



RESEARCH TECHNIQUES AND STEAM TECHNOLOGY IN TEACHING PHYSICS

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ABSTRACT

Physics Greek is a science about natural existence, derived from the words "natural", "nature". Teaching physics in school helps to increase the students' knowledge about being, the surrounding world. Today, the development of continuous education in our country, the introduction of international technologies into public education is improving. This article is devoted to the methods of scientific research in the teaching of physics and the importance of STEAM technology.

Development of innovative and scientific potential in our country today at a time when the movement towards raising spiritual-ethical, innovative, scientific and intellectual potential, education new teaching methods, technologies and innovations to the processes implementation is our primary duty. On April 29, 2019 "Uzbekistan The concept of development of the public education system of the Republic until 2030 "On approval" in the Republic of Uzbekistan general secondary and setting priorities for systematic reform of extracurricular education, spiritual, moral and intellectual development of the growing young generation raising to a new level, innovative education in the educational process It is intended to introduce forms and methods. Education, in a word, the

future perspective of the country education and literacy of the young generation that will provide. Various scientific research the use of methods in the process of teaching physics increases the effectiveness of education, forms the independent thinking process of students, the topic in students increases enthusiasm and interest in learning, strengthening acquired knowledge, mastering skills and abilities to freely use them in practice forms. It was an important tool for the implementation of pedagogical technologies interactive methods for teachers to repeat in different subjects, in different groups creates comfort. "Cluster", "Siquain", "Perceptual Map", "Venn Diagram", "Blitz - survey", "Analysis of concepts", "Charkhpalak", "Zinama-zina", "Zig-zag" Interactive methods are reproducible, flexible, they are



different creates an opportunity to apply science in teaching. Moreover, nowadays "Charkhpalak", "Brainstorming", in the experience of secondary school teachers "Round Table", "BBB", "Boomerang", "Cluster", "Test", "PIZA" and small methods of working in groups are used. For example: "BBB" (I know, I want to know, I learned) method encourages students to think independently. Responsibility for mastering knowledge and cultivates interest. Using this method in the 7th grade physics lesson is as follows possible For this, the teacher draws a table with three columns on the board. First to part "I know", to the second part "I want to know", to the third part "Know I got it," he writes. After the thoughts in the class are over, address the students again and asks what else he would like to know about "Dinamika". It is used to monitor the knowledge of schoolchildren About the "Test" method. The term "test" was first coined by the American psychologist J. Kettel introduced in 1890 by The term "test" is derived from the English word "test" and means inspection, control, test. The term "test" in pedagogy students with a unique form and content, different levels of difficulty tasks that provide an opportunity to objectively assess the level of mastery consists of a system. Test assignments - objective control of educational results is one of the didactic and technological tools. All with the help of tests checking students' knowledge at the same time, taking them to training teaching to prepare, to develop independent study skills, opportunities such as strengthening discipline are created. Students of tests

Types and classification according to the level of mastery:

1. Recognition tests - yes or no, true or false answers

consists of a question. In the assignment, the student must know or

It is asked about the object, which should have an idea about its properties.

2. Differentiation tests - tests with one or more correct answers.

3. Comparison tests - finding commonalities or differences in the studied objects

is requested, in which the characteristics or parameters being compared are in the assignment condition will be given.

4. Multiple-choice test tasks - assignment condition and all necessary

initial information is given, answer options are given. The reader is given it will be necessary to show the solution of the task and what is the correct answer.

About STEAM technology. STEAM educational technology school is a new method of teaching students, different from the traditional teaching method is a different methodology. He teaches students five subjects at a time (Science), technology (Technology), engineering, (Engineering), visual arts (Art), intended for teaching mathematics (Math). in STEAM science is not an integrated teaching system by subjects. STEAM education means scientific and technical knowledge in real life with the help of practical training application is understood. One of the methods used in STEAM technology is Heuristic learning is a method. The meaning of the word heuristic is "I find" based on the question and answer. means Teaching with the heuristic method in schools is mainly from the beginning of the 19th century started to be used. In order to make the exercises in physics interesting, this is it for memorization of every problem or task in



training verbatim rather, they should have a character that activates their higher activities. American scientist D. Poya said about the heuristic education method:

"The purpose of heuristics is to search for methods and rules that lead to innovations means". The essence of the heuristic method is through the following plan recommends the implementation of:

1. Setting a problem or a practical task to understand
 2. Making a plan to solve the problem.
 3. Implementation of the established plan.
 4. Looking back (checking the created solution). Carry out this plan
- in the process of improvement, teachers will find answers to the following questions.
1. In the matter what is unknown
 2. What is known about the issue?

3. What are the conditions of the matter? consists of?

4. Have similar issues been resolved before?

5. If it's like that

If the problems are solved, can it be used to solve the problem?

Of course, the above plan-scheme is the students' creative thinking activities but this plan forms the students' creative abilities there cannot be one way of shaping. In conclusion, it can be said that scientific research in secondary schools using methods, widely introducing STEAM technology into educational processes not only improving the theoretical knowledge of the young generation, encourages them to enter practical and professional processes faster. This is our country one of the achievements of modern education.

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