personal creative components, as well as the step-by-step formation of the technological component.

Pedagogical conditions that contribute to forming students' readiness for research activities include:

- Preparing future teachers according to regulatory documents and professional requirements.
- Applying principles of organizing research work in forming research culture.
- Using project-based learning technology in teaching disciplines.
- Developing students' research culture based on STEM approaches.
- Targeted training in working with information sources to ensure independent learning in research activities.
- Forming the structural components of research culture (Tables 1-2).
- Mastering the stages of research culture formation (Table 2).
- Step-by-step training in forming the technological component of research culture (Table 3).
- Active involvement of future teachers in research activities.

**Conclusion**

The modern education system is undergoing profound transformations, requiring professional teachers to acquire new competencies and a strong research culture. The main drivers of these changes are integration into the global educational space, the need to respond to the demands of the digital era, and the preparation of competitive specialists capable of working with innovative technologies.

The issue of developing the research culture of future primary school teachers is one of the most pressing areas of contemporary pedagogical science. This study comprehensively examines the essence and structure of research culture from philosophical, psychological, pedagogical, and methodological perspectives, defining its stages, conditions, and effective strategies for formation.

The results of the study showed that the formation of research culture among future primary school teachers is one of the important tasks of the modern system of pedagogical education. Research culture is an important indicator of a teacher's professional development, innovative thinking, and the ability to make scientifically grounded decisions in pedagogical practice. During the study, the structural components of research culture, the stages of its formation, and the pedagogical conditions that contribute to its development were identified.

Based on the research results, the following practical recommendations can be proposed:

– introducing research-oriented tasks into the curricula of pedagogical higher education institutions;

– widely applying project-based learning technologies in methodological disciplines;

– developing students' research abilities through the use of STEM approaches;

– organizing students' participation in scientific conferences and research projects.

These measures will contribute to the systematic development of research culture among future teachers. Research culture is a crucial indicator of a future teacher's professional growth, capacity for reflection, creativity, and innovative thinking. It ensures a scientifically grounded and evidence-based approach to teaching, enabling the analysis of educational innovations and the application of the most effective practices.

The article outlines the structural components of research culture formation in future teachers (axiological, technological, and personal-creative). This model provides a methodological foundation for the comprehensive development of research potential. Particularly significant is the technological component, which involves mastering research methods, acquiring skills in information analysis, design, and reflection – all of which are vital steps in becoming a teacher-researcher in professional practice.

Special attention is given to the effective use of project-based learning and STEM education in shaping students' research culture. The STEM approach is regarded as a powerful tool for developing logical and engineering thinking and addressing real-life problems through interdisciplinary connections. Moreover, the gradual involvement of students in research activities has been shown to ensure the targeted and systematic development of their research culture.

The pedagogical models and step-by-step strategies presented in the article demonstrate effective pathways for cultivating research culture in future teachers. Building on the concepts of I.F. Isaev, V.V. Kraevsky, Sh.T. Taubaeva, and N.F. Smorgunova, the study highlights the importance of gradually preparing future specialists for research activities and systematically developing their research skills throughout teaching and practice.

One of the core subjects in primary education is mathematics. Mastering this course with the aid of modern digital tools, alongside active participation in innovative mathematics-related projects, is identified as a key means of fostering research culture. This approach integrates theoretical knowledge with practical skills while promoting creativity and inquiry. Research activity, therefore, plays a decisive role in enhancing the professional competence of future teachers.

In conclusion, research culture represents an essential element of a future teacher's professional and personal development. Its formation enables the teacher to act not only as a transmitter of knowledge but also as an innovator, experimenter, and reflective practitioner. Systematic development of research culture within higher education institutions ensures not only deeper theoretical preparation but also students' orientation toward professional self-improvement, lifelong learning, and scientific analysis of pedagogical practice. Thus, the cultivation of research culture among future primary school teachers should be considered a strategic objective aimed at fostering innovative pedagogical thinking and preparing the teachers of the 21st century.

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# БОЛАШАҚ БАСТАУЫШ БІЛІМ ПЕДАГОГТЕРІНІҢ ЗЕРТТЕУШІЛІК МӘДЕНИЕТІ

*M. Sözer, А.Е. Алибаева**

*Гази университеті, Түркия Республикасы, Анкара қ.*
**e-mail: akif@gazi.edu.tr, alibaeva-1987@inbox.ru*

