DEVELOPMENT OF A VISUAL LESSON IN PHYSICS ON THE BASIS OF VIRTUAL REALITY TECHNOLOGY

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Annotation

Virtual reality and its connection with physics and its stages of development in the visual lesson. In order to avoid mistakes when creating a technology model, it is necessary to follow the basic points of computer modeling

Keywords:

Virtual, technology, visual lesson, modeling, physics, algorithm.

Computers are now actively used in all areas of activity, and the field of education is no exception. In physics classes, students often have to use abstract thinking and imagination to visualize a body or phenomenon. For example, even the simplest driving task under consideration for two cars going to meet each other requires imagination. How to show students the location of electrons and protons, how to tell them about their motion? It is important to activate their abstract thinking, to help them develop their imagination. Computer modeling helps us with the solution to this problem. One of the main applications of the computer in the study of physics is to manage and simulate these experiments. Computer modeling in a school course helps students become familiar with some of the methods of creating and researching models of physical processes and events. In addition to teaching physics at the same time, a programming language is being studied (students will learn more about the language they worked on in computer science classes). Of course, the study of computer models cannot lead to the discovery of an entirely new phenomenon or a new elementary particle. However, it was computer modeling, for example, that led to the emergence of a new phenomenon of turbulence - an interesting and complex phenomenon.

The first step in computer modeling is to build a qualitative, then a quantitative model. In today's virtual reality-based learning resources, physics can be classified as follows:

• the first level - to achieve full vitality through special technical means (helmet-display, special gloves, etc.);

• Second level - three-dimensional (or stereoscopic) monitors or the creation of a three-dimensional image using a projector and special glasses;

• The third level is the demonstration of virtual reality based on a standard computer monitor or projection tool.

In order to avoid mistakes when creating a model of virtual reality technology, it is necessary to follow the basic points of computer modeling.

1. It is necessary to define the object of visual lesson tasks and modeling;

2. This is followed by the development of a conceptual model, the definition of the basic elements of the system and the elementary acts of interaction;

3. The third point is related to formalization, in other words, the transition to this mathematical model;

4. An algorithm is created and a program is written, which is based on a visual lesson;

5. It is advisable to conduct a series of computer experiments;

6. The last point is to analyze and interpret the results.

It is common to distinguish two types of modeling: analytical and simulation. The analytical model is commonly referred to as the vital object model, in the structure of which algebraic, differential, and other equations are applied. Simulation models are mathematical models that replicate the algorithm of motion (operation) of the studied system with the sequential execution of a large number of elementary operations. Although the lessons are devoted to constructing physical problems, the main focus is not on understanding a particular process or event, but on getting acquainted with the algorithm for constructing such models. Therefore, it is important to use computer modeling not only in computer science classes, but also in physics classes. Finally, I would like to add that in modern science there is often a need for an experiment in which the discovery of basic laws is not required, but the behavior of a particular object or a specific process.

Another reason to use models is to use them as an effective teaching tool. Based on the above analysis, it is possible to formulate the following reasons for the importance of computer modeling in physics lessons:

1) helps to explain the scientific basis of modeling (rules for creating models and experimenting with them);

2) deepens students' knowledge in the field of physics and gives a creative character to the study of this topic;

3) Practical examples of the use of mathematical and physical methods in modeling, demonstrating the specific meaning of practical activities;

Conclusion

In conclusion, the model is designed for a full-scale experiment to study a very precise process that occurs in a system with certain geometric parameters and physical properties under adverse environmental conditions. The geometric dimensions of the system in it are too large or too small, the process under study is too fast or too slow, the performance parameters of the process are too high and the accuracy increases the productivity of the technology. Thus, virtual education is not only a feature of remote telecommunications, but also manifests itself in all forms of education, including full-time, in the interaction of teacher, student, objects studied. Distance learning serves to expand the possibilities of full-time education based on virtual education. The main purpose of virtual education is to understand the essence of a person's place in real life - to ensure the compatibility of his virtual and other capabilities.

References:

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