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FEATURES AND CHARACTERISTICS OF A LABORATORY PHYSICS WORKSHOP IN THE STUDY OF PHYSICS ESHTUXTAROVA ORZIGUL SHONAZAROVNA

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Abstract
Laboratory work is a teaching method in which students understand physical phenomena. Laboratory work is a teaching method in which students understand physical phenomena. At the frontal laboratory work, concepts are formed as the main element of scientific knowledge, the initial ideas about phenomena are developed and deepened, the connection between science and technology is traced, interest is developed that promotes independent activity, and in general the gap between theory and practice is overcome.
Keywords: laboratory work, *training and education, environmental education,* promotes independent activity

INTRODUCTION

Lunacharsky A.V. in his writings pointed out the special importance of teaching methods. He wrote: “It depends on the method of teaching whether it will arouse boredom in the child, whether teaching will slide over the surface of the child’s brain, leaving almost no trace in it, or, on the contrary, this teaching will be perceived joyfully, as part of a child’s game, as part of a child's life, will merge with the child's psyche, become his flesh and blood. It depends on the method of teaching whether the class will look at the classes as hard labor and oppose them with their childish liveliness in the form of pranks and tricks, or this class will be soldered by the unity of interesting work and imbued with grateful friendship for their leader.

METHODOLOGY

Laboratory work is a teaching method in which students understand physical phenomena. If we consider laboratory work within the framework of didactics, then it can act as both a method and a form of teaching physics. If we consider laboratory work as a teaching method, then we can say that it is a method of consolidating theoretical material on a topic, while students perform tasks according to a strictly defined plan and under the guidance of a teacher. In this case, research is supposed to be part of the laboratory work. Babansky Yu.K. considered laboratory work as a method learning, in which the creation of control and self-control in the process learning is the main function. At the same time, he considered organizational-cognitive, motivational, stimulating and regulatory activities, as additional and no less significant functions.

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Laboratory work as a method of monitoring the effectiveness of the pedagogical process was considered by Slastenin V.A. If we consider laboratory work as a form of training, then we can say that it is aimed at obtaining practical skills and abilities with the help of equipment. The development of new knowledge and their consolidation, the formation of practical skills and abilities, such goals were set by Shamanova T.I. when performing laboratory work. Practical classes are conducted both individually and with a group of students. Tasks of laboratory work:

- application of knowledge in practice;
- formation of practical knowledge necessary in life and work and skills;
- assistance in vocational guidance of students;
- development of personal qualities.

The following functions of laboratory work are distinguished:

1) the learning function is to accelerate the process of assimilation of the material covered;
2) the developing function is aimed at developing imagination, memory, attention, creative and spatial thinking;
3) the educative function affects various character traits;
4) motivational-stimulating function creates such conditions under which students are included in cognitive activity;
5) the reflexive function contributes to the knowledge of the learners themselves in activity in comparison with others; development of skills to control and analyze their actions, to find and correct mistakes, evaluate the results of their actions and make adjustments to them;
6) the diagnostic function allows the teacher to identify the characteristics of the personality of the student, the level of assimilation of knowledge and skills.

These skills can be acquired as a result of purposeful independent work. A distinctive feature of the laboratory workshop is the partial independence of students, which should gradually become almost complete, active conscious work not only in the assembly of the installation and measurements, but not only in the process of performing work, but also in preparing for measurements, processing results and compiling a report.

Laboratory work in the course of physics can be classified according to the following criteria:

- by content - mechanics, molecular physics, optics, electricity and magnetism, atomic and nuclear physics.
- according to the methods of implementation - observation, experience, measurement of quantities and study of their dependencies;
- by students' independence of performance - creative, testing, heuristic;
- in terms of importance in the educational process - illustrative, previous, final;
- for the didactic purpose - learning new, repetition and consolidation of material, familiarization with the principle of operation of devices, measurement of physical quantities, the study of phenomena, the study and verification of the dependences of physical quantities;
- on an organizational basis - frontal laboratory work, physical workshop, home experiment.

Organizational classification is the most common and is the most common. The latter classification makes it possible to consider the experiment from the point of view of teaching methods, to correctly determine the place of each of its types in the educational system.

Frontal laboratory work is a class during which students independently measure physical quantities, as well as observe and reproduce physical phenomena, using the necessary

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laboratory equipment. Students are instilled with practical skills, the value of which lies in the gradual acquisition. When performing frontal laboratory work, the simplest skills and abilities are formed, since simple equipment is used. In this regard, frontal laboratory work only partially solves the problem of developing students' skills to work with modern laboratory equipment. Frontal laboratory work is carried out during the study of the relevant material. Depending on what features to put as the basis for the classification of frontal laboratory work, the following can be distinguished: qualitative and quantitative work; short-term and work designed for the entire lesson; and so-called creative works. However, from the point of view of the theory of teaching physics, the most profound and productive will be the classification according to the didactic goals of the work. On this basis, the following types of occupations are distinguished:

1. observation and study of physical phenomena;
2. familiarization with measuring instruments and measurement of physical quantities;
3. familiarization with the device and the principle of operation of physical devices and technical installations;
4. detection or verification of quantitative patterns;
5. determination of physical constants, characteristics of matter and processes.

