



## METHODS OF USING NEW INNOVATIVE TECHNOLOGIES IN THE ORGANIZATION OF LABORATORY CLASSES IN BIOLOGY IN HIGHER EDUCATIONAL INSTITUTIONS

**Urunova D.S**

Navoi Pedagogical Institute

teacher of the department "Biology"

<https://doi.org/10.5281/zenodo.6517075>

### ARTICLE INFO

Received: 20<sup>th</sup> April 2022

Accepted: 25<sup>th</sup> April 2022

Online: 30<sup>th</sup> April 2022

### KEY WORDS

*didactic,  
micropreparation,  
morphological,  
multimedia, hypertext,  
hypermedial, intellectual,  
motivational, emotional,  
creative thinking.*

### ABSTRACT

*This article discusses topical issues in the system of continuous education, such as the widespread use of the capabilities of the intellectual education system, adapted to innovative technologies, methods for organizing student laboratory classes. The organization of these laboratory classes was discussed based on their use in the lessons of biological sciences.*

The purpose of the laboratory lesson should be determined from the first lesson, depending on the results of the student's individual work in the lesson, and applied in all classes. In laboratory classes, students should be constantly monitored to achieve their goals.

The content of laboratory classes is determined during the classes in the fulfillment of the goals and objectives of training.

In the classroom, students consolidate the theoretical knowledge gained in lectures. The following didactic principles are observed in laboratory classes:

- planning and conducting laboratory classes;
- clearly define the purpose of laboratory classes;
- arouse students' interest in

- deepening knowledge in the subject;
- allows the student to independently achieve results;
- theoretical training of the student;

The educational goal of the lesson is determined by the knowledge, skills and abilities acquired by the student during the lessons. The educational goal of laboratory classes in biology is aimed at the manifestation of universal human qualities among students: diligence, patriotism, love for the nature of their homeland, love for the animal world and compassion. According to psychologists, it is very difficult to reveal any personal qualities during one lesson. For this reason, the state policy in the field of personnel training is aimed at the formation of a harmoniously developed individual-citizen through



continuous education, inextricably linked with the intellectual and spiritual and moral education of a person.

For example, the didactic goal of studying the structure of the lancelet is to form students' worldview ideas about the common origin of all chordates, and the educational goal of the subject is to provide them with labor, aesthetic, hygienic, and environmental education in the learning process. The developmental goal in laboratory classes involves planning individual quantitative and qualitative changes for students. The developmental goal is based on the individual characteristics of the student's personality and implies qualitative changes, such as his intellectual, motivational, emotional and creative thinking, strengthening his will. The development goal can be expressed as follows:

- the formation of skills and abilities of educational work (working with a textbook, finding the necessary material in the reference book, planning, finding the main meaning of the text, answering questions);

- develop the skills to apply knowledge in practice (planning your activities, using tools and equipment, monitoring and evaluating your activities, calculations, etc.).

Laboratory classes form the basis of teaching biological sciences in educational institutions. One of the most pressing issues today is the introduction of technologies that help in the educational process to actively organize laboratory

classes that stimulate active learning of students. The purpose of including laboratory classes in the curriculum in biological sciences is to consolidate the acquired knowledge, the formation of practical and educational skills of students through their application in practice. Laboratory studies, as one of the forms of the educational process, perform the functions of linking learning with theory and practice. In laboratory classes, students work independently or conduct experiments. In the context of scientific and technological progress, laboratory work allows students to study and demonstrate the mechanism for applying theoretical knowledge in depth. Laboratory classes develop students' research skills, provide a creative approach to science and technology, and allow them to master the general methodology of conducting an experiment.

The possibilities of the system of intellectual education in the organization of laboratory classes in biology are practically unlimited. Organization of conversations with students to consolidate their knowledge, assessment of their knowledge and their comparison with the standard, analysis of students' activities, storytelling, dissemination of collected data among thousands of students (public education), organization of hypertext classes, identification of data sources, etc. y



everyone solves problems with intelligent learning tools. The difference between the hypertext approach and plain text is that the elements of a laboratory lesson are presented in a linear sequence based on multi-level links. Multimedia information design of the educational process The combination of information design of the educational process based on multimedia and hypertext leads to the formation of a new type of education - hypermedia education. A computer learning system is a programmed tool for solving educational problems and is widely used in the implementation of distance learning in the educational process. This system covers the following processes:

- implements an individual and differentiated approach to the educational process;
- diagnoses and provides feedback to students;
- through self-control correctly controls educational activities;
- saves time, optimizes training;

- demonstrates virtual educational information;
- plays a key role in modeling events and processes;
- can conduct laboratory exercises, experiments and demonstrations in virtual precision;
- develops optimal decision-making skills;
- increases interest in the learning process through the use of game situations;
- forms a culture of knowledge and information, as well as skills and competencies.

Thus, the use of virtual laboratory tasks in the organization of laboratory classes in biology contributes to the improvement of educational materials in the form of verbal (text), two-dimensional and three-dimensional graphics, animation and tactile (perception and sensation) structures. based on the priority of hypermedical education.