

Methodology of Using Innovative Technologies in Teaching Physics in General Education Schools

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Abstract: Today's modern world is a modern look at every detail in the field of Education encourages to look with. Including each subject in addition to its own teaching methodology, in a way that also embodies modern innovative technologies in it teaching students is one of the pressing issues on the same days. In this article the author details the importance of Physical Science in the world community and the use of innovative technologies in teaching this science to students was.

Keywords: technology, innovation, physics, pedagogical technologies, training methodology of science, traditional education.

It is known that today in our society, it is necessary to use traditional, exemplary, modern teaching methods in order to educate students to be well-educated and highly spiritual in all aspects. Physics provides an opportunity to understand the environment surrounding us, natural processes and laws.

The science of "Physics" helps students to better understand the events taking place in the world, and explains that everything in the universe is made of small particles - atoms. Studying "Physics" is considered to be very difficult, students will definitely face these difficulties when entering a higher education institution in the field of physics in the future. Including the atomic physics section of "Physics" is considered a very difficult section for students to understand. The main difficulty in teaching is that there is almost no demonstration.

The difficulty of teaching atomic physics in general secondary schools is that it is limited to show real experiments. The reason for this is that most experiments have a dangerous effect on the human body. General secondary school facilities cannot fully meet the requirements of such poverty.

It is known that nowadays the number of innovative technologies and interactive methods has greatly increased. We present below the methods of use of some pedagogical technologies that are widespread in educational institutions and can be used in specific subjects and subjects. [1]

Physics is the theoretical basis of modern technology. Also, the fact that many aspects such as electrical engineering, radio engineering, electronics, thermotechnics, and communication tools were created on the basis of physical inventions is of great importance for schoolchildren. After graduating from technical schools, young students who have obtained the specialty of a junior specialist work in the fields of production typical of different regions of our country.

- aspects of digital educational technologies as educational tools, such as electronic textbooks, computer-based testing, use of video techniques in distance education;
- students' computer literacy.

➤ Internet connection and use of e-mail.

Wide use of digital educational technology primarily increases the efficiency of students' independent learning. Therefore, the integrative teaching process requires the use of the latest methodological achievements. We meant that electronic textbooks are also very important. We consider it appropriate to start using them from the lower level.

It is known that one of the important elements of the use of digital educational technologies in physics integrative classes is conducting video technology in connection with distance learning. The use of modern pedagogical technologies in training sessions not only increases the effectiveness of teaching, but also makes it possible to establish good feedback. That is, it improves the possibility of teaching in the block-module system. It requires compliance with didactic principles in teaching integrative lessons based on digital educational technologies.[1]

It is interesting to use a computer model in physics lessons, in particular, the school increases the level of knowledge of students and provides an opportunity to study information technology, and the features of more harmonious intellectual development of students increase.

When teaching physics to schoolchildren, it is necessary to reconsider the following issues: development of complicated graphic-based connected illustrations in some sections, the method of processing the usual table or analytical view, the method of showing technical and demonstration experiments and the method of showing technical and demonstration experiments, visual solution of physical problems.

When developing the methodology of visual teaching, it is necessary to isolate the main feature of the studied phenomena, that is, to turn it into a model. A model means to correctly interpret this feature and prepare this model in such a way that students can interpret it in their imagination.

It is necessary to pay special attention to the static and dynamic model. Dynamic computer modeling has a more reliable appearance and can show the dynamics of various physical processes very well.

At present, the attitude towards visual teaching of physics has changed. Various computer models have become widespread, and in the future, the relationship between teachers and teachers in physics education will create many opportunities for teachers in physics education.

It is possible to increase the effectiveness of the process by using them in combination with other visual teaching tools.

As an indicator of the effectiveness of the computer model, it is possible to take the intellectual development of students. To increase this indicator, the content of the lesson in the prerequisite should be consistent with the purpose of the dynamic computer model. It will be possible to increase the effectiveness of the teaching process by using them in combination with other visual teaching aids.

Using computer technology, it is possible to reliably, quickly and accurately calculate physical phenomena and processes in school conditions, and to repeat experiments many times based on various initial data.

The main condition for increasing the effectiveness of visual teaching is to increase the cognitive activity of students, in which, in order to increase the volume of independent work, a communication dialogue between the student and the computer is organized.

The following requirements will be fulfilled by practical full implementation of demonstration experiments based on the computer model: vision, special emotional mood raising. An approach appropriate to the purpose and function of the educational material suggests the use of a number of options for explaining the new material of the dynamic computer model:

1. Knowing their mechanisms based on theoretical phenomena;
2. Knowing the theory based on historical experiences;

3. Knowing that the material in the theory is extremely difficult;
4. Learning by applying the demonstration in the life and technique of the phenomenon being studied;
5. Learning new material by making graphics;

The use of modern scientific achievements in the educational process in accordance with the capabilities of the pedagogue is regulated on the basis of didactic principles. The implementation of these principles in laboratory training is considered an important task, and the use of ICT in the educational process in research is approached on the basis of didactic (instructiveness, scientificity, consistency, compatibility of theory with practice) principles. These principles are especially evident in performing physical experiments. Laboratory training has a great impact on the development of professional competence and professional competence of students in their future professional and pedagogical activities.

Effective use of information technologies in the conduct of laboratory training on "Mechanics", modeling of laboratory work with the help of computer technologies, methods of using interactive educational technologies in training, dedicated to the development of software tools that increase educational efficiency is processed.

