THE IMPORTANCE OF USING INNOVATIVE PEDAGOGICAL METHODS IN PHYSICS CLASSES IN THE DEVELOPMENT OF TECHNICAL ABILITIES OF STUDENTS OF THE TECHNICAL HIGHER EDUCATIONAL INSTITUTION

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Abstract: In this article, the importance of using interactive methods to improve the technical skills of students in the teaching of physics to future engineers, the role of problem-based learning, brainstorming and the case method in increasing the effectiveness of teaching, and the advantages of using it in the course of the lesson are highlighted. In the content of the article, the effectiveness of the teaching method using interactive methods compared to ordinary teaching is widely covered.

Key words: technical abilities, technological approach, professional competence, interactive methods, brainstorming, problem-based learning, case method, interest levels.

ЗНАЧЕНИЕ ИСПОЛЬЗОВАНИЯ ИННОВАЦИОННЫХ ПЕДАГОГИЧЕСКИХ МЕТОДОВ НА ЗАНЯТИЯХ ПО ФИЗИКЕ В РАЗВИТИИ ТЕХНИЧЕСКИХ СПОСОБНОСТЕЙ СТУДЕНТОВ ТЕХНИЧЕСКОГО ВУЗА

Аннотация: В данной статье рассматривается важность использования интерактивных методов совершенствования технических навыков студентов при преподавании физики в технических вузах, роль проблемного обучения, мозгового штурма и кейс-метода в повышении эффективности обучения и выделены преимущества его использования в ходе урока. В содержании статьи широко освещается эффективность метода обучения с использованием интерактивных методов по сравнению с обычным обучением.

Ключевые слова: технические способности, технологический подход, профессиональная компетентность, интерактивные методы, мозговой штурм, проблемное обучение, кейс-метод, уровни интереса.

INTRODUCTION

It is no secret that physics is a key factor in development. In the international education system, special attention is paid to the science of physics, and it is divided into several departments and taught in depth already in the school years. The teaching of physics is also of special importance in our republic These include the implementation of practical experiments during the lesson, the consideration of theoretical issues in a separate form, the organization of science Olympiads and the conduct of science circles.

If we look at the level of technical development, we must say that the development and attention to science and education has advanced significantly in the second half of the 20th century and in the present century.

As a result, inventions serve to ease human life and create better conditions. Science is the basis of any developed country. It is no secret that the main part of this is made up of exact sciences. Physics is of particular importance. Therefore, this shows the importance of teaching this subject.

In the system of higher education of our republic, great attention is paid to the training of independent and free-thinking, initiative and willing specialists. Theoretical and practical studies

are being conducted in this regard. [3]. In the new edition of the Law of the Republic of Uzbekistan "On Education", training of highly qualified and cultured personnel capable of independent activity and independent decision-making is defined as one of the main tasks in the higher education system [1].

President of the Republic of Uzbekistan Sh.M. Mirziyoyev In the decree "On approval of the concept of development of the higher education system of the Republic of Uzbekistan until 2030" signed by Mirziyoyev on October 8, 2019: the public under the Ministry of Higher and Secondary Special Education of the Republic of Uzbekistan and the State Inspectorate for Quality Control of Education under the Cabinet of Ministers The proposal to establish the Republican Council of Higher Education in the form of a non-governmental non-profit organization on the basis of the Council and the Council of Rectors of Higher Education Institutions of Uzbekistan was approved. We can recognize these tasks as important tasks of training personnel with research competence in the higher education system [2].

Teaching physics is a pedagogical process, under the leadership and management of the teacher, it allows students to master the basics of physics, to be able to apply the acquired knowledge in life, and to acquire the ability to deal with the techniques of the developed society. As a result of teaching, general polytechnic education, correct scientific outlook, humane feelings and so on should be formed in students. A skilled pedagogue is not limited to having a good knowledge of the basics of science and a solid mastery of its teaching methods, but also to develop the teaching process, the psychological laws of students' mastery of science, the formation and development of practical skills and competencies, and the development of thinking ability. He should know perfectly how to solve educational issues in the development of a person in teaching. It is also necessary for the teacher to be able to consistently apply psychological laws. Social life experience is important in the development of students. So, the teacher should keep this important factor in mind. Analyzing the student's active change under the influence of the environment will make the teacher's work more effective. The teaching process should serve the student's continuous pursuit of self-improvement and positive achievements in this regard.

