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ФОРМУВАННЯ ПРИРОДОЗНАВЧОЇ КОМПЕТЕНТНОСТІ МАЙБУТНЬОГО ВЧИТЕЛЯ ПОЧАТКОВИХ КЛАСІВ ЗА УМОВ ПЕДАГОГІЧНОГО ФАХОВОГО КОЛЕДЖУ

Анотація. У статті розкрито особливості формування природознавчої компетентності майбутніх учителів початкової школи як основу професійної підготовки. У системі фахової підготовки майбутніх учителів початкових класів чільне місце відводиться природничо-науковій освіті. Зазначено, що впровадження Державного стандарту початкової загальної освіти в Україні, зокрема виокремлення в ньому освітньої галузі «Природознавство», ставить перед закладами вищої освіти нові завдання щодо вдосконалення та підвищення якості професійної підготовки майбутніх учителів початкової школи. Саме вчителі-початківці закладають основи природознавчої компетентності учнів і забезпечують формування тих понять і уявлень, які в процесі подальшого навчання слугуватимуть базою для вивчення предметів природничо-наукової підготовки (біологія, хімія, географія, фізика, астрономія). Формування природознавчої компетентності майбутнього вчителя здійснюється в процесі вивчення природничих дисциплін, зокрема «Основ природознавства», «Методи навчання природничої освітньої галузі» та інших предметів. Зроблено висновок, що з-поміж ключових завдань професійної підготовки студентів – забезпечення належного рівня теоретичних знань із методики викладання освітньої галузі «Природознавство»; розвиток практично-методичних умінь; оволодіння вміннями правильно добирати методи, прийоми та засоби навчання в процесі розробки планів-конспектів уроків природознавства; формування педагогічних навичок до організації та керування процесом навчання на уроках природознавства та ін. Під час вивчення цих курсів підготовка майбутніх учителів початкових класів здійснюється через три етапи: теоретичний, лабораторно-практичний, навчально-дослідницький. Проаналізовано види практик (навчально-польова, педагогічна). Схарактеризовано навчально-дослідницьку роботу в системі професійної підготовки майбутніх учителів початкових класів. Наведено приклади формування природознавчої компетентності майбутніх учителів початкової школи в Коломийському педагогічному фаховому коледжі Івано-Франківської обласної ради.

Ключові слова: компетентність, природознавча компетентність, педагогічні умови, навчальні тренінги, інтегрований курс «Я досліджую світ», професійна підготовка.

FORMATION OF THE FUTURE PRIMARY SCHOOLTEACHERS' SCIENCE COMPETENCE UNDER THE CONDITIONS OF THE PEDAGOGICAL PROFESSIONAL COLLEGE

Abstract. The article reveals the peculiarities of the formation of future primary school teachers' science competence as a basis for professional training. In the system of future primary school teachers' professional training, a prominent place is given to natural science education. It is noted that the implementation of the State Standard of Primary General Education in Ukraine, in particular the separation of the educational field "Natural Science", poses new tasks for higher education institutions to improve the quality of future primary school teachers' professional training. It is novice teachers who lay the foundations of students' natural science competence and ensure the formation of those concepts and ideas, which in the process of further education will serve as a basis for studying the subjects of science training (biology, chemistry, geography, physics, astronomy). The formation of the future teachers' science competence is carried out in the process of studying natural sciences, in particular "Basics of Natural Science", "Methods of Teaching of Natural Science" and other subjects. It is concluded that among the key tasks of students' professional training is ensuring the appropriate level of theoretical knowledge in the teaching methodology of "Natural Science"; development of practical and methodical skills; mastering the skills to correctly select methods, techniques and means of learning in the process of developing plans-summaries of natural science lessons; formation of pedagogical skills for organizing and managing the learning process in natural science lessons, etc. During these courses, future primary school teachers' training is carried out through three stages: theoretical, laboratory-practical, educational-research. Types of practices (educational field, pedagogical) are analyzed. The educational and research work in the system of future primary school teachers' professional training is characterized. Examples of the formation of future primary school teachers' natural science competence in the Kolomyia Pedagogical College of the Ivano-Frankivsk Regional Council are given.

Keywords: competence, scientific competence, pedagogical conditions, educational trainings, integrated course "I Explore the World", professional training.