*Аңдатпа. Мақалада болашақ бастауыш білім педагогтерінің зерттеушілік мәдениетінің қазіргі жай-күйі талданады. Бұл мәселе бүгінгі білім беру жүйесінде өзекті, әрі жаңа бағыттардың бірі болып саналады. Себебі студенттердің зерттеушілік мәдениетін дамытуға арналған нақты әдістемелер мен ғылыми негіздер әлі де жан-жақты толыққанды зерттелмеген. Қазақстан Республикасының білім беру саласындағы нормативтік-құқықтық актілерінде мұғалімнің кәсіби қызметіне қажетті пәндік, педагогикалық, әдістемелік, цифрлық, құқықтық және қарым-қатынастық құзыреттерді меңгеруі міндетті деп көрсетілген. Аталған мақалада философиялық, психологиялық және педагогикалық еңбектер негізінде зерттеу мәдениетінің мәні ашылып, мазмұнына теориялық түсініктер беріледі. Сондай-ақ, болашақ мұғалімдердің зерттеушілік мәдениетін дамытудың маңыздылығы көрсетіледі. Бұл болашақта студенттердің дипломдық жұмыс, ғылыми мақала, жоба сияқты академиялық тапсырмаларды сапалы орындауына, сондай-ақ кәсіби қызметінде дербес шешім қабылдап, проблемаларды талдап, оңтайлы шешім табуына алғышарт болады. Осыған байланысты, STEM мен жобалап оқыту технологияларын енгізудің маңызы артып отыр. Жоғары оқу орындарында ғылыми-зерттеу жұмысын ұйымдастыру қағидаттары, зерттеу мәдениетінің құрылымдық бөліктері, оны қалыптастыру сатылары және жобалау негізіндегі оқу процесі мақалада кеңінен қарастырылған. Сонымен қатар, педагогтің зерттеушілік мәдениетін дамытудың тиімді тетіктері айқындалып, технологиялық компонентін қалыптастыруға ықпал ететін педагогикалық шарттар анықталған.Зерттеу барысында теориялық әдістер (жинақтау, салыстыру, талдау, жүйелеу, ғылыми еңбектерге шолу) қолданылды. Бұл тәсілдер зерттеу мәдениетінің мазмұнын жан-жақты ашуға және болашақ мұғалімдерді кәсіби даярлауда тиімді жолдарын айқындауға мүмкіндік берді.*

***Кілт сөздер:** зерттеу мәдениеті, жобалап оқыту, STEM технологиялары, педагогтің кәсіби құзыреттері, ғылыми-зерттеу қызметін ұйымдастыру.*

# ИССЛЕДОВАТЕЛЬСКАЯ КУЛЬТУРА БУДУЩИХ ПЕДАГОГОВ НАЧАЛЬНОГО ОБРАЗОВАНИЯ

*Sözer M., Алибаева А.Е.**

*Университет Гази, Республика Турция, г. Анкара*
**e-mail: akif@gazi.edu.tr, alibaeva-1987@inbox.ru*

*Аннотация. В статье рассматривается текущее состояние исследовательской культуры будущих педагогов начального образования. Данная проблема является актуальной и относится к числу новых направлений в современной системе образования. Это связано с тем, что конкретные методики и научные основы по развитию исследовательской культуры студентов до сих пор недостаточно всесторонне изучены. В нормативно-правовых актах Республики Казахстан в области образования указано, что педагог должен овладеть предметными, педагогическими, методическими, цифровыми, правовыми и коммуникативными компетенциями, необходимыми для профессиональной деятельности. В статье на основе философских, психологических и педагогических трудов раскрывается сущность исследовательской культуры и даются теоретические представления о её содержании.*

*Также подчеркивается важность развития исследовательской культуры у будущих педагогов. Это способствует успешному выполнению студентами академических заданий, таких как дипломные работы, научные статьи и проекты, а также формированию у них способности самостоятельно принимать решения, анализировать проблемы и находить оптимальные пути их решения в профессиональной деятельности. В связи с этим возрастает значение внедрения технологий STEM и проектного обучения.*

*В статье подробно рассматриваются принципы организации научно-исследовательской работы в высших учебных заведениях, структурные компоненты исследовательской культуры, этапы её формирования, а также процесс обучения на основе проектной деятельности. Кроме того, определены эффективные механизмы развития исследовательской культуры педагога и педагогические условия, способствующие формированию её технологического компонента.В ходе исследования были использованы теоретические методы (обобщение, сравнение, анализ, систематизация, обзор научных трудов). Эти подходы позволили всесторонне раскрыть содержание исследовательской культуры и определить эффективные пути профессиональной подготовки будущих учителей.*

***Ключевые слова:** исследовательская культура, проектное обучение, STEM-технологии, профессиональные компетенции педагога, организация научно-исследовательской деятельности.*

**Авторлар туралы мәліметтер**:

Sözer Mehmet Akif – PhD, профессор, Гази университеті (Түркия, Анкара қ., e-mail: akif@gazi.edu.tr, ORCID: 0000-0002-1291-4067).

Алибаева Айгүл Ергазыевна* – докторант, Қорқыт ата атындағы Қызылорда университеті (Қазақстан, Қызылорда қ., e-mail: alibaeva-1987@inbox.ru, ORCID: 0009-0006-5836-2727).

**Сведения об авторах:**

Sözer Mehmet Akif – PhD, профессор, Университета Гази (Турция, г. Анкара, e-mail: akif@gazi.edu.tr, ORCID: 0000-0002-1291-4067).

Алибаева Айгуль Ергазиевна* – докторант, Кызылординский университет имени Коркыт Ата (Казахстан, г. Кызылорда, e-mail: alibaeva-1987@inbox.ru, ORCID: 0009-0006-5836-2727).

**Information about authors:**

Sözer Mehmet Akif – PhD, Professor, Gazi University (Ankara, Turkey; e-mail: akif@gazi.edu.tr; ORCID: 0000-0002-1291-4067).

Alibayeva Aigul* – Doctoral Student, Korkyt Ata Kyzylorda University (Kyzylorda, Kazakhstan; e-mail: alibaeva-1987@inbox.ru; ORCID: 0009-0006-5836-2727).