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INTRODUCTION OF PROBLEM METHODS AND TECHNOLOGIES FOR TEACHING PHYSICS

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ABSTRACT

General secondary school has revealed the shortcomings and inadequacy of solutions in pedagogical processes using problematic methods of teaching physics at school. The article also discussed the introduction of problematic teaching technologies at the Department of electrodynamics of physics, as well as additional recommendations and directions. The Department of electrodynamics of physics also began to differ in the features of problem-based teaching in contrast to other departments.

Keywords: creative ability, observation, logical thinking, problem-based learning, theoretical knowledge, skills, qualifications, imagination, innovative method.

INTRODUCTION

The main direction in the transition of physics teaching technology to a new content is to provide students with deep and thorough theoretical knowledge, the formation of practical skills, as well as improving the quality and effectiveness of teaching in order to activate their educational and cognitive activities, the development of independent thinking.[1, p. 152]

This, in turn, raises the problem of improving the content of teaching educational technology in the subject of teaching methods of physics. In this regard, the development of problematic teaching methods of the Department of physics "electrodynamics" in secondary schools has scientific and theoretical significance.[2, p. 82]

The research work carried out and the experience of advanced and creative physics teachers show that the correct use of problem situations during the lesson contributes to a deep and thorough understanding of the laws of physics, conscious assimilation of subjects, as well as solving problems of their professional orientation.[4, p. 87]

This article selects teaching materials of the physics section "electrodynamics" on the example of problem-based learning and, accordingly, develops methods of teaching them, as well as research work. Pedagogical experience-control during research work has shown that problematic technologies of teaching physics in General schools are not studied in detail.[3, p. 170]

The principles of selection of teaching materials for problem technologies of teaching in the Department of "electrodynamics" physics, not by her and not end up defined by its content. The experience of advanced

physics teachers has not yet been studied or generalized. Secondary school physics teachers do not use the problematic method of teaching the physics section "electrodynamics"enough.

We think the reason is as follows:

1. Most school physics teachers do not know how to create problem situations and how to teach them. This is especially true for the creation of problem situations in physics. Teachers are accustomed to limit their educational activities to the educational materials contained in the textbook, and in some cases, in the manual. They are not very serious about creating problematic situations when switching a particular topic to the program.

2. Materials on problem technologies of teaching the section "electrodynamics" of physics are practically not covered in textbooks and do not have sufficient expression in the literature on the method of their use.

All this has recently led to a decrease in the interest of secondary school students to study physics. All this is caused by the shortcomings that are allowed in the teaching of educational work, in particular physics.

One of the ways to improve the technology of teaching the section of electrodynamics of physics in General education schools is teaching using the problem method of teaching.

Every country that has passed the path of economic development will feel the need to develop science, technology and production. Materials related to the section "electrodynamics" of the school physics course of General secondary education are widely used in the field of science and technology. Therefore, every secondary school student must have knowledge of the physics section "electrodynamics" and be able to apply them in practice with certain skills and qualifications. Thus, in General, it is necessary to improve the quality of physical education in General schools and improve its content through the problematic teaching of the Department of "electrodynamics" of physics.[4, p. 110]

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Problem teaching of the Department of electrodynamics of the faculty of physics has its own characteristics.

In the process of getting acquainted with the Department of electrodynamics of schoolchildren, they are directly acquainted with the laws they study and the observed phenomena and processes in everyday life. This gives them the opportunity to realize that their theoretical knowledge can be inextricably linked with practice, to think independently. Students will see the support of their theoretical knowledge in practice. This situation allows students, firstly, to creatively apply their theoretical knowledge of electrodynamics in practice; secondly, to the intelligibility of educational material; third, to a conscious, thorough, in-depth assimilation of their theoretical knowledge; of the four, this helps to form their practical skills and abilities.

Currently, students live in a period of development of science and technology. Each student is often in a relationship with them, directly using the new technique.

This, in turn, requires students to carefully and thoroughly study the basics of electrodynamics. From the observations of readers and the questions and answers they receive from them, it becomes clear that it will be difficult for them to apply their theoretical knowledge of electrodynamics in everyday life. Students do not have the skills and abilities to independently monitor, analyze, make scientific conclusions and generalize their

knowledge of electrodynamics, conduct experiments, and perform laboratory work. Tirisha, developing creative abilities of pupils, virtually ignored. Students will not be able to creatively apply their theoretical knowledge in practice in the process of studying electrodynamics. At the same time, most students are not able to fully understand the role and significance of electrodynamics in the study of technical secrets. This, in turn, reduces students ' interest in studying physics. Problematic teaching of electrodynamics in secondary schools, firstly, contributes to the development of creative abilities of students; secondly, the education of their logical thinking; third, and most importantly, it contributes to the formation of their practical skills and abilities.

