

## METHODS OF CONDUCTING DEMONSTRATION EXPERIMENTS USING THE PLATFORM "PHYSICS AT SCHOOL"

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### Annotation:

The article briefly describes the result of the work on conducting virtual demonstrations and experiments using digital technologies in the teaching of physics.

**Keywords:** demonstration experience, hands-on training, laboratory work, digital technology, virtual.

In our country, great attention is paid to improving the quality of teaching in secondary schools, introduction of modern teaching methods in the educational process, selection of talented students, training of competitive specialists in the labor market.

But there are a number of problems that have not been solved in the field, which indicate the need to further accelerate the work aimed at improving the quality and effectiveness of Education. These problems are also present in the process of teaching physical science among all subjects. Including:

- students' interest in physics is not given enough attention, educational programs are not focused on the formation and development of independent, creative thinking in students, the work carried out to ensure the quality of education does not meet the modern requirements;
- the creation of modern textbooks on the subject of physics is not well established, the content of the educational literature does not adequately cover the current level of development of Science and technology, a set of issues, practicum, manuals for laboratory work, attention is not paid to the creation of multimedia programs;
- it is necessary to point out such problems as the fact that secondary schools are equipped with modern equipment for performing experiments, practical and laboratory work on Physical Science [1].

One of the important areas of elimination of the above mentioned problems is the use of virtual models, experiments in the educational process.

Virtual models in physics lessons, above all, allow students to develop experimental, research activities. Computer models are an excellent tool for organizing such events. Computer simulation allows you to create a bright, memorable dynamic image of physical experiments or events on the computer screen and opens wide opportunities for the teacher to improve the lessons.

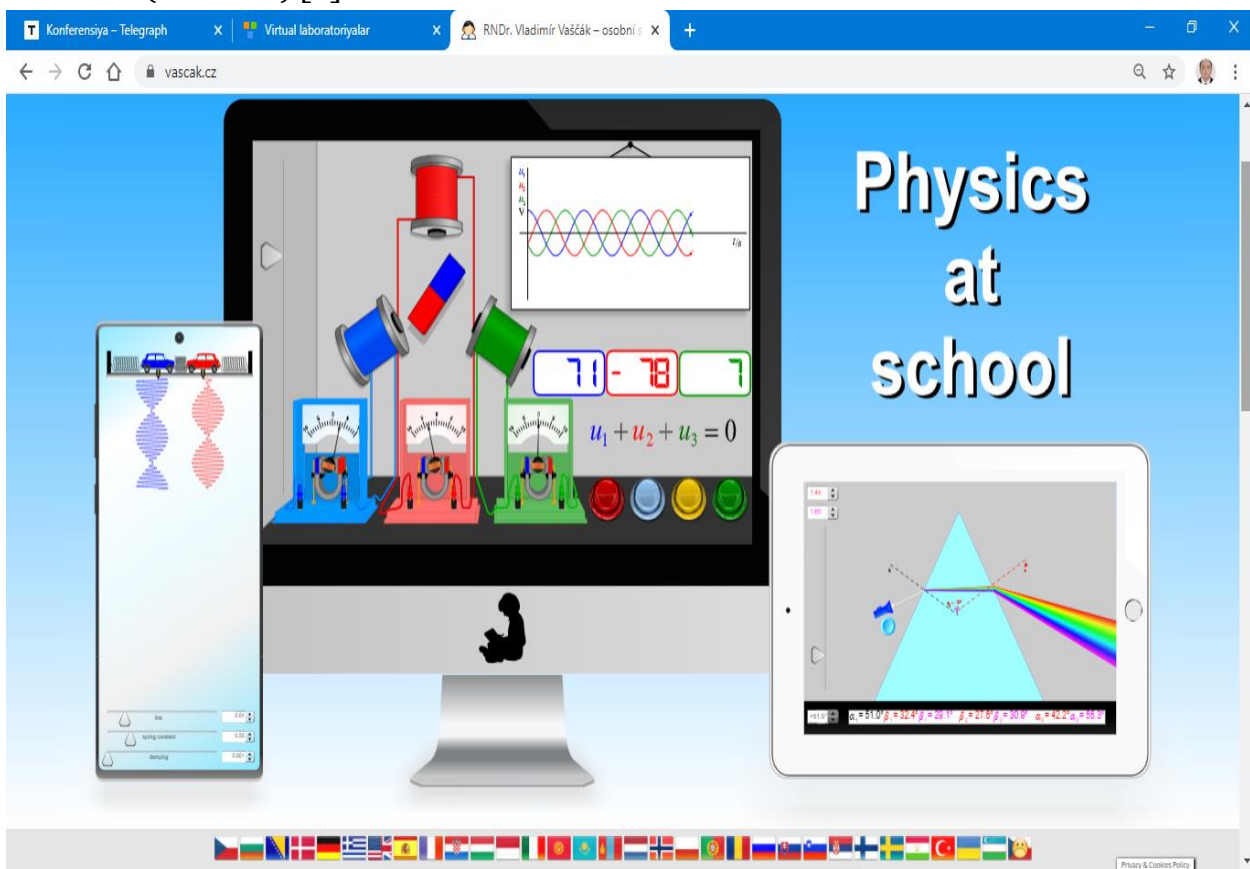
Also among the students, the greatest interest is in computer models, through which it is possible to control the movement of objects on the computer screen by changing the values of the numerical parameters that lie on the basis of the mathematical model. Some models provide an opportunity to observe time-bound graphs of a number of physical dimensions, which characterize the experiment in Dynamic mode at the same time during the experiment. Such models are especially valuable,



