



**THE IMPORTANCE OF USING VIRTUAL LABORATORIES IN
TEACHING PHYSICS**

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Annotation. Nowadays, modern technologies teach them to search for the knowledge they possess, independently learn and analyze it, even to bring the hulosas themselves.

Keywords: technology, model, virtual laboratory, interactive method, material point, ideal gas, harmonic oscillator

The main thing from the goals and objectives of using interactive educational methods in teaching the physics course of a comprehensive school is to change the student's approach to theoretical, scientific, science with pedagogical skills and virtual laboratoriums in the course of the lesson. Thanks to the implementation of physical models using computer technology, it is a relatively new direction both in scientific research and in the educational process. The development of physical science and the study of physics are inextricably linked with the construction and study of models of various physical phenomena. Therefore, the creation of scientifically based approaches to the study of simplified equivalent models of physical laws by intelligence is one of the pressing problems.

In teaching physics on the basis of pedagogical software tools, scientific and methodological studies aimed at developing the intellectual potential of students are the most important pressing problems, and the thinking of students is developed through computer models of the physical phenomenon. Currently, the implementation of models of physical phenomena, virtual physical experiments with the help of computer technology has a practical effect on the development of the intellectual potential of schoolchildren. Computer models of many physical phenomena are very easy to explain a physical phenomenon and serve to develop students ' cognitive abilities, imagination.

For example, the material point, the ideal gas, the harmonic oscillator, The Rutherford experiment model, are charged particles. Physical models are also widely used in education. Educational computer models in the form of Virtual physical experiments have a role in teaching physics at the level of yu qori.

Virtual physical experiments in Physics in addition to the visual demonstration of standard laboratory work, it will be possible 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, through this, to carry out scientific methodological research of the development of students' intellectual potential.

Physics cannot be studied without an experimental part. Much can be said about the need to switch to new educational standards, the need to introduce information technology into the educational process.

Currently, more attention is paid to virtual laboratory work on various topics. Without completely changing the work of the given real laboratory, only they need to be replenished. In addition, virtual laboratory training should only be used in training after the reader is familiar with real devices.

Another advantage of Virtual labs over traditional labs is security. In particular, it is advisable to use virtual laboratory work in cases with high voltage or hazardous chemicals.

However, virtuals also have disadvantages. The main thing is the absence of direct contact with the object of study, tools, equipment. It is absolutely impossible to train a specialist who sees a technical object only on a computer screen. It is possible that there were those who previously wanted to consult a surgeon who only practiced at the computer. Therefore, the most rational solution is to combine the introduction of traditional and virtual laboratory work into the educational process, taking into account their advantages and disadvantages.

In the study of physics, the use of virtual laboratory work is significant. Deep understanding of physics makes it possible for virtual laboratories to study theory and solve various computational, qualitative and experimental problems. If the student gets acquainted with theoretical questions in the lectures, then the theory is used in laboratory classes, and in addition, practical skills are formed in conducting physical measurements, processing and presenting results.

Without independent preparation for laboratory work, it is impossible to qualitatively and successfully protect the results of laboratory work by students. In the process of preparing for the next lesson, it is first necessary to study the description of the work performed in this guide. Therefore, for each work in the textbook, it is necessary to read the material corresponding to the topic of work. Without mastering its basic theoretical principles, without being aware of the logic of the measurement procedure, it is impossible to start work without the use of measuring instruments related to this work.

Nowadays, interest in the application of innovative technologies, pedagogical and information technologies in the educational process, attention is gaining strength day by day, one of the reasons for this is that, until then, in traditional education, students are taught to acquire only ready-made knowledge, while modern technologies teach them to search for the knowledge they are acquiring, independently study and analyze, even





Our task, on the other hand, is to discover a new teaching method for a different graduate of physics in the learning process, which consists in increasing the knowledge of students using interactive methods and other methods. This is directly related to the reform of the course process, that is, it will consist in the introduction of a new method of teaching, which corresponds to the possibilities of familiarization by students of the subject, which is studied on the basis of an innovative approach to educational materials.

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