

**The use of interactive methods and innovative technologies in entomology lessons while studying insect morphology**

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**Abstract:** This article discusses innovative pedagogical technologies and ways to use them, assimilation of knowledge and mature skills, the role of various types of personality-oriented technologies, based on the activation of students' activities and increasing the efficiency of the educational process, in the study of the morphology of insects in the subject of entomology in universities. The article is based on the notion that any activity should contribute both to the assimilation of new information and the formation of skills and abilities and the processing of this information.

**Key words.** Interactive methods, innovative technology, problem-based learning, case technology, differentiated and individual technology, collaboration technologies, elements of psychological training, developing critical thinking, activity activation, colloquium, efficiency, synectic method, mini-conferences and group discussions.[24,25]

Today, the teacher faces the task of training specialists who meet the requirements of the time and improving the education system. This requires our scientists and teachers to update textbooks in the field of education, taking into account the requirements of modernity, the introduction of innovative and pedagogical technologies in the educational process. Therefore, the role and importance of modern interactive methods and innovative technologies in the education process is very important. Pedagogical technologies and their application provide knowledge acquisition and mature skills. It should be noted that at the moment, the role of various types of personality-oriented technologies has sharply increased, based on the activation of students' activities and increasing the efficiency of the educational process, which involve the use of various forms and methods of organizing educational activities, allow revealing the subjective potential of both the student and the teacher. . This is, first of all, the use of active learning methods, dialogic forms of organizing seminars, elements of heuristics, the synectic method, mini-conferences and group discussions, training simulation and business games, elements of psychological training, master classes, group and independent work, and much more. . Innovative learning, as a process and result of educational and official activities, is focused on the formation of an individual's readiness for dynamic changes in society, through the development of the ability to be creative. One such innovative technology is modular learning.

The methodology of the modular system is based on the notion that any lesson should contribute both to the assimilation of new information and the formation of skills and the processing of this information.[1,2,3,4,5,6]

Thus, it is logical to use a block (modular) organization of the material supply. Namely: a lecture (a lesson in studying new material), a seminar, research, independent work (lessons for improving knowledge, skills), a colloquium, (control lessons - intermediate control, lessons in accounting and assessing knowledge and skills, final control).

Innovative technologies are not only a pedagogical approach to teaching a particular topic, but also innovations and changes in the activities of teachers and students, the implementation of which mainly uses interactive methods.

Interactive teaching methods are a special form of organizing cognitive activity, in which students, in the learning process, have the opportunity to understand and think about what they know and think and want to know. The role of the teacher in interactive lessons partially leads to the orientation of students' activities towards achieving the goals of the lesson.[21,22,23]

The use of pedagogical technologies in all areas of higher education, including problem-based learning; technologies that develop critical thinking; modular technologies; collaboration technologies; differentiated and individual learning technology.[7,8,9,10,11]

The system of application of innovative pedagogical technologies in the process of education.

Learning technologies	Teaching methods	Graphic organizers
Technologies of teaching lectures	Blitz Poll	Clusters
Technologies for conducting seminars and trainings	Blitz game	Diagrams
Practical training technologies	Reasoned essay.	Working with tables
Technology case studies	Mental attack.	Definition of concepts, exchange of opinions.
Technologies of self-education	Written and oral tour conversations.	Sequence of logical chains

Case technology - based on the problem situation on the topic, the student must find a way out of the problem situation or make the right decision. Before solving the problem, such activities as search, analysis, hypotheses using additional information, the use of theoretical knowledge and application in practice are carried out.

Strategies used in the learning process.

- Increasing the knowledge base (search for information)
- Data analysis (business correspondence)
- Situational role-playing game
- Discussion

Instructions:

1. Enough to understand the essence of the keys.
2. Determine the factors that serve to find a solution to the problem.

3. Identify the factor (or two factors) that are most relevant to the problem among the identified factors.
4. Try to justify your decision based on these factors.
5. Express your opinion

Case resolution process:

1. Students discuss the essence of the matter, getting to know them.
2. Students identify factors that set the stage for problem solving.
3. The identified important factors that allow solving the problem are considered.
4. Students describe the most important factors based on the general opinion.
5. Opinions are analyzed, a general conclusion is made.

Of the above innovative technologies, I consider it expedient to use several technologies for effective teaching of the subject of entomology. The advantages of this application are as follows. For example, when studying the topic “Morphology of insects”, the teacher gives a lecture on the topic using IT presentations as a visual aid. During the explanation of new material, special attention is paid to important points that need to be paid attention to. To consolidate the material, you can use work in groups or individually on cards, a blitz survey, a cluster, etc. Performing a practical task, students not only learn new material, but also the skills to use new knowledge. [13,14,15,16] The use of innovative technologies in the educational process increases the effectiveness of training. When creating educational technologies for disciplines, it is advisable to proceed from diversity, creativity, non-standard approaches, taking into account the specifics and patterns of each discipline. In this process, it is advisable to take into account the specifics of subjects, forms of education and topics. [17,18,19,20]

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