

## MODERN INFORMATION IN TEACHING PHYSICS USE OF TECHNOLOGIES

---

*Kodirov Saidkosim Polatkhan ugli*

*Physics teacher of TDTUOF and Nurli Kelajak educational center*

**Abstract:** The article provides information about the method of teaching physics in general secondary schools and the importance of educational principles are discussed, scientific conclusions are presented based on statistical data, and since physics is considered an applied science, it is effective to teach it through experimental methods. The article discusses the advantages of experimental physics classes, including the analysis of virtual experiments.

**Key words:** *Physics, experiment, method, virtual experiment, laboratory, general secondary education, school, physics, modeling, method.*

Changes taking place in our republic cover all spheres. In every speech put forward by the President, including in his address dated December 29, 2020, he identified physics and learning foreign languages as a priority, the main goal of the strategy of actions and steps taken to develop the state and increase the well-being of the people is the people's interest. It consists of five paragraphs, the fourth paragraph is focused on the field of education. The development strategy of the Republic of Uzbekistan is primarily determined by the directions of socio-economic reconstruction in the society. For the successful implementation of the above-mentioned measures, physics is the basis of most fields.

The development of physics and the study of physics are inextricably linked with the construction and study of models of various physical phenomena. Therefore, one of the urgent problems is the creation of scientifically based approaches to the learning of simplified equivalent models of physical laws by intelligence.

Computerization has a huge humanistic potential, which both facilitates work and ensures speed. With the help of facilitating labor, a difficult, dangerous share is carried out by expanding the creative possibilities of a person. The development of information and intellectual potential and the development of the "Knowledge Industry" is one of the main consequences of the computerization of society. Reducing the number of routine processes allows you to focus on creative problem solving, allowing one person to combine several functions performed by several specialists. The logical and managerial functions associated with responsible decision-making are associated with information and computing equipment. The widespread use of information and computing technologies helps to make decisions for the development of professional activities. "In the educational process, the most urgent problem is to discover a new

teaching method for each subject of physics. This is directly related to the reform of the teaching process, i.e., it will consist of introducing a new teaching method that corresponds to the possibilities of real knowledge of the studied subject by students based on an innovative approach to educational materials." In teaching physics based on pedagogical software tools, scientific-methodological researches aimed at the development of students' intellectual potential are the most important current problems, and students' thinking is developed through computer models of physical phenomena. Currently, performing models of physical phenomena and virtual physical experiments with the help of computer technologies has a practical effect on the development of the intellectual potential of schoolchildren. Computer models of many physical phenomena are very easy to explain the physical phenomenon and serve to develop students' cognitive abilities and imagination. For example, material point, ideal gas, harmonic oscillator, model of Rutherford experiment, charged particles are among them. Physical models are also widely used in education. Educational computer models in the form of virtual physical experiments have a high role in teaching physics. In addition to visual representation of standard laboratory work in physics, virtual physics experiments will be able to demonstrate various physical phenomena that cannot be performed in the classroom. Based on the fact that this is the basis for the development of students' mental thinking, it should become one of our main goals to establish the teaching of physics using pedagogical software tools and to conduct scientific methodical research on the development of students' intellectual potential. Physics cannot be studied without an experimental part. Much can be said about the need to move to new standards of education, the need to introduce information technologies into the educational process. Currently, more attention is paid to virtual laboratory work on various topics. They should only be supplemented without completely changing the actual laboratory work being given. In addition, virtual laboratory exercises should be used in training only after the student has familiarized himself with real devices. Laboratory work in physics is divided into the main sections of the program. There are 3D options for lab work. A virtual laboratory is a hardware and software complex that allows you to conduct experiments without direct contact with the real installation or in its complete absence. In this case, the concepts of "virtual laboratory" and "virtual remote laboratory" should be distinguished. The basis of a virtual laboratory is a computer program or a set of related programs that perform computer modeling of certain processes. A remote virtual laboratory is a group organizational structure of several scientists belonging to different scientific centers and connected by mutually beneficial cooperation relations through the Internet. Compared to traditional laboratory work, virtual laboratory work has several advantages. Nowadays, in the development of modern technology, physics plays the main role among natural sciences. At this point, it would be appropriate if the teacher