Relevance of the research topic: As information increases, the problem of delivering it to readers and students also increases. It is necessary to form the ability to deliver the most important information to the audience, analyze it, improve it and apply it within a short period of time. Of course, a pedagogue must be skilled in order to accomplish this task. It is very difficult to convince the listener, who is in the field of various information, of the relevance of the topic discussed in the course of the lesson and to bring it to the appropriate level, using only the previous traditional method. Therefore, the organization of the teaching process using interactive methods increases efficiency.

Currently, the activities of higher education, the processes of teaching and the reception of information by students and their activities in the classroom are extremely important. The quality of lessons and the proper organization of the educational process is one of the main issues of education. As in every field, the formation of knowledge, skills and abilities in students, systematic and solid knowledge, development of logical thinking and creative ability in the teaching of physics is the main requirement of modern education. Relying on practical experiences, strengthening the student's theoretical knowledge acquired in classes, ensuring the active participation of each student in the course of the lesson, developing students' competence is also relevant in physics and other sciences in general.

Technological approach to the educational process - in order to facilitate the student's learning, first of all, to divide the educational material (information) into interrelated parts, fragments (educational elements), and then In order to achieve the intended result, it requires sequential, step-by-step, consistent implementation of educational activities (actions, actions) and simultaneous execution of all the planned works and actions. This is one of the laws of pedagogy, which must be followed in order to apply educational technology. [5] In order to improve the quality of education in the course of the lesson, the use of various new pedagogical technologies and didactic games is introduced, and this method is sufficiently effective today. However, it may be more appropriate if the use of more modern and effective methods is applied to the educational process without stopping at one place. [7]

Setting the problem: Traditional methods are usually used to describe the lesson. However, this method does not always give the desired result and does not justify itself. Improving the technical abilities of students of the technical higher education institution is important in the formation of their professional skills and knowledge acquisition, and it is appropriate to use various interactive methods for their improvement and development in physics classes. Compared to traditional education, the advantage of the form of lessons organized through interactive methods is that a large amount of information can be delivered in a short time based on the basic knowledge of the audience in a sufficient and understandable manner. In the traditional form of education, it is impossible to deliver large volumes of information at the specified time using only chalk. In the interactive method, it is possible to organize an active lesson process with discussion and discussion, with the active participation of students and an interesting atmosphere of the audience. As an example, rather than simply explaining the wiring of electrical appliances through a diagram, if students are asked a discussion question about how to connect electrical appliances, you can get several different answers. This allows you to discuss and learn several methods using time.

During the organization of practical exercises, i.e., problem solving classes, it is possible to consider several ways of solving the problem through the method of problem-based education. The role of interactive methods in the organization of laboratory training is very important. Problem-based learning, case study, and "student" training methods are effective in organizing experimental classes. In fact, the introduction of interactive teaching methods in the educational system creates a wide range of opportunities for students and pedagogues.

Including:

- receiving a large amount of information in a short time;
- to ensure students' activity in the course of the lesson;
- teaching students to think creatively;
- acceleration of information acquisition and orientation to independent work;
- effective work on the information that has not been mastered.

In contrast to the traditional forms of lessons that are usually organized, during lessons organized in an interactive way, students develop independent work skills and increase their potential for acquiring new knowledge. The organization of classes through methods of improving technical ability forms professional skills in students. In addition, problems that are difficult to solve during the lesson can be determined in different ways through the brainstorming method.

The purpose of the study:

Laboratory classes play a key role in improving students' technical skills through interactive teaching methods. The most important issue in the organization of all pedagogical

processes is to interest students in the learning process and ensure their active participation. In the organization of the teaching process, the student's interest is in the first place. The development of students' technical thinking in the organization of lessons requires taking into account their abilities. The fact that the learner feels the achievement he has learned in the lesson increases his interest in the lesson. As a result, the student's interest increases and he engages in independent, scientific research.

