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METHODOLOGICAL CONSIDERATIONS FOR COMPETENCY-BASED TEACHING OF NATURAL SCIENCES IN GENERAL EDUCATION

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Abstract
This article highlights the application of knowledge acquired by students in various life situations when teaching natural sciences in general education based on a competency-based approach, existing curricula, methodological aspects and approaches to teaching, students' creative and critical thinking skills, their ability to apply acquired knowledge in life, the content of teaching, its theoretical and practical significance, professional activity, didactic levels, and methodological aspects of developing this process.

Keywords: Educational process, international research, natural sciences, curricula, competency-based approach, thinking skills, competence, general education, methodological aspects of teaching.

Introduction
As a result of research conducted worldwide on the development of students' natural knowledge, skills, and abilities, a number of aspects have been identified, including the fundamental aspects of increasing students' logical and creative thinking levels (AICHI University of Education, Japan), as well as the development of educational resources, creation of innovative technologies, manipulation of realities affecting consciousness, development of students'

creative thinking potential (Princeton University, USA), development based on STEAM education technologies (National University of Singapore, Singapore), development of an autodidactic system for improving reading competencies (Belfield Pedagogical University, Germany), development of structures for practical research within international assessment programs such as PISA and PIRLS (National Advice on Pedagogical Technology, England), and the inclusion in school curricula of knowledge related to applying knowledge and skills and analyzing problems.

Research is being conducted in the following priority areas for improving the technology of teaching natural sciences in general education based on a competency-based approach: increasing teachers' methodological preparedness based on international assessment programs, and improving mechanisms for the continuous development of students' creative potential based on the integration of theory and practice within the framework of competency-based approaches.

Analysis shows that successful participation in international assessment programs such as PISA and PIRLS requires mainly two objectives: first, the preparation of materials used by teachers, which requires the creation of new educational materials; second, targeted training of teachers and changes in the priority principles of teaching methodology in the educational process to improve results in international studies. For this, it is necessary to train teachers, implement a more active system of developmental education, and provide them with materials that can be used more effectively in the educational process.

Teaching natural sciences in general education based on a competency-based approach is expressed through students' application of acquired knowledge in various real-life situations. In this process, existing curricula, teaching methods, and approaches are strengthened to ensure better performance of students in our

country. These projects contribute to the development of students' creative and critical thinking skills and their ability to apply acquired knowledge in life.

Also, improving the methodology of teaching natural knowledge in general education based on a competency-based approach is of great importance. In developing intellectual abilities, a foundation is created for the formation of an individual's interests and inclinations. Educating young students who can think independently is one of the urgent issues of today.

In the educational process, teaching natural sciences based on a competency-based approach in interdisciplinary connection, especially developing natural sciences in an integrated content, is considered important. In this, the knowledge, concepts, skills, abilities, and competencies provided to students acquire a generalized content. Implementing interdisciplinary connections in the educational process plays an important role in forming interconnected knowledge and skills in students.

Analysis and Results

Thus, improving students' natural competence in the context of interdisciplinary integration, ensuring interdisciplinary connections in the educational process, studying the content of lesson topics, and mastering important rules make it possible to activate the following processes:

to attract students' attention to the main aspects of academic subjects that are of primary importance in revealing the key ideas of the discipline; to continuously complicate perception, expand the scope of students' creative initiative and independence in learning activities, effectively organize the development of biological competence in the context of interdisciplinary integration, and gradually implement organizational activities aimed at

developing biological competence in the educational process through the use of various didactic tools;

to achieve the integrated mastery of academic subjects through various didactic tools;

to establish creative cooperation between teachers and students.

At present, in modern schools, the development of biological competence in the context of interdisciplinary integration is considered a factor that helps solve pedagogical problems, improve school activities, enhance teachers' potential, and identify optimal ways of influencing them.

Also, teaching natural sciences in the educational process based on a competency-based approach within the framework of interdisciplinary integration creates opportunities for implementing large-scale measures aimed at educating a harmoniously developed generation capable of taking responsibility for the future of our country.

The organizational and methodological aspect of teaching natural knowledge in general education based on a competency-based approach consists of designing a curriculum that connects ideas from various fields. Such teaching encourages students to think deeply. The cognitive aspect of competency-based teaching means that it is aimed at increasing students' thinking abilities. This helps them solve problems, analyze information, and understand complex concepts [4].

