

USE OF MODULAR EDUCATIONAL TECHNOLOGIES IN BIOLOGY TEACHING.

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ABSTRACT

This thesis discusses the advantages of modular educational technologies in teaching biology, ways of integrating them into the teaching process, and their role in developing students' knowledge and skills. Modular education is one of the modern, person-oriented pedagogical technologies that allows students to independently acquire, consolidate, and evaluate knowledge. This approach is effective in gradually deepening the mastery of topics in biology, strengthening interdisciplinary integration, and developing practical skills. The abstract analyzes the main components of modular education, the principles of creating modules adapted to biology, and the experiences of organizing lessons based on them.

Keywords: technology, method, interactive, creative, simulation, module, modular education.

Introduction. The modern education system is aimed at forming independent thinking, practical skills, and innovative approaches in students. In particular, the use of advanced educational technologies in teaching natural sciences, including biology, serves to increase the effectiveness of education. One of such advanced methods is modular education technology.

Main Part. Modular education is an educational system that divides the curriculum into small independent sections, taking into account the individual capabilities of each student, allowing them to independently obtain, apply, and master knowledge. For an experimental subject such as biology, modular education has great advantages, as it develops practical skills, self-control, and analytical thinking in students along with theoretical knowledge. The content of modular education technology

Modular education technology allows, by reorganizing the pedagogical process, to organize education taking into account the individual capabilities, interests, level of knowledge, and speed of mastery of each student. In this technology, educational materials are developed in the form of modules. Each module consists of the following parts:

Introductory (motivational) part: arouses the student's interest in the topic, poses a problem;

Theoretical material: concepts, laws, scientific foundations related to the topic;

Practical tasks: laboratory work, experiments, observations;

Reinforcement exercises: tests, diagrams, crosswords;

Intermediate and final control tools: tests to assess knowledge and skills, written works. Modular education considers the student's activity to be a priority over the teacher's activity. That is, the teacher acts as a guide, an advisor. Advantages of a modular approach in biology. Biology forms natural scientific knowledge, thinking based on observation, experiment, analysis and conclusions. Therefore, the use of a modular approach in teaching this subject provides the following advantages:

-Strengthens interdisciplinary integration: it creates an opportunity to study biology in conjunction with chemistry, physics, and ecology;

-Develops independent learning skills: students work independently on theoretical and practical tasks given in the module;

-Strengthens practice-oriented learning: knowledge learned through laboratory work and experiments is practically reinforced;

-Personalized approach: each student learns the material in accordance with his level of knowledge and pace;

The system of knowledge consolidation and control is clear: the student determines his level of knowledge through intermediate and final assessments.

Example of organizing a lesson in modular education. For example, teaching the topic “Nervous system” in biology for the 8th grade on a modular basis can be organized as follows:

Module name: Structure and function of the nervous system in the human body

Module objective: To create knowledge among students about the main parts of the nervous system, their functions; understanding reflexes and nerve impulses. Explanation of the brain, spinal cord, peripheral nerves, vegetative system through slides, audio-video materials. Simulation of a nerve impulse, demonstration of a reflex experiment.

Control: Assessment at the end of the module with tests, questions and answers, mini-essay-style tasks.

CONCLUSION.

Teaching biology on a modular basis increases the level of knowledge of students, increases interest in science, and forms practical skills. Lessons organized on the basis of modules turn the student into an active subject, that is, he searches for his own knowledge, analyzes, draws conclusions. Also, the modular approach increases the effectiveness of the lesson, strengthens interdisciplinary connections and is an important tool for developing competencies.

-Separate modules should be developed for each grade in biology;

-It is necessary to prepare methodological guides for teachers on the introduction of modular education;

Providing biology rooms in schools with modern equipment and laboratory equipment will increase the effectiveness of modular education.

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