INTRODUCTION

The problem formulation. One of the priority tasks of education reform in Ukraine is the development of personnel potential, the training of specialists who are ready to competently perform professional tasks, to implement new educational strategies in practice. Considering the priorities of modern education, there is a need to train educated, intellectual, moral, constructive and practical people capable of cooperation. Completing this important task increases the responsibility of pedagogical educational institutions for the quality of future teacher training. The problem of the formation of professional competences and the formation of the creative personality of the future primary school teacher is not new in itself, but its relevance under the modern conditions of secondary education reform is growing significantly.

The implementation of the State standard of primary education in Ukraine (State Standard of Primary Education, 2018) and the separation of the educational field "Natural Science" sets new tasks for higher education institutions to improve the quality of future primary school teachers' professional training, who lay the foundations of natural science competence students and ensure the formation of concepts and ideas that serve as a basis for studying the subjects of natural science training (Biology, Chemistry, Geography, Physics, Astronomy) in basic and senior (high) specialized schools. Therefore, the future primary school teacher needs to acquire a thorough science education, which contributes to deep knowledge and understanding of the surrounding world, ensures the formation of key life positions and the vision of a person's place in nature, the need for self-education and professional growth (Volohata, 2018).

Analysis of recent research and publications. The professional training of the future primary school teacher for the formation of science competence in students is considered in the scientific publications of researchers: T. Baibara, A. Balokha, N. Bibik, O. Bida, K. Volokhata, T. Hilberg, L. Horobets, L. Koval, N. Kononenko, N. Lutsan, L. Narochna, T. Oleksenko, I. Sichko, T. Filimonova, G. Chernenko and others.

Thus, A. Balokha (Balokha, 2017), K. Volohata (Volohata, 2018), T. Filimonova (Filimonova, 2022), researching the problem of science competence as a component of the professional training of future primary school teachers, emphasize that under the science competence of a primary school teacher school is understood as an integrated personality quality, which is manifested in the ability to carry out activities based on knowledge, abilities, skills, values and experience acquired by future specialists in the process of studying natural science disciplines, and also show the importance of the natural science competence of the future primary school teacher as an important component of the teacher's professional training.

THE AIM AND RESEARCH TASKS

The purpose of the article is to reveal the peculiarities of the formation of future primary school teachers' natural science competence as the basis of professional training under the conditions of a pedagogical college.

RESEARCH METHODS

To achieve this goal, theoretical research methods are used, including analysis and synthesis of research results on the research problem, generalization – to formulate conclusions, forecasting – to determine the prospects for further research.

RESULTS OF THE RESEARCH

The task of higher education institutions is to prepare the future primary school teacher in accordance with the competence approach, which will enable him/her in his /her further professional activity to form natural science educational competencies in younger schoolchildren, thus, will ensure the process of becoming a competitive specialist.

The formation of the natural science competence of the future teacher in the pedagogical professional college is carried out in the process of studying natural sciences, in particular "Fundamentals of Natural Science" and "Teaching Methodology in the Field of Natural Science Education". The main tasks of the course are: to ensure the appropriate level of students' theoretical knowledge in teaching methods of the educational field "Natural Science"; develop practical and methodical skills; to master the skills of choosing the right methods, techniques and means of learning in the process of developing plans-summaries of natural science lessons; to form pedagogical skills of the future teacher to organize and manage the learning process in natural science lessons. During this course, the training of future primary school teachers is carried out through three stages: theoretical, laboratory-practical, educational-research. Scientist H. Chernenko singles out and substantiates three stages of future primary school teachers training for the formation of natural science competence in younger schoolchildren: theoretical, laboratory-practical and independent-creative (Chernenko, 2012).

At the first stage, students are formed, generalized and systematized natural knowledge in the course "Fundamentals of Natural Science", which affects the theoretical component of natural science competence and future teachers' training for teaching the natural component in the integrated course "I Explore the World" in the primary school. It is worth noting that the field of natural science education integrates the theoretical foundations of the following subjects: Physical Geography, Local History, Botany, Zoology, Geography of Ukraine, ecology. Each of the named disciplines provides targeted theoretical preparation of the future teacher for teaching natural science to younger schoolchildren and, at the same time, contributes to the formation of natural science competence in them, which enables the future specialist to implement the educational branch of "Natural Science" in the primary school, in accordance with the State Standard of Primary General Education.

Studying the course "Fundamentals of Natural Science", students learn basic physical and geographical concepts, they develop a clear idea of the relationship between geographical objects, natural and territorial complexes of Ukraine, processes, and natural phenomena. In addition, students acquire practical skills to navigate the terrain, sum up observations of nature, investigate the properties of rocks and soil, describe the flora and fauna of their area, perform practical work with geographic maps, a globe, and tellurium. Studying Botany, students get acquainted with the variety of plant forms, their relationships in nature, plant protection, seasonal phenomena in the life of plants. In the process of studying Zoology, special attention is paid to the ecological direction of the educational material, as well as to the peculiarities of life, diversity and environment of animals in nature.



