

# FORMATION OF PROFESSIONAL COMPETENCIES IN FUTURE PRIMARY SCHOOL TEACHERS BASED ON PROJECT BASED ACTIVITY

Fayazova Diloram Tuychiyevna  
Chirchik State Pedagogical University

## Abstract

The article examines the formation of professional competencies in future primary school teachers based on project-based activity as an effective pedagogical condition for connecting theoretical knowledge with practical teaching experience. In modern teacher education, professional competence is understood not only as mastery of subject content, but also as the ability to design learning situations, organize pupils' cognitive activity, apply interactive methods, solve pedagogical problems, cooperate with learners and colleagues, and reflect on one's own professional growth. Project-based activity creates a productive educational environment in which future teachers learn to plan, implement, evaluate, and present pedagogically meaningful tasks. This approach strengthens methodological thinking, creativity, communication culture, digital literacy, responsibility, and readiness for independent professional decision-making. The article emphasizes that project work is especially important in preparing primary school teachers because the primary education stage requires integrated knowledge, child-centered methods, emotional sensitivity, and the ability to develop pupils' curiosity, collaboration, and practical skills. Through educational projects, students acquire experience in designing lesson fragments, developing didactic materials, solving classroom situations, conducting small-scale pedagogical research, and assessing learning outcomes. The study highlights the need to organize project-based activity systematically, taking into account the content of pedagogical disciplines, the requirements of school practice, and the professional profile of future primary school teachers. The article concludes that project-based activity can serve as an important mechanism for improving the quality of teacher training and forming professional competencies that correspond to the needs of contemporary primary education.

**Keywords:** Professional competencies, future primary school teachers, project-based activity, teacher education, pedagogical skills, methodological training, primary education, professional development.

## Introduction

**Аннотация:** В статье рассматривается формирование профессиональных компетенций у будущих учителей начальных классов на основе проектной деятельности как эффективное педагогическое условие соединения теоретических знаний с практическим педагогическим опытом. В современной системе подготовки педагогических кадров профессиональная компетентность понимается не только как владение предметным содержанием, но и как способность проектировать учебные ситуации, организовывать познавательную деятельность учащихся, применять интерактивные методы, решать педагогические задачи, сотрудничать с обучающимися и коллегами, а также осуществлять рефлексию собственного профессионального роста. Проектная деятельность создает продуктивную образовательную среду, в которой будущие учителя учатся планировать, реализовывать, оценивать и представлять педагогически значимые задания. Данный подход усиливает методическое мышление, креативность, коммуникативную культуру, цифровую грамотность, ответственность и готовность к самостоятельному принятию профессиональных решений. В статье подчеркивается, что проектная работа особенно важна в подготовке учителей начальных классов, поскольку начальное образование требует интегрированных знаний, личностно-ориентированных методов, эмоциональной чуткости и умения развивать у школьников любознательность, сотрудничество и практические навыки. Через учебные проекты студенты приобретают опыт разработки фрагментов уроков, создания дидактических материалов, решения классных педагогических ситуаций, проведения небольших педагогических исследований и оценки результатов обучения. Отмечается необходимость системной организации проектной деятельности с учетом содержания педагогических дисциплин, требований школьной практики и профессионального профиля будущего учителя начальных классов. В статье делается вывод о том, что проектная деятельность может служить важным

механизмом повышения качества педагогической подготовки и формирования профессиональных компетенций, соответствующих потребностям современного начального образования.

**Ключевые слова:** профессиональные компетенции, будущие учителя начальных классов, проектная деятельность, педагогическое образование, педагогические умения, методическая подготовка, начальное образование, профессиональное развитие.

## Introduction

The preparation of future primary school teachers is one of the central directions of modern pedagogical education, because the quality of primary education directly influences the intellectual, moral, communicative, and creative development of children at the earliest stage of schooling. A primary school teacher does not only transmit knowledge in reading, writing, mathematics, natural sciences, and social learning, but also forms pupils' motivation, learning habits, social behavior, emotional stability, and initial experience of independent thinking. Therefore, the professional training of future primary school teachers must be aimed at developing a complex system of competencies that includes methodological, communicative, organizational, diagnostic, reflective, digital, and creative components. In this context, project-based activity becomes an important pedagogical tool for transforming theoretical knowledge into practical professional experience.

