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Improving The Technology Of Forming Research Competence Of Future Teachers

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Abstract: In the context of societal globalization and digitalization, higher education faces the task of training professionals who meet the demands of modern society. A fundamental requirement in training future teachers is to equip them with fundamental professional knowledge and to synergistically develop project and research competencies as crucial structural components of professional mastery. This article explores innovative educational technologies—project-based learning, contextual learning, problem-based learning, and portfolio technology—for effectively shaping the research competence of future educators. The study concludes that the integrated application of these technologies significantly enhances the effectiveness of training highly qualified specialists with research capabilities.

Keywords: Research competence, future teachers, project-based learning, contextual learning, problem-based learning, portfolio technology, innovative educational technologies.

Introduction: In the context of societal globalization and digitalization, higher education faces the task of training professionals who meet the demands of modern society. A fundamental requirement in the process of training future teachers is to equip them strategically with fundamental professional knowledge and to synergistically develop project and research competencies as important structural components of professional mastery.

In the Republic of Uzbekistan, to define the priority directions for the systematic reform of higher education, to elevate the process of training highly qualified personnel with modern knowledge, high spiritual and ethical qualities, and independent thinking to a new qualitative level, and to modernize higher education, the Concept for the Development of the Higher Education System of the Republic of Uzbekistan until 2030 was approved in accordance with the Decree of the President of the Republic of Uzbekistan dated October 8, 2019, No. PF-5847 [1]. The Concept outlines tasks for higher education institutions based on long-term goals, including expanding access to higher education, improving the quality of training highly educated specialists, introducing digital technologies and modern methods into the educational process, increasing the effectiveness of research work in higher education institutions, widely engaging youth in scientific activities, and forming an innovative infrastructure for science.

In the process of optimizing the research potential of future teachers, the two fundamental forms of educational activity – structured classroom lessons and independent research activities – are of equivalent strategic importance. The operational use of innovative educational technologies plays a determinant role in ensuring their effectiveness.

Research competence is a set of knowledge and skills that must be mastered, defining the required tasks and the ways to perform them [2]. It follows that research competence, besides being the fundamental research knowledge, practical skills, and professional qualifications that a knowledgeable person should possess, is also an epistemic concept describing their reflective attitude towards the subject of activity and the path to achieving results.

Project and research competencies must meet all the requirements of a post-industrial society and be manifested in readiness for self-education, self-improvement, and social mobility. The effective use of innovative technologies such as project-based learning,

contextual learning, problem-based learning, and portfolio is of great importance in forming the research competence of future teachers.

METHODOLOGY

This research examines the following innovative educational technologies for forming research competence:

Project-Based Learning Technology. The Philosophical Encyclopedic Dictionary provides the following definition of "project": "Project (from Latin projectus – thrown forward) – 1) the product of project activity; 2) organization of forms of cooperative activity; 3) one of the concepts of existentialist anthropology (e.g., J.-P. Sartre). Primarily, the structural organization, functional mechanisms, as well as production processes and technological methods of the project object are operationally defined and conceptually presented. Materially, a project exists in the form of drawings, calculations, models, and other graphic and textual materials, on paper or in electronic form. A project is not only a product but also a means of design; in its development, the designer implements the requirements for the object, creates and compares variants of project decisions, and coordinates various plans and stages of object development.

A.P.Panfilova views a project as a collaborative educational, creative, or gaming activity aimed at solving a problem that is significant for the participants, having a common goal, agreed-upon methods, and types of activities[3]. At the heart of projects lies an idea that constitutes the essence of the project concept – it is result-oriented, achieved by solving a problem that is practically or theoretically important. This result can be seen, understood, and applied in practical activity. To achieve such a result, it is necessary to teach children to think independently, identify and solve problems, attract knowledge from various fields, foresee results and potential consequences of solutions, and establish cause-effect relationships.

Contextual Learning Technology. This innovative technology provides students with the opportunity to synergistically integrate fundamental theoretical knowledge with practical situations and strategically prepares them for optimally solving real pedagogical problems. Contextual learning is an active form of learning intended for use in higher education institutions. It is focused on students' professional training and is implemented through the systematic use of professional context and the gradual saturation of the educational process with elements of professional activity [5]. Contextual learning is based on the activity theory, according to which the assimilation of social experience is carried out as a result of the subject's active activity. The following principles are implemented: personal activity; problem-based approach; unity of education and upbringing; sequential modeling of the content and conditions of specialists' professional activities in the forms of students' learning activities [5].

To achieve the maximum transformational development of student activity, strategic importance is attached to the gradual synergistic development of their pedagogical and research competencies. It is proposed to interpret the teaching of general education subjects not from the standpoint of the academic presentation of scientific knowledge, but in the context of professional activity.

