INNOVATIVE PHYSICS TEACHING METHODS AND MODERN TECHNOLOGIES IN DISTANCE LEARNING

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Abstract: The development of new teaching methods in accordance with the new state educational standards should help to obtain fundamental education that contributes to the further development of the individual. It is necessary to give a panorama of the most universal methods, laws and models of modern physics, to demonstrate the specifics of the rational method of cognition of the surrounding world, to focus on the formation of students ' General physical Outlook and the development of physical thinking.

Keywords: teaching physics, optics section, distance education, power

The physics course should be a complete and fundamental course, unified in its parts and demonstrating the role of physics as the basis of all modern natural science. It is necessary to overcome the widespread division of physics into classical and modern and to give an exposition of the entire discipline from the point of view of the logic of physics as a science.

One of the possible tools for solving these problems is the use of computer network technologies INTERNET.

On the other hand, teaching physics as an exact science requires students to master computer skills as a working tool, which is an integral part of the profession. This applies to both technical specialists and future physics teachers. The accumulated scientific physical information has reached such a volume that traditional methods make it difficult, on the one hand, to give a student a detailed idea of the classical foundations of physics, on the other - not to omit at least the cornerstones of modern physics. And here comes to the rescue a hypertext environment that allows you to integrate the lecture material in the form of a structured multimedia presentation.

In the section vibrations and waves there are virtual laboratory works on the spring pendulum, physical and mathematical pendulums. And this is not just animation. A simple movement of the computer mouse, the click-and-move method changes the initial conditions - the length of the pendulum, the initial position, the force of gravitational attraction. Motion parameters (gravitational field and its components, kinetic and potential energy, speed) are displayed as graphs simultaneously with the change in the position of the pendulum.

In the optics section, there is a large demonstration with lenses. It is possible to move the object and lens, change the focal length. Real and imaginary images and main beams are displayed simultaneously.

Laboratory work "Virtual electric lamp" allows the student to explore the electrical circuit and independently derive the Ohm's law.

A large number of works are devoted to cosmology, atomic and nuclear physics. Here you can solve the Schrodinger equation and see a moving wave packet. Use the Monte Carlo method to simulate how the magnetization and total spin energy depend on temperature. You can manage a virtual nuclear power plant yourself and even observe the instrument readings in real time on a real accelerator.

Beyond the scope of this article are the problems and achievements of distant education in physics. The very change of the terms "correspondence" to "distant" reflects not only and not so much a tribute to fashion, but actually occurred and rapidly occurring changes in this area of education. Distance education today is literally full-time, allowing students and teachers not only to exchange information, but also to see each other.

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