By mastering the subject "Teaching Methodology in the Field of Natural Science Education", students acquire theoretical knowledge. During the study of the methodology of teaching natural science, future teachers develop holistic ideas about the content, methods, techniques, forms and means of teaching natural science in the elementary school. Among the methods of activating the educational and cognitive activity of future teachers, the most effective are interactive, partially research-based, problem-based, research methods and project-based learning technologies. An important task for students is not only to know the essence and methods of applying these teaching methods, but also to implement them in practice in primary school.

Under the conditions of wide use of interactive tools in the educational process of natural science, the requirements for the professional training of the teacher are growing significantly. In addition to the basic knowledge required for the implementation of pedagogical activities, the teacher must master the basics of working with a modern computer, be able to use information and telecommunication technologies and the capabilities of the Internet network to achieve defined educational goals, and master new organizational forms of educational activities. During lectures, we consider the use of interactive technologies as one of the ways to activate students' cognitive activity. It is they who play an important role in the learning process, as they stimulate the cognitive activity of students and enable its development at all levels (knowledge, understanding, application, rating). Students get acquainted with the method of using interactive technologies during educational trainings for the professional training of future primary school teachers. The Pedagogical College has developed a system of training classes that provide students with familiarization with the Concept of the New Ukrainian School, the principles of the State Standard of Primary Education, the formation of skills in the application of the activity approach during the study of the integrated course "I Explore the World", familiarization with innovative technologies in the process of forming naturalistic competence in younger schoolchildren.

Conducting educational trainings as a group form of organizing students' active learning makes it possible to maximally involve them in analytical work, connecting theory and practice, helps to increase their interest and motivation, and activate their mental activity.

The laboratory-practical stage is characterized by the formation of the readiness of future primary school teachers to organize and conduct lessons "I Explore the World". The topic of practical classes allows students to improve, expand, consolidate and learn to creatively reproduce the acquired theoretical knowledge regarding the formation of natural concepts in younger schoolchildren. In laboratory classes, students carry out scientific substantiation of the educational program in the educational field "Natural Science" and the textbooks "I Explore the World"; develop the calendar planning of the lessons "I Explore the World"; learn to choose effective methods and means of learning, taking into account the topic and purpose of the lessons; develop detailed notes on natural science lessons; acquire knowledge about innovative approaches to teaching in primary school (personally oriented, game, project technologies, information and communication tools, individual and collective forms of activity, interactive exercises, research workshops, mini-projects, creative projects, demonstration experiments, problem-based approach).

Practice is one of the most important components of the professional training system of the future specialist. It is a connecting link between a student's theoretical education and his future independent activity. An appropriate role in the formation of natural science competences in future elementary school teachers is played by educational field practice in the educational discipline "Fundamentals of Natural Science", which contributes to the practical consolidation of theoretical knowledge acquired during the study of the course, implements the combination of studying nature with practical activities, and forms a careful attitude to the environment. The purpose of educational and field practice in natural history and local history is: deepening and expanding students' knowledge acquired by students in the process of studying the theoretical course and creative use of this knowledge in practice; equipping with the skills and abilities of conducting observations in nature, collecting and processing natural material; training of future specialists to organize and conduct excursions into nature; instilling in students a careful attitude to the nature of their native land and familiarizing them with the techniques and methods of nature conservation activities.

Educational field practice in natural history and local history is a mandatory link of the educational process in the system of higher education in the natural science field. Its key tasks are the development of holistic scientific thinking, according to the modern natural concept, about the interrelationships of the organization of all components of nature, about the dependence of human economic activity on the surrounding natural environment, and about anthropogenic influence on the environment; consolidation of theoretical knowledge acquired by students during classroom classes on "Fundamentals of Natural Science"; study and recognition of natural biodiversity, taking into account the influence of local conditions; development of observational skills of natural processes and phenomena; mastering the methods of conducting field research; mastering the skills and abilities necessary for conducting independent research work with natural objects.