because students face great difficulties in drawing and reading graphics. Computer models easily fit into a traditional lesson, allowing real processes to be displayed almost "live". In addition, computer models allow the organization of new, non-traditional types of Education.

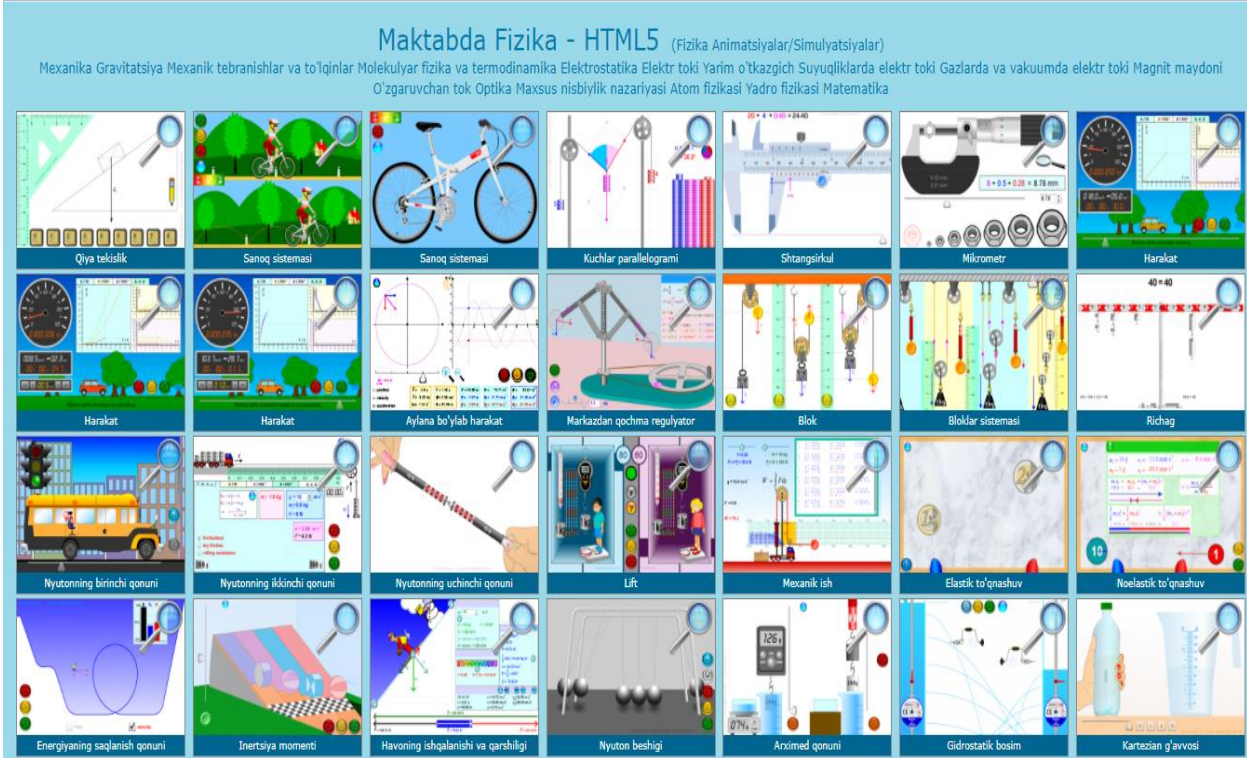
The use of virtual models allows you to simulate a variety of processes and events, significantly expanding the possibilities of practical training, where full demonstration in the laboratory is technically very difficult or impossible. This technology can be adapted to any lesson and can effectively help the teacher and the student. Another important point is that there are some processes or events that cannot be visually observed in a laboratory setting, such as the movement of a satellite around the Earth. In this case, the manifestations of computer simulations are invaluable, since they allow you to "squeeze" the time and space Circle and at the same time get conclusions and results that correspond to reality.