When organizing and conducting laboratory classes on the physics of mechanics and demonstrating them on the basis of virtual developments, the pedagogue acquires the following qualifications and skills, and creates the basis for the development of the scientific outlook of students on this department:

- in the process of observing, imagining and studying phenomena related to the subjects of the "Mechanics" department, expand the scientific outlook of the students on the basis of quantum mechanical parameters;
- observation of physical phenomena, qualitative and quantitative study of the research method, introduction to the theory and confirmation of its conclusions, proving the solution of the problems of application of physical laws on the basis of experiments;
- to successfully demonstrate the laws of the department on the basis of virtual developments and to compare and justify the results obtained from them in accordance with theoretical information;

To have technical knowledge in the use of physical devices, assembly of the device and compliance with certain safety requirements for the correct and accurate conduct of the given experiment in laboratory work

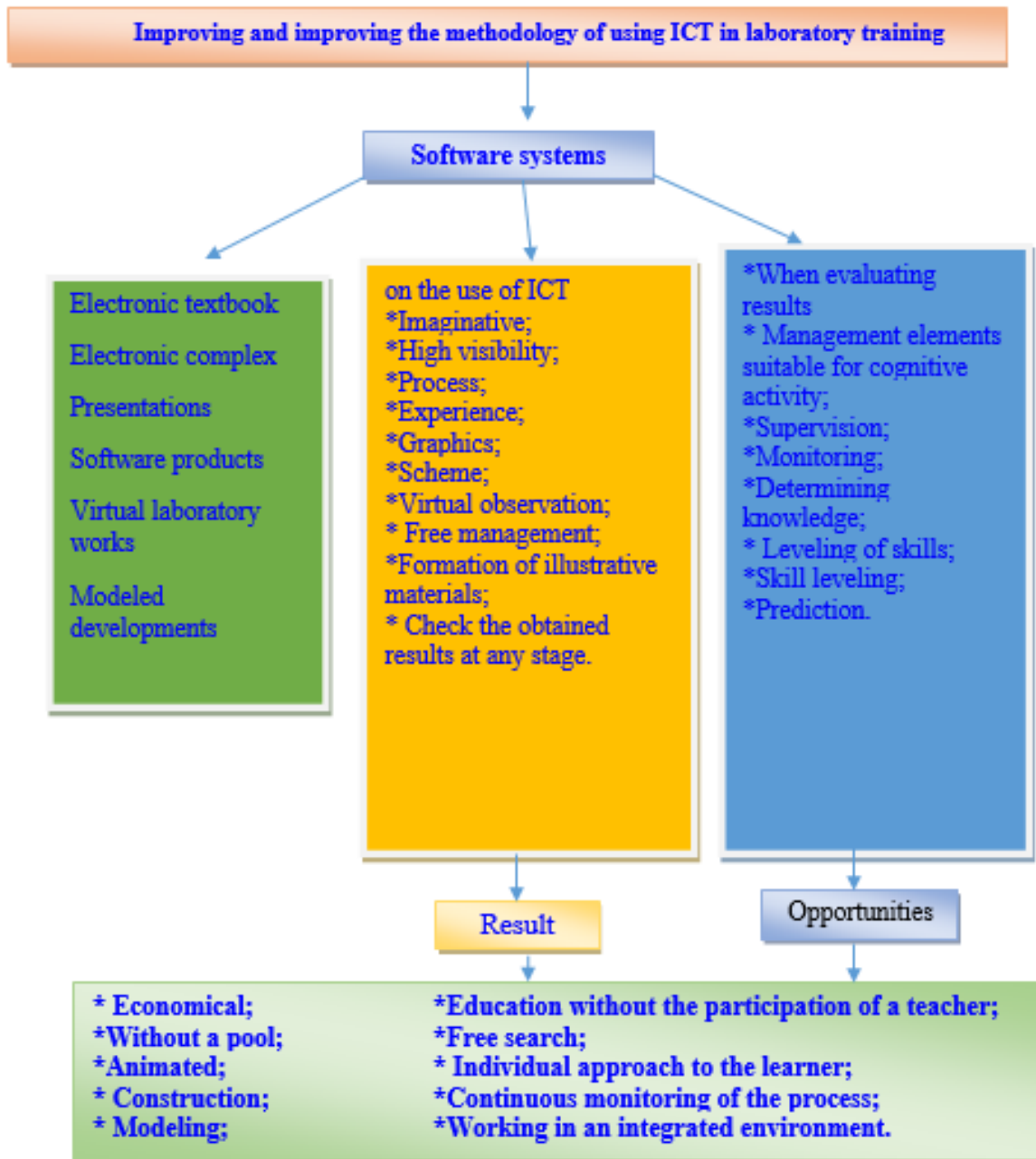


Fig.1. Model of using ICT in laboratory training

- observation of physical phenomena, qualitative and quantitative study of the research method, introduction to the theory and confirmation of its conclusions, proving the solution of the problems of application of physical laws on the basis of experiments;
- to successfully demonstrate the laws of the department on the basis of virtual developments, and to compare and justify the compatibility of the results with theoretical information;
- to have technical knowledge in the use of physical devices, assembly of the device and compliance with certain safety requirements in order to correctly and accurately conduct the given experiment in laboratory work.

In order to improve the methodical support aimed at fulfilling these requirements, an electronic complex (program) of virtual laboratory training on "Mechanics" was developed and put into practice. The electronic program for laboratory training combines the possibilities of educational tools (didactic, technical, auxiliary) into a single system, and the purpose of collecting experimental devices for individual work in training, comparing results, creating opportunities for free management, and a comprehensive approach to the process. focused on execution. In the

process of research, the following sections were focused on developing the capabilities of this system:

- educational and methodological support;
- electronic resources (virtual, software, multimedia developments);
- entering, processing, summarizing the results;
- the use of knowledge acquired in the educational process and the achievements of modern science in accordance with the capabilities of the pedagogue in the educational process is regulated on the basis of didactic principles.

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