

PRINCIPLES OF ORGANIZING INDEPENDENT EDUCATION IN PHYSICS IN GENERAL SECONDARY EDUCATIONS

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Abstract. *In this work, it is mentioned about the types of independent work in physics for general education school students, the method of execution. The problems of organizing independent work in secondary education are studied and solutions are proposed. The task of developing didactic materials that help students to carry out their independent educational and cognitive activities, and to do this, to analyze the problem based on philosophical, psychological, pedagogical and methodological literature; theoretical synthesis, analogy, abstraction and concretization, theoretical modeling; Pedagogical observation, survey, questionnaire, various forms of pedagogical experiments are considered.*

Keywords: *independent work, educational efficiency, student independence, motivational tasks, types of independent work, creativity.*

Introduction. One of the main problems in teaching physics is the ability to inculcate complex physical phenomena and processes in the minds of students. Many physical processes can be understood by the reader only by imagining them in his mind. The ability to create a correct and clear image in the student's mind depends on the skill of the teacher, as well as the style and skill of the author of the study guide used by the student for independent study. Independent work in general secondary educational institutions is a unique tool for organizing and managing the independent activities of students in the educational process, acquiring the necessary knowledge, skills and abilities, and self-awareness. Independent work is the main indicator of educational success, it is an important indicator both in the learning process and in the results of teaching. The concept of "independent work" itself implies a wide range of concepts and directions. The concept of self-employment has a different meaning depending on how it is used.

Independent work is, as a rule, the process of preparation of a written, oral and experimental version of homework based on the materials presented in detail by the teacher in the audience and using the methodology demonstrated in detail[1-3].

The main goal of independent work is to expand and deepen the knowledge acquired in classroom lessons: to identify and develop individual abilities of exceptionally talented students[4].

When talking about the formation of students' independence, it is necessary to keep in mind two tasks that are closely related to each other. The first of them is to develop students' independence in educational activities, to teach them to acquire knowledge independently, to form their worldview; the second is teaching to independently apply existing knowledge in educational and practical activities [5].

The main goal of this work is to develop didactic materials that help students to carry out independent learning and cognitive activities. To perform these tasks, we used the following methods: problem analysis based on the philosophical, psychological, pedagogical and methodological literature related to the research topic; theoretical synthesis, analogy, abstraction

and concretization, theoretical modeling; Pedagogical observation, survey, questionnaire, various forms of pedagogical experiments.

A child who has just started studying at school does not have the skills to independently carry out educational activities. During the educational process, he should achieve a certain level of independence, cope with various tasks, open up the possibility of acquiring new things in the process of performing educational tasks, and be able to act independently.

Also, K.D. Ushinsky wrote about the need to form the independence of students during the educational process: "not only conveying certain knowledge to the student, but also developing it independently, forming the desire and ability to acquire new knowledge without a teacher, useful knowledge not only from books, but also from life events and events around him it is necessary to be able to form the skill of receiving. Therefore, one of the most important tasks of school education is to teach students with mental potential to increase their independent thinking and knowledge by taking useful information from the surrounding events and events" [6].

When organizing independent work, the teacher should determine in advance the tasks that will lead to the appearance of motivation in students. In tasks, complex stimuli that stimulate analytical and synthetic activity should be under the influence of external motivational forces. These motivational tasks are carried out in the following two stages:

The first is to analyze the content of the received task, compare it with the stock of knowledge accumulated in memory and previous practical experiences, to correctly understand and think about the given tasks, to independently determine and conclude the results that should be able to envisage the future actions necessary for its implementation. is a task.

The second is the implementation of planned practical actions. At this stage, the students perform the assigned tasks, the analysis of the achieved results involves comparing them with the intended goals and results, that is, the students perform self-control of the tasks.

If at the same time the intended goals and results of independent work correspond to the obtained results, if it is useful, if the effect is really provided, then we can define that the effectiveness of teaching has been achieved. If inconsistency between the planned and obtained results is detected, then action control is intensified, the search for the desired results continues until the goal is achieved and the task is completed. The teacher summarizes the results of independent work of all students [7-8].

As students acquire the skills and qualifications of independent work, the content of tasks becomes more and more complex, students are encouraged to activate their independent activities. According to N.A. Loshkareva, "independent work on natural sciences in high school should increase the content of teaching and increase students' deeper knowledge of science."