The use of direct Internet resources in the organization of the teaching process using virtual demonstration experiments and virtual laboratory work is becoming increasingly popular. One such resource, which can be used in the teaching of physics, is the platform "**Physics at school**". This resource contains computer animations and simulations covering almost all sections of the school physics course (Picture 1) [2].



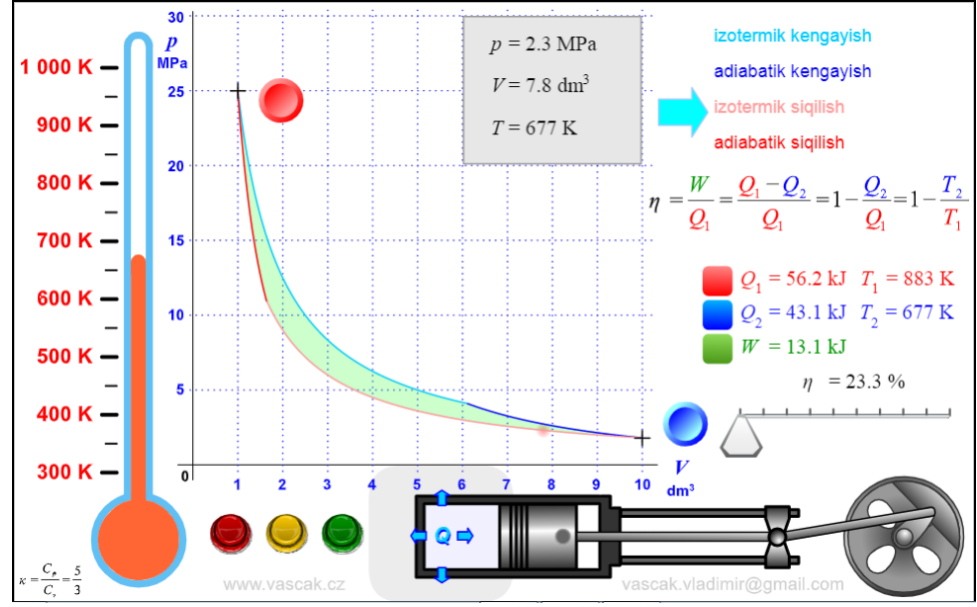
Picture 1. The main window of the platform "**Physics at school**".

As a result of our joint efforts with the administrator of this platform Vladimir Vascak, the opportunity to use the platform in Uzbek was created today. Move to the Uzbek version of the platform with the mouse to select the flag of the Republic or <https://www.vascak.cz/physicsanimations.php?l=uz> it is carried out by contacting the address. The Uzbek-language version of the platform includes 290 animations and simulations, consisting of 16 sections, which can be used in teaching the school physics course (Picture 3).



Picture 2. Platform sections "Physics at school".

The resources of this platform can be used as a demonstration experience in the teaching of physics, or as virtual laboratory training. As an example, we brought a simulation of the "Karno cycle", which can be demonstrated in the 10-th class physics course. This simulation is accompanied by a visual reflection of the processes that take place in the heat transfer machine, in the graphical image of the process, reflects the state of the heat transfer machine, as well as the formulas for the subject. (Picture 3)



Picture 3. Simulation "Karno cycle" on the platform "Physics at school".

The use of virtual models as above in the teaching of physics makes it possible to more successfully solve the following tasks in the training process:

- ❖ to develop the imagination of the readers by presenting the processes visually using a wide range of possibilities;



- ❖ development of creative thinking in students using dynamic methods of information processing and presentation;
- ❖ to carry out cooperation and interpersonal communication training through the exchange of data between students in the discussion of the simulation process or in the performance of virtual laboratory work;
- ❖ to develop cognitive interest based on the natural desire of students towards computer technology.

As we all know, students perform practical, experimental and laboratory work with great pleasure and diligence in direct contact with tools and objects. Of course, virtual demonstrations and experiments are not exactly a substitute for traditional physics lab work, but are also used as a complement to them [3].

### **LIST OF REFERENCES:**

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