The concept of professional competence in teacher education is connected with the ability of a future specialist to act effectively in real pedagogical situations. For future primary school teachers, this means the ability to design lessons according to pupils' age characteristics, select appropriate methods and materials, organize cooperation, support individual learning needs, assess educational results, and create a psychologically comfortable classroom environment. Traditional lecture-based instruction alone cannot fully ensure the development of these abilities, because professional competence is formed through activity, practice, reflection, and problem solving. Project-based activity allows students to participate in such processes actively and consciously.

Project-based activity is especially relevant for pedagogical universities because it creates conditions for interdisciplinary integration and practice-oriented

learning. While working on projects, students analyze pedagogical problems, search for information, design educational products, prepare teaching materials, conduct observations, develop lesson models, and present the results of their work. Such activity develops responsibility, independence, collaboration, critical thinking, and the ability to connect pedagogical theory with classroom practice. For example, a project devoted to developing didactic games for first-grade pupils may require knowledge of child psychology, methodology of teaching literacy, visual design, assessment criteria, and inclusive approaches. As a result, the student does not learn these elements separately, but applies them in one integrated professional task.

In the context of primary education, project-based activity also helps future teachers understand the logic of child-centered learning. Since young pupils perceive the world holistically and learn more effectively through observation, play, communication, and practical action, future teachers must be prepared to organize learning as an active and meaningful process. By completing projects during their university training, students gain experience that later helps them organize project work with children in primary school. This continuity between teacher preparation and school practice increases the practical value of pedagogical education.

The relevance of the topic is also determined by the need to modernize higher pedagogical education in accordance with contemporary social and educational demands. The teacher of the new generation must be able to work creatively, use digital tools, adapt educational content to different learners, cooperate with parents and colleagues, and continuously improve professional skills. Project-based activity supports these requirements because it encourages future teachers to search for solutions, justify their decisions, evaluate outcomes, and reflect on their own growth. Therefore, the formation of professional competencies in future primary school teachers through project-based activity should be considered not as an additional method, but as an essential component of modern teacher education.

### **Literature review**

The theoretical foundations of project-based activity are closely connected with the ideas of experiential and activity-based learning. Dewey emphasized that meaningful education should be based on experience, reflection, and active

participation, while Kilpatrick developed the project method as a way of organizing learning through purposeful practical tasks. These ideas remain important for modern teacher education because professional competencies are formed not only through the acquisition of theoretical knowledge, but also through its application in real or simulated pedagogical situations.

Research on project-based learning shows that this approach develops independent thinking, collaboration, problem-solving skills, creativity, and responsibility. Blumenfeld et al., Barron et al., Thomas, Bell, Kokotsaki et al., and Condliffe note that project-based learning is effective when students work with meaningful problems, plan their actions, create practical products, and reflect on the results. For future primary school teachers, these features are especially valuable, because their professional activity requires the ability to design lessons, prepare didactic materials, organize pupils' learning activity, and evaluate educational outcomes. [1-3]

Studies by Darling-Hammond, Shulman, Schön, and Zeichner demonstrate that teacher education should combine theoretical preparation, practical experience, pedagogical reflection, and professional decision-making. Shulman's concept of pedagogical content knowledge is important for understanding how future teachers transform subject knowledge into teachable material. Schön's idea of the reflective practitioner also supports the view that professional competence develops through analysis of one's own actions. In this regard, project-based activity helps future primary school teachers connect pedagogical theory with classroom practice. [4]

The literature also highlights the importance of digital, methodological, and reflective competencies in modern teacher training. Mishra and Koehler's technological pedagogical content knowledge framework shows that teachers should be able to integrate digital tools with pedagogy and subject content. Hattie and Guskey emphasize the role of effective teaching strategies, feedback, and professional development in improving educational quality. Thus, the reviewed sources confirm that project-based activity can serve as an effective pedagogical mechanism for forming professional competencies in future primary school teachers. [5-6]

### **Methods**

The methodological basis of the study is formed by the competence-based, activity-based, practice-oriented, and project-based approaches to teacher education. The competence-based approach makes it possible to consider the professional training of future primary school teachers not only as the acquisition of theoretical knowledge, but also as the development of readiness to apply this knowledge in real pedagogical situations. The activity-based approach emphasizes that professional qualities are formed through active participation in educational, methodological, communicative, and reflective tasks. The practice-oriented approach connects university training with the real needs of primary school education, while the project-based approach provides conditions for students to independently plan, implement, analyze, and evaluate pedagogically significant work.

The study relies on theoretical analysis of scientific and pedagogical literature devoted to professional competence, project-based learning, teacher education, primary education methodology, and the development of practical skills in future teachers. Theoretical analysis was used to clarify the essence of professional competencies required for future primary school teachers and to determine the pedagogical possibilities of project-based activity in their formation. Special attention was paid to the relationship between project work and such competencies as lesson design, methodological creativity, communication with pupils, organization of cooperative learning, use of digital resources, assessment of learning outcomes, and pedagogical reflection.