tells the students that physics, like other natural sciences, studies nature, the phenomena and processes that occur in it, and reveals their essence. The changes taking place in the developing society require changes not only in the content, but also in the methodological and technological aspects of education. Today's task of education is to teach students to be able to operate independently in the conditions of an information-educational environment that is increasing day by day, to use the flow of information wisely. The rational use of its principles in the educational process is one of the important factors in determining the quality of education. The process of scientific knowledge in the presentation of educational material is very important at the initial stage of teaching physics. In the process of studying physics, students consider complex natural phenomena as abstract concepts that cannot be studied. Any physical concept, physical quantity, laws and elements of physics are the result of abstraction. When explaining the concept of flat motion, the teacher explains it to students through real actions and objects that they encounter in their daily life or experience. In this case, the modeling method will help. Based on the scientific principle of education, only scientifically based, experimentally confirmed information should be presented to the attention of students, and at the same time, the newest achievements of science should be included in the content of physics education. It is very important to know the goals of the educational process, their general directions, peculiarities, and the relationship between the types of education. If the composition of existing types of education, the technology of educational organization, and the potential of teachers and students are compatible, education will be directed to the acquisition of specific knowledge, skills and abilities of students. In this case, the goals of spiritual and educational development of students remain only as official documents. The introduction of elements of students' research activities into pedagogical technologies helps the pedagogue to direct the students' learning and cognitive activities. First, there is no need to buy expensive equipment and dangerous radioactive materials. For example, laboratory work in quantum or atomic or nuclear physics requires specially equipped laboratories. And virtual laboratory work allows to study such phenomena as the photoelectric effect, Rutherford's alpha particle scattering experiment, crystal lattice detection by electron scattering, gas laws, nuclear reactors, etc. Second, it is possible to simulate processes that do not exist in the laboratory. In particular, most of the classical laboratory works in molecular physics and thermodynamics are closed systems, at the output of which a certain amount of electrical quantities are measured, from which the necessary quantities are calculated using the equations of electrodynamics and thermodynamics. They can use animated models to observe the dynamic pictures of the studied physicochemical phenomena and processes that cannot be observed in real experiments, while observing the corresponding graphical structure of physical quantities along with the experiment. Third, virtual laboratory work can

visualize physical or chemical processes more visually than traditional laboratory work. For example, physical processes such as the movement of charged particles that create electricity will be possible to study in greater detail and precision. You can also access processes that take fractions of seconds or take years, for example, studying the motion of planets in the gravitational field of a central body. Another advantage of virtual laboratories over traditional laboratories is safety. In particular, it is appropriate to use virtual laboratory work in situations where you work with high voltage or hazardous chemicals. However, virtual ones also have their drawbacks. The main thing is the lack of direct contact with the object of study, tools, equipment. It is absolutely wrong to train a specialist who only sees a technical object on a computer screen. There may be those who wish to refer to a surgeon who previously only trained on the computer. Therefore, the most reasonable solution is to combine the introduction of traditional and virtual laboratory work into the educational process, taking into account their advantages and disadvantages. The use of virtual laboratory work is important in the study of physics. A deep understanding of physics comes in handy in virtual laboratories to study theory and solve various computational, qualitative and experimental problems. If the student gets acquainted with theoretical questions in lectures, then the theory is applied in laboratory exercises, and in addition, practical skills are formed in conducting physical measurements, processing and presenting results. Without independent preparation for laboratory work, it is not possible for students to successfully defend the results of laboratory work. In the process of preparing for the next lesson, first of all, it is necessary to study the description of the work performed in this manual. Therefore, for each work in the textbook, it is necessary to read the material corresponding to the topic of the work. It is impossible to start work without mastering its main theoretical principles, without being aware of the logic of the measurement procedure, without using the measurement tools related to this work.

#### References:

1. Каримов Р.Х. Использование принципа игрофикации при организации электронного обучения // Электронное обучение в непрерывном образовании. – 2018. - Т. 1. – № 1 (2). – б. 68-72.
2. Raximov N., Rasulov R. Nanofizika va nanoelektronika asoslari. Namangan, 2019. 104 b.
3. Raximov A. Elektrotexnika va elektronika asoslari. –Т.: O„qituvchi, 2018. 255 b.
4. [www.ziyonet.uz](http://www.ziyonet.uz)