In studying and researching the problem of teaching natural sciences to school students based on a competency-based approach, it has been found that the basis of the interdisciplinary integration of science and scientific knowledge lies in the unity of the material world, that is, the interconnection of nature, society, and its cognition, as well as the development of interrelations between sciences and the increasing importance of information tools. As a result, the achievements in the

educational process are also reflected in the fields of nature, society, and technology—the material world.

In this process, the education system is aimed at establishing a high level of scientific foundations, developing thinking, understanding and perceiving the world holistically, correctly interpreting events occurring in the surrounding environment, and educating young people who can comprehend their essence.

The cognitive, motivational-reflexive, and behavioral characteristics of teaching natural sciences in general education based on a competency-based approach are developed step by step through self-development and the formation of internal motivation. Pedagogical conditions for developing biological competence help improve the independence and effectiveness of learning activities, as well as the level of knowledge and skills [3].

Based on the above, in developing natural sciences among school students based on a competency-based approach, mnemonic activity methods, vitagenic and reflexive technologies, methods of working with mental maps, and their emotional impact are considered effective. These include understanding and memorizing information systems, classifying and describing data, discussing personal views structured in the form of dialogue, understanding the axiological content of the information world, directing value systems toward social and professional tasks, forming an emotional attitude toward information, and using students' life experience, the Internet, and additional sources.

A competency-based approach in the educational process effectively influences students' understanding and implementation of social and professional tasks. Developing biology based on a competency-based approach begins with considering students' thinking and activity. Thinking mainly manifests as intellectual consciousness or the ability to think [2].

In addition, a competency-based approach in teaching natural sciences helps develop senior students' cognitive interest, intellectual abilities, and creative potential through experimentation, problem-solving, and modeling of biological processes. It enables students to independently search for and analyze biological information, describe modern discoveries in biology, and acquire knowledge about maintaining their health and rational use of natural resources.

Based on these approaches, it requires a deep understanding of biological knowledge and professional preparedness in areas such as medicine, agriculture, and environmental protection. It also enables the acquisition of the ability to apply biological knowledge in real-life situations through self-education and the development of experimental and analytical skills. Ultimately, this approach prepares students for future professional activity.

Logical-semantic competence plays a decisive role in ensuring the correctness, efficiency, and accuracy of thinking, as well as in creating a logical sequence of elements within a logical system. A student with well-developed logical-semantic competence possesses a clear system of biological concepts, understands their integral value, and can establish interdisciplinary connections [5].

Such a student has strong logical thinking, acquires knowledge and experience to solve real-life problems, possesses reasoned arguments and conclusions, generalizes, compares, and formulates hypotheses. In addition, they can clearly express ideas, precisely define biological terms, and use them in mastering biological phenomena and processes. They are also able to analyze and synthesize large volumes of factual information, identify relationships and development trends within biological systems, and draw scientifically grounded conclusions.

To develop competencies in school students, it is necessary to improve existing teaching methodologies. The effectiveness of natural sciences is ensured by the following psychological-pedagogical conditions:

taking into account students' individual characteristics, their cognitive and professional interests;
enriching methodological tools with teaching methods, forms, and means that stimulate independent learning activity;
focusing on a scientifically grounded approach to studying biology as the main means of forming subject competencies;
creating a developmental educational environment;
ensuring conditions for successful learning;
using effective teaching technologies and methods in response to the increasing volume of information due to the rapid development of natural sciences [2].
One of the most effective technologies that contribute to the formation of key competencies is critical thinking technology, which is aimed at developing the ability to express one's thoughts, form personal opinions, solve problems, and establish constructive relationships with others.
Teaching natural sciences based on a competency-based approach ensures the formation of key and subject-specific competencies necessary for students to successfully acquire knowledge and apply it in life. This approach is aimed at developing analytical thinking, creativity, and independent learning. In this regard, students, using critical thinking strategies, become active participants in the learning process rather than passive recipients of knowledge.

Conclusion

Teaching natural sciences in general education based on a competency-based approach provides students with the opportunity to apply acquired knowledge, skills, and abilities in their personal, professional, and social activities. Education based on a competency-based approach forms independence, active citizenship, initiative, the ability to rationally use media resources and information and

communication technologies in one's activities, conscious career choice, healthy competition, and general cultural skills in students. In addition, during the process of mastering each academic subject, subject-specific competencies are also formed in students based on the nature and content of that subject.

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