A descriptive and analytical method was applied to examine the structure of project-based activity in pedagogical training. Project work was considered as a step-by-step process that includes identifying a pedagogical problem, setting a goal, planning tasks, selecting methods and materials, creating an educational product, testing or presenting the result, and evaluating the effectiveness of the completed work. This structure corresponds to the professional logic of the teacher's activity, because a teacher also constantly analyzes educational needs, plans learning situations, organizes pupils' activity, observes results, and improves methods. Therefore, project-based activity was interpreted as a model of future professional practice. [7]

The study also used the method of pedagogical modeling. On this basis, project tasks suitable for future primary school teachers were grouped according to their

professional orientation. These included projects aimed at designing lesson fragments, preparing visual and digital didactic materials, developing educational games, creating exercises for literacy and numeracy skills, organizing extracurricular activities, preparing diagnostic tools, and solving pedagogical cases. Such modeling helped to reveal how different types of project work contribute to the development of different components of professional competence.

The reflective method was considered an important part of the methodological framework. Reflection allows future teachers to understand not only what result they have achieved, but also how they acted, what difficulties they faced, what professional skills were strengthened, and what aspects require further development. In project-based activity, reflection may be organized through written reports, self-assessment, group discussion, portfolio materials, and presentation of project outcomes. This process develops the ability to critically evaluate one's own pedagogical decisions and to improve future professional activity.

Thus, the methods used in the study made it possible to analyze project-based activity as a purposeful pedagogical mechanism for forming professional competencies in future primary school teachers. The combination of theoretical analysis, pedagogical modeling, descriptive interpretation, and reflective evaluation created a basis for identifying the educational potential of project work in modern pedagogical universities. [8]

### **Results**

The analysis of project-based activity in the professional training of future primary school teachers shows that this approach creates favorable conditions for the gradual and integrated formation of professional competencies. Unlike reproductive forms of learning, where students mainly receive and reproduce theoretical information, project work requires them to apply knowledge in a concrete pedagogical situation. As a result, professional competence develops not as a set of isolated skills, but as a dynamic unity of knowledge, practical action, communication, creativity, responsibility, and reflection. This is especially important for future primary school teachers, whose professional activity demands flexibility, emotional sensitivity, methodological accuracy, and the

ability to organize learning in accordance with the age and individual characteristics of children. [9-10]

One of the main results of using project-based activity is the strengthening of methodological competence. During project work, students learn to design lesson fragments, select teaching methods, prepare didactic materials, adapt tasks to pupils' abilities, and determine expected learning outcomes. For example, when developing a project on teaching reading skills in the first grade, students must consider the psychological features of younger pupils, the sequence of literacy formation, the role of visual materials, the importance of game-based methods, and the need for gradual assessment. Such work develops the ability to think as a teacher, not only as a learner. Students begin to understand that every method must be pedagogically justified and connected with the educational goal.

Project-based activity also contributes to the development of communicative competence. Future primary school teachers work individually and in groups, discuss ideas, distribute responsibilities, defend their viewpoints, present results, and receive feedback. These actions are directly connected with the communicative nature of the teaching profession. A primary school teacher must be able to explain clearly, listen attentively, cooperate with colleagues, interact with parents, and create a positive classroom atmosphere. Through project work, students gradually acquire these qualities in a practical educational environment. They learn to express pedagogical ideas logically, respond to criticism constructively, and organize cooperation with others.

Another significant result is the development of creative and critical thinking. Project-based activity often begins with a problem that does not have one ready-made answer. Students must search for information, compare different solutions, select effective methods, and create an educational product. This process encourages independence and originality. Future teachers learn to develop didactic games, visual aids, digital presentations, worksheets, extracurricular activities, and integrated lessons. At the same time, they evaluate whether these materials correspond to pupils' age, educational objectives, and classroom conditions. Therefore, creativity is combined with pedagogical responsibility.

The results also show that project-based activity improves digital competence. In modern primary education, teachers increasingly use digital platforms, multimedia materials, interactive tasks, and electronic assessment tools. When students prepare projects, they often use digital resources to design presentations,

create visual materials, prepare tests, organize portfolios, or demonstrate lesson models. This experience helps them understand the didactic value of digital tools and avoid their mechanical use. Digital competence becomes connected with pedagogical purpose, not only with technical ability. [11]

Project work has a positive influence on reflective competence as well. After completing a project, students analyze the quality of their work, identify difficulties, evaluate the effectiveness of chosen methods, and determine directions for improvement. Reflection allows them to see professional growth as a continuous process. In this sense, project-based activity forms not only current pedagogical skills, but also readiness for lifelong professional development.