Pedagogical practice is an integral component of the educational process in the "Teaching Methodology in the Field of Natural Science Education". It provides a combination of theoretical training of future teachers with their practical activities in educational institutions, contributes to the formation of a creative attitude of the future specialist to pedagogical activity and determines the degree of his professional suitability and the level of pedagogical orientation. The activity of students during the period of pedagogical practice is an analogue of the professional activity of a teacher, which is carried out under the real conditions of work of educational institutions. Students have the opportunity to feel themselves in the future workplace of a teacher, consolidate the theoretical knowledge acquired in college in the form of practical skills, gain some experience working in a teaching team and show their level of theoretical training, apply knowledge of school programs and textbooks to organize and implement the educational process schoolchildren, the ability to use innovative and informational and communicative learning technologies, to master modern pedagogical learning technologies and the advanced pedagogical experience of secondary school teachers in the city and region. The task of this practice is to acquaint students with the



specifics future profession, acquisition of primary professional skills and skills in professional disciplines ("Fundamentals of Natural Science", "Teaching Methodology in the Field of Natural Science Education", etc.). Students master the practical skills of working with methodical and scientific literature, form the ability to prepare and conduct lessons of various types from the integrated course "I Explore the World" in elementary school, under the guidance of a methodist teacher, learn to optimally select, combine and coordinate methods, means and forms of education with natural sciences, to select educational material in accordance with the tasks of the lesson and the psychological and pedagogical characteristics of younger students. The formation of professional competence of students in the process of pedagogical practice depends on the creation of a system of practical training and the organization of pedagogical practice in accordance with the content and tasks of training future teachers of the educational field "Natural Science".

Educational and research work in the system of professional training of future primary school teachers is of great importance as a factor in the formation of the future teacher's personality, since the cognitive activity of college students is based on independent, close to research activity. Educational and research work in the educational process of natural science is carried out in order to stimulate and interest students in learning outcomes and objective assessment of knowledge in natural science methods; self-control and verification of own knowledge is carried out. Students independently compile a methodical folder that contains educational and methodical material for the "I Explore the World" lessons, prepare their own portfolio.

Traditionally, for many years, the Kolomyia Pedagogical College of the Ivano-Frankivsk Regional Council has held a competition of pedagogical excellence in the teaching methodology of science education, in which third-year students participate. Preparation for it is the creativity of students, all that they have acquired in the process of theoretical training, during practical and laboratory classes, they have the opportunity to implement precisely during this action. Usually, competitive lessons differ in methodical and pedagogical literacy, artistry, and creativity. For students, this is a school of pedagogical excellence. The final of the competition is a real celebration that leaves an unforgettable mark in the memory of future primary school teachers. The organic interweaving of students' research work into the educational process contributes to their deep mastery of the program material, improvement of their professional training, ensures involvement in scientific creativity, and significantly increases the level of student scientific works. So, for example, college students participate in annual scientific conferences that take place at the institution of higher education, as well as in all-Ukrainian scientific forums, where they present meaningful and relevant reports ("The use of indoor plants in the lessons of "I Explore the World" in elementary school", "Formation of elementary meteorological ideas and concepts" at the lessons "I Explore the World" in primary schools", "Formation of elementary astronomical ideas and concepts" at the lessons "I Explore the World" in elementary schools", "Project education of younger schoolchildren" at the lessons "I Explore the World", etc.). These and other forms of education ensure the success of professional training of future primary school teachers.

CONCLUSIONS AND PROSPECTS OF FURTHER RESEARCH

Today, the problem of the formation of professional competences and the formation of a creative personality of the future primary school teacher is becoming actualized. It is novice teachers who lay the foundations of students' natural science competence and ensure the formation of those concepts and ideas, which in the process of further education will serve as a basis for studying the subjects of natural science training (biology, chemistry, geography, physics, astronomy). An important area of primary school teacher training under the conditions of a professional pedagogical college is the theoretical and methodological foundations of pedagogical education. The formation of the future teachers' natural science competence is carried out in the process of studying natural sciences, in particular "Basics of Natural Science", "Methods of Teaching in the Field of Natural Science Education" and other subjects. Among the key tasks of students professional training is ensuring the appropriate level of theoretical knowledge in teaching methods of the educational field "Natural Science"; development of practical and methodical skills; mastering the skills to correctly select methods, techniques and means of learning in the process of developing plans-summaries of natural science lessons; formation of pedagogical skills for organizing and managing the learning process in natural science lessons, etc. During the study of these courses, the training of future primary school teachers is carried out through three stages: theoretical, laboratory-practical, educational-research. Therefore, the future primary school teacher must have theoretical knowledge and practical skills; know the contents of programs and textbooks "I Explore the World" (grades 1-4); have innovative approaches; to know the essence and methodology of using new technologies in the educational process during the formation of natural concepts in younger schoolchildren, etc.

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