

DIDACTIC OPPORTUNITIES TO USE VIRTUAL LEARNING TOOLS IN THE PREPARATION OF FUTURE TEACHERS FOR PROFESSIONAL CAREERS

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ABSTRACT

In the process of professional training of future teachers in higher education institutions of the Republic of Uzbekistan to teach methods of designing information space in personal and professional activities, tools for creating personal and professional web pages, 3D animated presentation materials, software for creating virtual laboratory work, software tools ideas were expressed on the basis of a systematic analysis of e-learning opportunities aimed at organizing the learning process, introducing the possibilities of organizing the learning process using Web technologies and improving the quality of higher education.

Keywords: Information space, design, 3D animation, virtual laboratory, web page, technology, e-learning.

INTRODUCTION

Modernization of the education system in our country creates a need to improve the educational process in higher education institutions, aimed at training competitive professionals who meet the requirements of educational standards of developed countries. Therefore, the introduction of modern information technologies, virtual laboratories, full satisfaction of students' information needs, access to the global information community and access to global information resources in the "training of highly qualified personnel with modern knowledge and independent thinking" for the development of specific disciplines serious attention is paid to creating conditions.

This article will serve to a certain extent in the implementation of the tasks set out in the Decree "On approval of the Concept of development of science until 2030" and other regulations related to this activity.

An important task for future teachers of "Technology" is to develop the skills of teaching "Physics" on the basis of virtual education, effective preparation for creative activities, the successful implementation of the educational process.

Based on the above considerations, it has become clear that a number of tasks need to be performed to increase the efficiency of the education system using integrated virtual learning tools. In particular, the selection and integration of optimal content in the field of education requires a systematic analysis of the necessary problems, the development and implementation of programmed virtual learning tools.

LITERATURE REVIEW

One of the innovative tasks of today is to further develop the system of continuing education, increase the quality of educational services and opportunities for students, training qualified personnel. It emphasizes the importance of creating an e-learning environment, while ensuring the integration of science, education and industry, in radically improving the quality of education. Therefore, the development and implementation of integrated virtual learning tools in the professional training of future teachers of technology in order to prepare the younger generation at a high level in the implementation of the established requirements is one of the important issues.

Based on the important tasks described above, to educate future teachers of "Technology" as teachers with high intellectual potential in "Physics", professionally mature, creative thinking and observation on the basis of innovative achievements of science. and the creation of a new generation of virtual learning tools programmed to train competitive, highly qualified personnel.

Of A.R. Juraev "Improving the methodology for the formation of professional competencies of future teachers based on training software" In the dissertation of Doctor of Philosophy (PhD) in pedagogical sciences, on the basis of programmed teaching aids (convenience, visual, practical orientation) by developing didactic opportunities for the formation of general technical skills in the qualification requirements through the use of programmed teaching aids in the preparation of future teachers (expansion-computational-graphic, technological-design, creative design), improving the development of interactive teaching methods on the basis of the laws of virtual reality.

METHODOLOGY

On the basis of the method of statistical analysis, the scientific and methodological literature on the research topic was systematically studied and advanced innovative and pedagogical practices were generalized.

Based on the observation method, the organization of teaching the subject "Physics" in higher education institutions in the direction of 5112100-Technological Education, the process of conducting lectures, practical and laboratory classes was observed.

Based on the method of comparison, the theoretical foundations of the integration of virtual learning tools and didactic possibilities of teaching were compared with the educational and methodical literature on the subject "Physics".

On the basis of the experimental method, the normative documents of higher education and the experience of professors and teachers were studied. On the basis of the laboratory, experimental lessons were conducted.

STATEMENT OF THE PROBLEM

Today, the material and technical base of laboratory rooms (laboratory equipment) is not formed at the required level in the organization of practical and laboratory classes on the subject of "Physics", which is an element of the qualification requirements in the process of professional training of future teachers of technology. and the fact that the existing ones do not meet the requirements of innovation and are obsolete has a negative impact on the level of mastery in science.