A physical workshop is a form of conducting a laboratory classes in which students are divided into units and perform work on received tasks of a complicated nature, with respect to the frontal eleven laboratory work, while the tasks for the groups are different. For the workshop, time is allotted in thematic planning either after studying one section of the course, or after studying the entire physics course for a given academic year, which is most often practiced. As mentioned above, tasks for a laboratory workshop differ significantly in complexity from frontal work. In this regard, the time for their implementation increases up to two training sessions, but carrying out this type of work in one lesson also takes place. To perform practical work, more complex and modern equipment is required, since its tasks cover the entire section or course being studied.

The last type of laboratory work that is considered during the study is a home experiment. It is a laboratory work performed by students at home. Students begin to perform work according to the task of the teacher, while using household items and self-made appliances.

The purpose of laboratory classes is, first of all, training, education and development of personal competencies that will allow students to conduct an independent search for information, methods and ways of performing tasks, evaluate their quality, and apply the knowledge gained in practical activities.

When planning laboratory work, it should be taken into account that along with the leading didactic goal, students develop practical skills in working with laboratory equipment and research skills.

Conducting laboratory classes should take place under the supervision of a teacher and in compliance with all safety rules. Before doing the work, the teacher conducts a detailed safety briefing, each student signs in a special register. The teacher is responsible for the observance of the rules by the students. In preparation for the lesson, the teacher must organize the ideal laboratory work and take all measures to develop students' practical skills in working with laboratory equipment. To conduct a laboratory lesson, students are provided with all the necessary material in the previous lesson. The materials must be submitted in writing and contain: the title of the work, the purpose, instruments and materials, visual aids, the task for

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the work and the order of execution, control questions, rules for handling laboratory equipment and technical and fire safety measures.

Before starting the laboratory work, students must obtain permission to work, after checking the assimilation of the sequence of work and the control questions specified in the assignment and safety precautions. The performance of laboratory work should be individual. There are 2-3 students at the desktop, and each of them does the work and submits the report independently. For each work performed, the student, after submitting a report and testing knowledge, receives a mark. When conducting laboratory work, schoolchildren develop the skill of explaining the essence of the observed processes and phenomena, processing the results obtained during the study and analyzing them, formulating conclusions necessary for further work and education. A creative approach to research work develops, they learn to choose the right methodology carrying out the experiment and the necessary equipment for work.

The teacher selects the method of performing laboratory work, based on the most optimal option for him. The following factors influence the choice of the method of performing the work: the correspondence of the chosen method to the purpose of the lesson, the level of preparation of students for mastering the material being studied at this stage, the content of the experiment being conducted. When choosing a method for performing work, the teacher is guided by program requirements, i.e. the fulfillment of the requirements for the preparation of students, based on the development of each student, must be ensured. The reproductive method is a method of performing laboratory work in which students must develop the skills to perform the work. This method does not provide for the independence of students in the performance of work, since already known facts are reproduced with the direct assistance of the teacher.

Work when using this method begins by repeating the material covered and possible ways of measuring the physical quantities used. Next, the progress of the work is discussed, and the students begin to assemble the installation. The next step is to carry out the necessary measurements and their processing of the results, and draw the appropriate conclusions. This method is aimed at reproducing existing experiments according to a certain algorithm, which excludes the independence of students, but at the same time consolidates the skills and abilities of working with laboratory equipment. The partial search method involves the teacher's guidance in the practical actions of students, giving them consistent instructions, and then, with the help of the questions asked, ask them the direction to analyze the results obtained during the study, which will later help them with the formulation of the conclusions of the laws previously unknown to them. This method contributes to the independent acquisition of knowledge by trainees in the course of laboratory work.

It is advisable to use this method when the students have already mastered all the necessary steps to complete the work and perform it on their own. The partial search method is applicable in works aimed at observing physical phenomena and establishing relationships between physical quantities. The research method is a method that implies the complete independence of students. To use this method, the teacher must correctly compose the task. Students independently determine the progress of the task, then perform the stages of the study. The research method of performing laboratory work is applicable to the most successful students who participate in design and research activities. The method differs from the previous ones in that before performing laboratory work, students are invited to independently think over ways to indirectly measure any quantity and determine the equipment necessary for the study. All proposals are discussed by a group of students and the most optimal variant of the

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work is determined. All work is done by the students themselves, the teacher only controls the actions of the students.

RESULTS AND DISCUSSIONS

The use of computer installations does not provide the necessary information about the physical phenomenon, it can only simulate the physical process, this should not be forgotten when organizing the educational process. In this case, we cannot organize the formation of practical and experimental skills in students. The learning process must be built in such a way that computer installations complement the process of performing laboratory work, and not completely replace it.

CONCLUSION

At the frontal laboratory work, concepts are formed as the main element of scientific knowledge, the initial ideas about phenomena are developed and deepened, the connection between science and technology is traced, interest is developed that promotes independent activity, and in general the gap between theory and practice is overcome.

During the study, the following was done:

- Analysis of scientific and methodological literature on the topic of research and the features of the laboratory workshop.
- An analysis of the available laboratory workshops was carried out.
- A fragment of the lesson was developed using L-micro laboratory equipment and conducted at a physics lesson in the 8th grade.

The study revealed that the use of a laboratory workshop in physics lessons improves the quality of education, the hypothesis was confirmed.

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