The teacher offers the students a clear oral or written task for independent work, the sequence of its execution, methods of checking the results by the students themselves, ways to record them. As B.S.Blum noted in his works, the teacher not only observes the practical actions of students, but also controls these actions, gives timely instructions to prevent possible mistakes, analyzes their independent activities, determines whether the task is performed correctly or incorrectly, and evaluates the content and results of the performed tasks. well understood and mastered, as well as examines what knowledge, skills and competences it assesses the formation of mastery skills. Thus, the teacher-teacher plans the teaching process and, in addition, organizes, observes and analyzes the independent work of students.

Independent work can be done with any organizational form of training (new lesson, laboratory lesson, circle lessons). Independent education of students is strictly speaking not completely independent, because their independence is always controlled by the teacher. The teacher's role in organizing independent work is to determine the type and amount of effective work for each student.

Independent work performed by students in secondary schools can be divided into the following types.

Independent work of the reconstructive-variable type allows you to find specific ways to solve the problem independently, based on the previously acquired knowledge and the general idea given by the teacher. This type of independent work creates conditions for teaching schoolchildren to meaningfully transfer their knowledge to typical situations, to analyze events, events and facts, to form techniques and methods of cognitive activity, and to contribute to the development of their internal motivation. This type of independent work serves as a basis for the student's further creative activity.

Heuristic independent work develops the ability to find answers outside of a given pattern. As a rule, the student determines and finds ways to solve the problem himself. A learner may already have the knowledge needed to solve a problem, but sometimes it is difficult to keep it in memory and use it when needed. Constantly searching for new solutions, summarizing and systematizing the acquired knowledge, transferring them to a completely non-standard state, making students' knowledge more flexible and mobile, and the ability to develop the need for self-education are formed precisely in performing heuristic independent work.

Creative independent work is the crown of the system of independent activity of schoolchildren. This activity allows students to acquire radically new knowledge, strengthens skills and seeks independent knowledge. According to psychologists, the mental activity of schoolchildren in solving problematic, creative tasks is in many ways similar to the mental activity of creative and scientific workers. This type of tasks is one of the most effective means of forming a creative personality.

In teaching practice, each type of independent work is planned by teachers and provided with different types of work used in the system of extracurricular activities. Let's list the most common and effective of them:

- working with the book, working with the text and graphic materials of the textbook: repeating the main content of a part of the text; painting; making a response plan for the read text; a brief synopsis of the text; search for answers to questions that have been set in advance in the text; analyze, compare, summarize and systematize material on several topics. Working with primary sources, references and popular scientific literature, taking notes and reviewing readings;
- exercises: teaching, repetition of exercises based on the example; constructing and solving reconstructive exercises, various tasks and questions; review the answers of other students, evaluate them in class activities; various exercises aimed at developing practical skills and abilities;
- solving various tasks and performing practical work;
- various inspection works, independent works, control works;
- preparation of reports and theses;
- performing individual and group tasks related to nature excursions and observations;

- home laboratory experiments and observations;
- technical modeling and design.

In the organization of independent work in schools of secondary education "Electrical devices in the house. In the teaching of the topic "Saving electric energy", students' independent work is carried out as follows. All students in the class are divided into 2 groups. Each group is assigned a captain and assigned individual tasks for the groups. For example: to group 1, "Write down the names of the electrical appliances in your home, calculate their daily, monthly and annual electricity consumption in kilowatts and calculate the cost at today's market price." To the 2nd group, "write the name of the electrical appliances in the school, calculate their daily, monthly and annual electricity consumption in kilowatts and calculate the amount of the cost at today's market price." The teacher manages the students' activities strictly following the curriculum. The teacher works as a leader of student team activities in all classes and as a manager of learning activities of each student in this team. In accordance with the tasks of education and upbringing, the teacher chooses a set of different methods and tools to organize their cognitive activity in order to increase the independence and creative activity of each of the students.

The task of the teacher is to organize the educational process in such a way that students' interest in physics knowledge increases, the need for more complete and deep learning increases, independence in work develops. So that each student actively participates, works to the full, independent work helps to master the program material, to form strong skills and abilities, and to develop all-round abilities of students.

Summary. Independent work is an important component of the learning process. It is recommended to consider it as a form of organization of activities conducted under the direct or indirect guidance of a teacher. During independent work, children perform various tasks mainly or completely independently in order to develop knowledge, skills and personal qualities. The main demand of the society for a modern school is the formation of a person who can independently creatively solve scientific, industrial and social tasks. The development of independence is inextricably linked with the educational activities of students. Optimal use of students' independent work helps to successfully form general academic knowledge and skills in physics class and to educate a creative personality. The use of different types of independent work helps the teacher to increase the level of knowledge of the student, activates the student's knowledge both in learning new material and in strengthening the learned things.

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