In the process of professional training of future teachers of Technology, the concept of a virtual laboratory has a much broader meaning from a methodological point of view, and high efficiency can be achieved by using the subject of "Physics" in practical and laboratory classes.

The problem with the use of virtual laboratories in the teaching of physics is that the methodological framework for such teaching has not yet been sufficiently developed, although it has been developed, it has not been popularized and has not been put into practice in the teaching process.

RESULTS

In the e-learning environment, there are specific problems in the organization of laboratory work, which can be organized using virtual laboratory work. In this training module, pedagogical software tools are widely used to solve the above problem, and the mastery of the subject by students in the learning process has led to positive results. In the process of using pedagogical software tools (a simulator that allows you to visualize a process), students apply the theoretical knowledge learned during the lecture, albeit virtual. In the process of these studies, in addition to further strengthening their knowledge, they directly contribute to the development of theory and life research. They can also contribute to the further development of simulators, bringing them to a level that gives close results to real-life research. Today, the rapid development of science and technology makes it difficult for real-life research equipment to go hand in hand with this development. In particular, the simulators do not have such obstacles. There are also objections to the use of simulators. The first is that simulators cannot fully express real objects and processes. The results obtained using simulators lead to differences between the results obtained from life experiences.

Crocodile Physics software. The Crocodile Physics program is a constructor that allows you to create and monitor virtual laboratory work in the fields of mechanics, electrical, optics, and wave phenomena in physics. This program can be used by students of schools, academic lyceums and vocational colleges and higher education institutions.

The program makes it possible to observe the results of slowing down processes related to certain branches of physics. Below are photos from the virtual laboratory process (Figure 1).

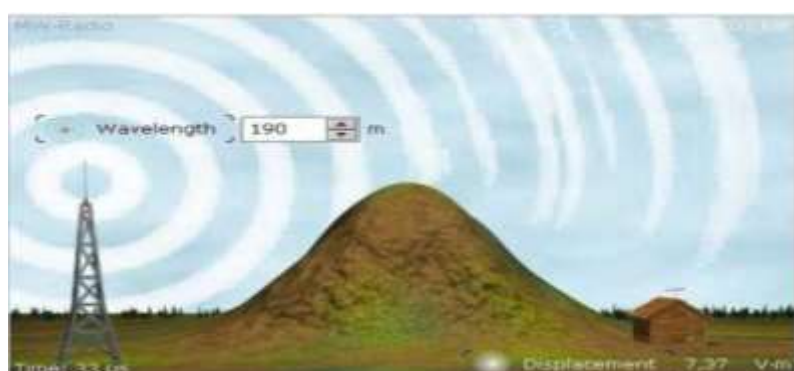


Figure 1. The diffraction process observed when a radio wave passes through an obstacle

Features of the program: more than 50 lessons, more than 150 ready-made models of physics, the ability to model physical processes on a computer, the implementation and observation of difficult experiments, the program's powerful tools, the ability to calculate the value of physical quantities with great accuracy allows you to save and print created models.

The content of this virtual laboratory is designed to train future teachers of technology, developed on the basis of the content of the curriculum of "Physics" and conducted experimental lessons, virtual in the educational process. The high efficiency of the use of laboratories was methodically justified.

CONCLUSIONS

Integrated virtual learning can be used to improve students' knowledge, skills, and competencies in conducting laboratory and hands-on activities in Physics that do not have sufficient capacity. By using the subject "Physics" in the direction of 5112100-Technological education in higher education institutions on the basis of virtual education, it is possible to increase the effectiveness of students' learning. The content of the virtual laboratory on the subject of "Physics" consists of a large database, video-animation, multimedia files, from which the teacher perfects the imagination of students in the conduct of lectures, practical and laboratory classes. It is recommended for use in the formation and effective organization of the course process.

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