Thus, the results indicate that project-based activity is an effective means of forming professional competencies in future primary school teachers. It develops methodological, communicative, creative, digital, organizational, and reflective qualities in an integrated way and brings university training closer to the real content of primary school teaching. [12-15]

### **Discussion**

The formation of professional competencies in future primary school teachers through project-based activity requires a systematic understanding of how university learning can be transformed into meaningful professional preparation. The effectiveness of this approach is connected with the fact that project work does not separate theoretical knowledge from practical application. In traditional pedagogical training, students may study psychology, didactics, methodology, classroom management, and assessment as separate academic disciplines. However, real teaching practice demands the simultaneous use of all these areas. Project-based activity creates an educational situation in which future teachers must combine different types of knowledge and use them to solve a concrete pedagogical problem. This integrative nature makes project work especially valuable for preparing primary school teachers.

A future primary school teacher must be able to organize the learning process in a way that is understandable, emotionally supportive, and developmentally appropriate for younger pupils. Children of primary school age need clear instructions, visual materials, practical actions, play elements, encouragement, and gradual movement from simple tasks to more complex ones. When students develop projects, they learn to take these features into account. For instance, a

project aimed at creating interactive tasks for developing mathematical thinking requires not only knowledge of mathematics, but also understanding of children's perception, attention span, motivation, and possible learning difficulties. Therefore, project-based activity helps future teachers develop pedagogical sensitivity and methodological flexibility. [16-18]

Another important aspect is that project work strengthens the connection between individual responsibility and collective cooperation. Teaching is not an isolated profession. A teacher constantly interacts with pupils, parents, colleagues, school administration, and the wider educational environment. Group projects help students experience cooperation, distribution of roles, mutual support, and shared responsibility for the final result. At the same time, each participant is responsible for a specific part of the project. This balance between cooperation and personal accountability prepares future teachers for professional communication and teamwork in school practice.

Project-based activity also changes the position of the student in the educational process. The student becomes not a passive receiver of information, but an active designer of pedagogical content. This has great importance for the development of professional identity. When future teachers create lesson models, didactic games, educational scenarios, diagnostic tasks, or digital learning materials, they begin to see themselves as participants in real pedagogical activity. Such experience increases motivation and helps students understand the practical value of the knowledge gained at the university. Professional competence becomes personally meaningful because it is connected with visible results of activity.

However, the effectiveness of project-based activity depends on its correct organization. If project work is reduced only to preparing presentations or collecting information from different sources, its pedagogical value decreases. A real educational project must include a problem, a goal, planned actions, practical product, presentation, assessment, and reflection. The teacher educator must guide students without replacing their independence. It is important to provide clear criteria, connect projects with professional competencies, and organize feedback at every stage. In this case, project work becomes not a formal task, but a mechanism of professional development. [19]

In pedagogical universities, project-based activity should be closely connected with school practice. Projects may be based on real classroom situations, lesson observations, curriculum requirements, pupils' learning difficulties, or the need

to prepare didactic materials for primary education. Such connection allows students to understand the realities of the profession before entering full teaching practice. It also helps them develop readiness to make pedagogical decisions in uncertain and changing conditions. [20]

Thus, project-based activity should be viewed as an important pedagogical condition for improving the quality of primary teacher education. It forms a professional type of thinking, develops practical readiness, and supports the transition from academic learning to responsible teaching activity.

### **Conclusion**

Project-based activity plays an important role in the formation of professional competencies in future primary school teachers because it creates conditions for active, practice-oriented, and reflective learning. The preparation of a primary school teacher cannot be limited to theoretical knowledge about pedagogy, psychology, didactics, and subject methodology. A future teacher must be able to transform this knowledge into practical educational decisions, design meaningful learning situations, communicate effectively with children, organize cooperation, assess learning outcomes, and adapt teaching methods to the needs of pupils. Project-based activity supports the development of these qualities because it requires students to work with real or model pedagogical problems and to create concrete educational products.