Determining the levels of knowledge obtained by students in theory shows that the problem study of electrodynamics plays an important role in the functioning of logical thinking of students. But it is used less frequently in physics classes. This is directly confirmed by readers ' answers to the following questions:

1. Why is the body of the electrometer made of metal?

2. In a charged body the energy is formed by what?

3. Why are the battery plates located close to each other?

4. Why does their resistance increase when metals are heated?

5. Why does the resistance of semiconductors decrease when heated?

6. Why is the current at the time of connecting the incandescent lamp more than the operating current?

7. Is there a difference between "current diffusion rate" and "electron velocity in a metal"?

8. is the recombination process unique to electrolytes and gases?

9. can the electrolytes be in a solid state?

10. is the contact phenomenon unique to semiconductors?

11. Are all solutions electrolytes?

12. Can any ionized gas to become a plasma?

13. Are all substances in nature semiconductors?

14. If applicable, Joule's law for semiconductors and electrolytes?

15. Why does an electron gas in a metal not escape from this metal until it is exposed to external influences?

16. How does electrical resistance occur in liquids and gases?

17. How to explain that lightning occurs when there is no ionizer, such as an independent gas discharge?

18. High voltage on the spark plug will be necessary, while on the spring spark plug enough voltage of 40-50 V? Why?

From the answers given by the students to the above questions, it is clear that they had theoretical knowledge of electrodynamics, practical skills and skills in the form. The above conclusion was also confirmed by the results of questionnaire questions asked to schoolchildren. Below we will take an example from the questionnaire questions for teachers:

1. Do you use the method of problem training at lessons of physics?

2. Have you studied any scientific problem with students in the classroom and extracurricular activities?

3. are textbooks and manuals Sufficient for students to work independently?

4. are students Interested in solving any problems in the physics lesson?

5. Are you familiar with the problem method of teaching physics?

6. what do you think is the importance of problem-based teaching of electrodynamics?

7. do you Think that problematic teaching of electrodynamics has an impact on the development of creative abilities of students, the growth of logical thinking?

8. Do you try to teach students to work and think independently in physics classes?

9. What innovative methods and techniques of problem-based learning do you use in physics lessons?

From the conducted questionnaire surveys, it turned out that teachers practically do not use innovative methods of problem-based learning in physics lessons. In many secondary schools, teachers take physics courses only in the form of information, without paying attention to students ' independent thinking and creative work.[4, p. 110]

From the results of the control work, it turned out that the theoretical knowledge, practical skills and qualifications that high school students possess in General are very shallow. Students were not able to apply their theoretical knowledge gained from electrodynamics in practice. Having independently created a problem situation in electrodynamics, they do not know how to solve it, analyze it. From the above information, it becomes clear that the use of problem-based learning in the teaching of physics in many secondary schools in our country indicates an undeveloped demand for this period. At the same time, for the study of electrodynamic materials in General secondary schools, the problem method is not enough methodological guidelines and educational literature. However, this will improve the situation again.

Currently, the study of electrodynamics of the faculty of physics using the problem method is not sufficiently focused on independent thinking of students. In the teaching of physics in secondary schools, there are main sections of electrodynamics. Problem-based learning is important in students ' thorough and in-depth mastery of electrodynamics. In physics lessons, you can create and positively solve problem situations in the following ways of students 'mental activity, ask problematic questions, organize students' independent work, use role-playing elements, make special mistakes in the course of classes, and organize these mistakes through their independent solution.

REFERENCES

1. Maksmutov M. I. Modern lesson. - Moscow: Pedagogy, 1985. 187 p.

2. Makhmutov M. I. the organization of problem training in school. - Tashkent: teacher, 1981. - 195 p.

3. DusiarovH. Methods of studying applied physics in secondary schools. phd a dissertation for the degree was written. - Tashkent: UzPFITI, 1997. - 70 p.

4. Mahmudov Yu., Baymirov Sh. "problematic teaching of electrodynamics of students of the VII class" textbook. No. 001428. 2019. - 110 p.