



## Stages Of Students' Work With Independent Learning Assignments In Biology Teaching Methodology

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### Abstract

The article highlights the pedagogical features of organizing independent learning in biology teaching methods, ways to organize learning activities based on the organization of creative work based on didactic goals and objectives of teaching, logical, analytical thinking, and self-control.

### Keywords

Independent learning, forms, function, importance, competence, student activities.

### Introduction

The "Concept for the Development of the Higher Education System of the Republic of Uzbekistan until 2030", approved by the Decree of the President of the Republic of Uzbekistan No. PF-5847 dated October 8, 2019, places special emphasis on the priority areas of systemic reform of higher education, raising the process of training highly qualified personnel with modern knowledge and independent thinking to a qualitatively new level, modernization of higher education and the development of social and economic sectors based on advanced educational technologies, as strategic issues. In particular, the Concept "Strategy of Actions for the Further Development of Independent Education in the Republic of Uzbekistan" defines the implementation of tasks aimed at "raising physically healthy, mentally and intellectually developed, independently thinking, with a firm life outlook, and loyal to the Motherland" as a complex pedagogical system with research and analytical directions for the preparation of young personnel for professional activity. This need makes it urgent to select strategies that develop educational processes in the training of highly qualified and competitive personnel, as well as to develop innovative educational technologies that serve to increase the effectiveness of this process and effectively implement them in the educational process.

Material and methods. This research work is aimed at studying and analyzing the process of working with independent learning tasks by students studying in the field of biology. The research was conducted at the biology faculties of higher educational institutions in Uzbekistan during the 2023–2025 academic year. The following materials were used:

Educational and methodological complex (EMC), textbooks and manuals used in practical and theoretical classes of the subject of biology teaching methodology;

- Biological equipment necessary for laboratory and field experiments (microscope, Petri dish, pipette, thermometer, laboratory vessels, etc.);

- Multimedia tools and electronic resources (interactive presentations, virtual laboratory simulators);
- Developments and instructions for independent work assignments of students.

The following methods were used in the research process:

1. Pedagogical observation method - the activity of students in the process of independent work, the stages and difficulties of completing the task were studied.
2. Experimental-testing method - students were divided into two groups: the experimental group (independent work was organized based on an innovative approach) and the control group (work was carried out in the traditional way).
3. Questionnaire and questionnaire - students' interest in independent work, motivation and difficulties were determined.
4. Analytical method - the data obtained were statistically processed, and the results in the experimental and control groups were compared.
5. Methodological analysis - existing educational and methodological materials, scientific works on biology teaching methods and foreign experiences were studied [5].

During the research process, a step-by-step methodology was developed for each independent work task, namely: setting the goal of the task; giving instructions; working with sources; formalizing the practical or theoretical result; presentation and analysis.

In higher education institutions, wide attention is paid to the development of methods for organizing independent learning in teaching all subjects. In the development of our research work, the stages of students' work with independent learning tasks in "Biology Teaching Methodology", as in all subjects, were analyzed, and the importance of methodological improvement determines the relevance of the research work. Biology teaching methodology is a system of effective methods, principles and tools in teaching biology, which ensures the correct organization of the educational process to achieve educational goals [2].

Independent learning tasks are theoretical or practical work that students perform during the learning process, based on the instructions of the teacher, but independently, and are aimed at consolidating knowledge, developing research skills and forming creative thinking [3].

Results and discussion. The effective organization of the educational process in higher education institutions is one of the necessary factors directly contributing to the formation of students' scientific worldview, the development of their skills of independent work and creative activity. This independent work can be organized to a certain extent systematically, and teachers can also set the following scientific and pedagogical tasks based on innovative approaches:

Providing oral and written answers to questions when passing unfamiliar and easily understandable topics, compiling a dictionary on the topic, and drawing up a plan for describing the topic in written work.

Drawing up an individual work plan for the student to familiarize himself with additional materials to consolidate the new topic.

Providing analytical, comparative tasks to strengthen the skills of connecting theoretical knowledge with practice and applying it in practice;

Organization of independent work in creative description;

Independent work based on instructions and didactic handouts increases the effectiveness of the lesson.

Organization of independent work on the prevention and completion of errors in biological knowledge - interpretation based on non-standard tests, comparative tables.

Independent work of students is an integral part of the entire educational process. Independent work should take 1st place as a specific educational subject that guarantees the acquisition of knowledge and practical professional skills by students, therefore, in each university, in each course, under the guidance of teachers, material for independent work of all students without exception is carefully selected.

The stages of working with independent educational tasks include the following stages:

1. Goal setting - determining the educational and educational objectives of the task. The teacher clearly defines the goal, objectives and expected results of independent work.
2. Explanation of the task - a clear statement of the content, method of implementation and requirements. Students are given complete instructions on the procedure for completing the task, the methods and resources used.
3. The process of implementation - the student's independent search, work with sources and the formation of the result. The student conducts independent research in accordance with the established plan, collects information from sources, conducts an experiment or observation.
4. Analysis of the result - the teacher evaluates the work, indicates errors and corrects them. The work performed is presented in the form of a written report, graph, diagram, photo or video. The results are analyzed by the teacher and group members, shortcomings and positive aspects are discussed.
5. Reflection and conclusion - the student's assessment of his/her own performance and development of recommendations for future work, etc. The student analyzes his/her own work and develops proposals for improving future efficiency.

In teaching biology, independent work assignments perform the following pedagogical tasks: applying theoretical knowledge in practice; independent research of natural phenomena and biological processes; organizing biological experiments and observations; developing scientific and creative thinking [3].

Independent learning assignments develop a sense of responsibility, time management skills, and interest in scientific and research activities in students [4].

Pedagogical scientist B. Sattorov noted that directing students to master modern methods of learning, developing their creative abilities, and improving their way of thinking is carried out through a variety of independent learning assignments that create motivational activity, which increases the effectiveness of students' cognitive activity and encourages them to be creatively active in relation to learning assignments. Any type of activity that allows students to develop independent thinking and cognitive activity constitutes independent work. In a narrow sense, the student's independent work means an independent set of activities carried out in the classroom and outside it, under the guidance of a teacher or without the participation of a teacher [5].

As a result of the effective organization of independent work of students in biological education and the sufficient importance given to the development of their creative abilities, the following positive situations can occur:

The independent work of students in biological education is systematically organized, there is clarity in their economic activity; students attach serious importance to the ideological content of any topic and learn to make independent conclusions on the topic, can independently and

logically express their opinion using additional materials on biological education. The occurrence of such positive changes in students forms their skills for independent and creative work. The following rules must be observed when organizing independent work of students. First of all, any independent work should be within the reach of students, attract their attention, and be consistent with the curriculum. The teacher should provide students with clear instructions for each independent task. In this case, when mastering new material, students need to rely on what they have seen, heard, and learned before [4].

### Conclusion

Currently, there are the following types of control over students' independent work: introductory control. In this case, the student's knowledge and skills in this subject before studying the subject are controlled; current control, that is, the regular control of the assimilation of the material during lectures, practical or laboratory exercises. In the process of completing the assignment, students independently summarize the topic using educational literature, prepare answers to questions related to the topic, understanding the essence of the basic phrases. If necessary (if mastering is difficult, questions arise, literature is not enough, the topic cannot be presented systematically, etc.), they receive advice from teachers. In the methodology of teaching biology, independent work assignments are an effective means of developing scientific research skills, research skills and creative thinking in students. When this process is organized step by step and systematically, the quality indicators of education increase significantly.

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