The analysis shows that project work contributes to the integrated development of methodological, communicative, creative, organizational, digital, diagnostic, and reflective competencies. Through the preparation of lesson fragments, didactic games, visual materials, digital resources, extracurricular activities, and pedagogical cases, future primary school teachers learn to connect educational goals with methods, materials, and expected results. This process forms methodological thinking and strengthens the ability to plan lessons in accordance with the age characteristics of younger pupils. At the same time, project-based activity develops communication skills because students discuss ideas, cooperate in groups, present their results, and respond to feedback. These skills are essential for the teaching profession, where effective interaction with pupils, parents, and colleagues is a constant requirement.

The value of project-based activity is also expressed in its influence on professional independence and responsibility. While completing projects,

students do not simply reproduce ready-made information; they analyze problems, search for solutions, make decisions, and evaluate the effectiveness of their work. This experience helps them understand the complexity of pedagogical activity and prepares them for real school practice. Future teachers begin to perceive themselves as active participants in the educational process and gradually develop professional identity. Such identity is especially important for primary education, where the teacher influences not only pupils' academic development, but also their emotional well-being, motivation, social behavior, and first experience of learning.

Project-based activity is effective only when it is organized systematically and purposefully. It should be connected with the content of pedagogical disciplines, the requirements of primary school practice, and clearly defined professional competencies. Each project should include a pedagogical problem, a goal, planning, implementation, presentation, assessment, and reflection. Reflection has particular importance because it allows students to understand their achievements, difficulties, and directions for further growth. Without reflection, project work may remain only a practical task; with reflection, it becomes a means of professional self-development.

Thus, the formation of professional competencies in future primary school teachers based on project-based activity is one of the effective directions for modernizing pedagogical education. This approach brings university training closer to real teaching practice, strengthens students' readiness for independent professional activity, and supports the development of a creative, responsible, and competent teacher capable of working effectively in contemporary primary education.

### References

1. Barron, B. J. S., Schwartz, D. L., Vye, N. J., Moore, A., Petrosino, A., Zech, L., & Bransford, J. D. (1998). Doing with understanding: Lessons from research on problem- and project-based learning. *The Journal of the Learning Sciences*, 7(3–4), 271–311.
2. Bell, S. (2010). Project-based learning for the 21st century: Skills for the future. *The Clearing House: A Journal of Educational Strategies, Issues and Ideas*, 83(2), 39–43.

3. Blumenfeld, P. C., Soloway, E., Marx, R. W., Krajcik, J. S., Guzdial, M., & Palincsar, A. (1991). Motivating project-based learning: Sustaining the doing, supporting the learning. *Educational Psychologist*, 26(3–4), 369–398.
4. Condliffe, B. (2017). Project-based learning: A literature review. MDRC.
5. Darling-Hammond, L. (2006). *Powerful teacher education: Lessons from exemplary programs*. Jossey-Bass.
6. Dewey, J. (1938). *Experience and education*. Macmillan.
7. Grant, M. M. (2002). Getting a grip on project-based learning: Theory, cases and recommendations. *Meridian: A Middle School Computer Technologies Journal*, 5(1), 1–17.
8. Guskey, T. R. (2002). Professional development and teacher change. *Teachers and Teaching: Theory and Practice*, 8(3), 381–391.
9. Hattie, J. (2009). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. Routledge.
10. Hmelo-Silver, C. E. (2004). Problem-based learning: What and how do students learn? *Educational Psychology Review*, 16(3), 235–266.
11. Kilpatrick, W. H. (1918). The project method. *Teachers College Record*, 19(4), 319–335.
12. Kokotsaki, D., Menzies, V., & Wiggins, A. (2016). Project-based learning: A review of the literature. *Improving Schools*, 19(3), 267–277.
13. Krajcik, J. S., & Blumenfeld, P. C. (2006). Project-based learning. In R. K. Sawyer (Ed.), *The Cambridge handbook of the learning sciences* (pp. 317–334). Cambridge University Press.
14. Larmer, J., Mergendoller, J. R., & Boss, S. (2015). *Setting the standard for project based learning: A proven approach to rigorous classroom instruction*. ASCD.
15. Markham, T. (2011). Project based learning: A bridge just far enough. *Teacher Librarian*, 39(2), 38–42.
16. Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record*, 108(6), 1017–1054.
17. Schön, D. A. (1983). *The reflective practitioner: How professionals think in action*. Basic Books.
18. Shulman, L. S. (1986). Those who understand: Knowledge growth in teaching. *Educational Researcher*, 15(2), 4–14.

19. Thomas, J. W. (2000). A review of research on project-based learning. Autodesk Foundation.
20. Zeichner, K. (2010). Rethinking the connections between campus courses and field experiences in college- and university-based teacher education. *Journal of Teacher Education*, 61(1–2), 89–99.