Problem-Based Learning Technology. Problem-based learning technology is understood as a specific system of techniques and methods that help independently acquire knowledge and independently apply it to solve new cognitive and practical problems. Problem-based learning combines student's active search activity with their assimilation of ready-made scientific conclusions, and the system of teaching methods is built taking into account the principles of goal-setting and problem-based approach. This type of education is characterized by the fact that knowledge and methods of activity are not provided in a finished form; to a large extent, the students themselves are the subject of the research [8]. In problem-based learning technology, the teacher shows students the main directions of search, identifies incorrect paths, and provides an opportunity to correct them. At the same time, students try to solve the problem independently, using the teacher's heuristic instructions. The process of studying a problem is compared to scientific research activity. The implementation stages of this technology are:

1. Creating a problem situation – the teacher poses a question or problem based on the educational material.
2. Understanding the problem and proposing a hypothesis – the student analyzes the problem and proposes a possible solution.
3. Search and evidence – students analyze knowledge, seek a solution through experiment or logical reasoning.
4. Conclusion and generalization – the obtained results are discussed, and a scientific conclusion is formed.

Portfolio Technology. Portfolio technology emerged in the second half of the 20th century in the USA and European countries, initially used as a means of systematizing student achievements in creative fields. Later, it became a technology for assessing personal

growth in the educational process. The goal of the technology is to direct students to analyze their own educational activities, assess achievements and shortcomings, and form a self-development strategy. It is implemented in the following stages:

1. Defining goals and criteria.
2. Collecting and systematizing activity results.
3. Analyzing and presenting the portfolio content.
4. Reflection and assessment.

RESULTS AND DISCUSSION

The study confirms that project-based learning fosters independent thinking, problem identification, and solution skills. Contextual learning effectively bridges theoretical knowledge and practical application, while problem-based learning is crucial for developing research competencies by actively engaging students in scientific inquiry. Portfolio technology provides a structured framework for self-assessment and personal development tracking.

The synergistic integration of these technologies creates a comprehensive ecosystem for cultivating research competence. The four-stage model of contextual learning (learning activity, learning-professional activity, professional activity, and reflection) provides a solid structural framework, which can be effectively combined with project work and problem-solving tasks, documented and reflected upon in a portfolio.

CONCLUSION

In conclusion, improving the formation of research competence in future teachers requires the integrated application of the considered innovative educational technologies, utilizing their synergistic interaction, and introducing modern pedagogical approaches into the educational process. This will significantly enhance the effectiveness of training highly qualified specialists with research capabilities. The implementation of project-based, contextual, problem-based, and portfolio technologies creates a holistic and effective model for preparing future educators who are not only knowledgeable but also capable of continuous self-improvement and active contribution to the teaching profession through research.

REFERENCES

1. O‘zbekiston Respublikasi Prezidentining 2019-yil 8-oktabrdagi “O‘zbekiston Respublikasi oliy ta’lim tizimini 2030-yilgacha rivojlantirish konsepsiyasini tasdiqlash to‘g‘risida”gi PF-5847-sonli Farmoni.
2. Горленко В.П. Педагогическая практика студентов: новые научные подходы // Педагогика. – 1996. – № 5.
3. Розуменко А. Компьютерная визуализatsia учебного материала по геометрии в развитии исследовательских умений студентов // 47-я Конвенция MIPRO по ИКТ и электронике (MIPRO), 20–24 мая 2024 г., Опатия, Хорватия. – IEEE, 2024.
4. Суяров К.Т. Развитие учебно исследовательских навыков учащихся академических лицеев на основе физического эксперимента: автореф. … канд. пед. наук: 13.00.02. — Чирчик, 2019.
5. Ван Ке., В.О.Сухомлинський–представник передової вітчизняної педагогіки // Інновації в початковій освіті. – Харків, 2025. – С. 47.
6. Пидкасистый П.И., Портнов М.Л. Искусство преподавания. Первая книга учителя. – М.: Пед. о-во России, 1991. – 211 с.
7. Шацкий, С. Т. Избранные педагогические сочинения: В 2 т. Т. 2. — М.: Педагогика, 1980. — 320 с.
8. Казанцева Е. С. Личностно-ориентированный подход к организации учебно-исследовательской деятельности студентов вуза: дис. … канд. пед. наук: 13.00.01. — Нижний Новгород, 2006. — 197 с.
9. Дзидзоева С.М. Педагогическая практика как условие развития исследовательских компетенций студентов: автореф. дис. – Ростов-на-Дону, 2009. – 30 с.