This process causes him to develop technical skills and creates a sense of professional responsibility. In the traditional lesson process, the student's activity in the lesson is limited, and the lesson process does not allow the student to exchange information. When the analytical and discussion method of teaching is used, the student reflects, thinks, expresses his opinion verbally, develops technical thinking, develops independent thinking and develops competence. As a result, the student develops skills of professional independence. Since the main goal is to train staff who can think independently and make independent professional decisions, the organization of the pedagogical process using interactive methods is the most effective and modern teaching method.

RESEARCH METHODS

In the modern teaching process, the main goal is for students to learn, think creatively, make independent decisions, and analyze data independently. Making the lessons interesting helps to develop the student's technical thinking. As a result, professional skills are improved. Material and technical bases in higher education institutions are very convenient for good organization of classes. The rooms are equipped with information technology devices, laboratory equipment and computers. Effective use of pedagogical technologies is the duty of the pedagogue. Let's consider the importance of a number of interactive methods, their place in the teaching process and as a factor that develops students' technical thinking.

The following interactive methods can be included in physics classes in order to develop technical skills in students:

1.Case method: The student uses his ability and energy and develops it intellectually. As a result, educational material is quickly and perfectly mastered, it can be kept in memory for a long time and widely used in practice. In this way, the student becomes a better learner, and the teacher becomes a better guide. The case method can be widely used in experiments and practical training. This method is used to develop and analyze theoretical material, obtain experimental results, calculate, analyze and consolidate the results, and control its assimilation. It replaces traditional questions and activates the thinking process of not only the answering student, but also all group members.

The advantages of the case method over the traditional method are:

- students develop listening skills;
- information analysis is achieved;
- creativity is formed.

2. The main purpose of brainstorming training is to find out what students know about the topic and to get more ideas from group members in a short time. In the process of training, students are offered ideas that can solve the educational problem, and an opportunity is created to give feedback on the topic. During such an educational process, group members discuss the topic for a few minutes and express different opinions, and write down their thoughts and suggestions on the board and in their side notebooks. Comments will continue to be written, no matter how vague, absurd, or controversial. At this time there will be no bans and no grades will be given.

At the end of the session, the participants will be given the opportunity to analyze the proposals and give feedback. If the activity is slow, if more correct thoughts do not come out, the professor-teacher tells his thoughts and offers to write down some of them. This method allows the student to defend and prove his point of view, to find the best solution in any situation; teaches to communicate, to convince opponents of the correctness of the expressed opinion. Its educational value is that it encourages students to agree, giving each participant the opportunity to feel that his proposal is worth recording. This makes finding a solution to a learning problem a collaborative effort. [5] It is recommended to use the brainstorming method mainly in practical training classes. Advantages of using brainstorming over the traditional method:

- quick analysis of information and responsiveness is formed;
- finding a clear solution to the given problem in a short period of time is formed;
- creativity is formed;
- speed of thinking increases.

CONCLUSIONS

As a result of the conducted research, we can draw the following conclusions:

- as a result of the use of interactive methods in the course of the lesson, it is possible to develop the student's thinking;
- when these methods are used, the technical ability of the learner is deeply and systematically formed and he learns to follow the sequence in the process of working with a device;
- as a result of the used methods, the student develops and improves the ability to work independently on himself, as a result, new ideas are created, technical creativity skills are formed, which creates scientific curiosity. brings;
- if we take into account that professional skills are one of the requirements for modern personnel, it is possible to achieve professional skills in them by forming a scientific approach to their work;
- as a result of conducting a discussion lesson, the ability to work and deal with a team is formed in the student by forming a culture of hearing, analyzing and correcting the opinions of others;
- as a result of learning how to behave and exchange ideas in a group, the ability to independently express one's opinion increases;
- as a result of analyzing different opinions and studying controversial situations, the student's scope of information acquisition expands and professional competence is formed.

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