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VIRTUAL LABORATORY AS A MEANS OF IMPROVING THE QUALITY AND EFFECTIVENESS OF EDUCATION STUDENTS IN HIGHER EDUCATION

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Introduction

At present, the computer plays a particularly active role in training: from a means used only for classes in computer science, computer turns into an assistant lecturer in lectures, seminars, practical and laboratory classes.

The use of computers in teaching allows you to:

• activate the cognitive activity, to reach a higher level of perception and learning. The perception of the unusual and bright quality of information contributes to the formation of interest in the subject, the desire for self-learning, provides the basis for development;

• implement the ideas of individual approach in the learning process;

• prepare students for active work in modern conditions;

• assist teachers in organizing proper monitoring, provide an objective assessment of students;

• to create conditions for the development of creativity, logical thinking, memory. Maintain a dialogue with the computer requires students the ability to analyze, to take independent decisions, as well as care and accuracy.

Since the introduction of computer technology in education is an objective and inevitable process, which is the result of scientific and technical progress, the problem of virtualization training as a means of implementation of this is really important.

In today's world, the educational process becomes more effective when using interactive, multimedia rich educational resources to ensure active learning methods. Well these requirements correspond to educational resources and virtual reality systems. In my opinion, an example of such electronic resources are virtual labs that can simulate the behavior of real-world objects in a computer learning environment and help students acquire new knowledge and skills in science and natural sciences, such as chemistry, physics, mathematics, computer science, biology.

Applications of information technology in education depend on the specifics of a particular discipline, as well as the level of technical and programmatic support to the course.

One of the types of software used in the preparation of students in various specialties are simulation and modeling software tools.

Virtual Labs allowing to simulate the behavior of real-world objects in a computer learning environment and providing assistance to students in independent mastering new knowledge and skills to attract attention of educators. According to many professionals working in this direction, the virtual laboratory is an "integrated information environment, including training, educational, practical, reference, control and training, and test and control materials."

Under the virtual laboratory is meant a set of programs or software and hardware, as well as a set of documentation for their use, allowing to carry out the experiment completely or partly on a mathematical model.

The purpose of the task

The combination of virtual reality and makes extensive use of students and help the scientific literature, teaches to think independently and make decisions, encourages self-education and allows you to discover their creative potential.

One of the goals of the virtual labs - the desire for a comprehensive visualization of the processes under study, and one of the main tasks - to provide opportunities to prepare the student to the most complete perception and understanding of their essence.

Virtual laboratories help to enhance the visibility, interactivity, as well as the formation of cognitive and creative activity of students.

Virtual lab can simulate objects and processes of the world, to provide access to real laboratory equipment.

Simulation of electronic devices in the computer lab or at home, and visualization of the results in the form of charts, graphs, characteristics, indications of virtual instruments contributes to a better understanding of the subject. Experiments on models complement and extend the real physical experiments, t. To. Enable us to investigate the situation intolerable for the navigation tests, allowing a deeper grasp of the essence.

It should be noted the economic efficiency of simulation and modeling software.

Function module

The main objectives of the virtual computer lab, in my opinion, are:

• development of complex corporate and other software, to carry out its task of creating a cycle of virtual servers: Deploy and configure the software, as well as its use in problem-oriented practical examples to form professional competence and develop a constructive, analytical and systematic thinking of students;

• organization of research projects involving the potential of leading IT companies;

• practical implementation of the educational process of the University of public products and information technologies at IBM, provided the school / university with-

in the framework of academic initiatives for core subjects / specialties and areas of training graduates. This area has been successfully tested by teachers of our university;

• case studies within seminars. This area was used by me in the direction of preparing students "Information Technology" in subjects "Multimedia Systems and Technologies", and "Digital Image Processing";

• allowing the remote use of enterprise software and other software used in the educational process, for self;

• Conduct training to improve skills;

• preparing pupils, students and post-graduate students to participate in presentations at conferences and competitions at various levels with the publication of the results of scientific research.

The use of virtual labs enables:

• initiate a large enough interest among the students, along with available to them;

• enhance the effectiveness of the training sessions, the assimilation of educational materials, as well as the effectiveness of training as a whole;

• reduce the time spent on preparation for classes;

• demonstrate during class experiments that can not be put in real life;

• organize an individual approach to the student.

Working in a virtual lab allows no large material costs to complete any decisions to select the optimal path, and then implement it.

Stressing the benefits of a virtual laboratory, we can assume that this means that "significantly reduces the time to develop teaching materials and to focus on the study of the theory and methods of analysis of the results." Having studied the pedagogical literature on this issue, I can say that virtual information and educational laboratory:

• used as an effective learning tool, not replacing any of the teacher in the learning process, providing for the student the freedom to choose the pace and path of learning with elements of self-learning and self-control;

• combines the advantages of a good tutorial with computer capabilities, making it possible to store large amounts of information, clarity, a combination of text, graphics, audio and video information.

The main advantages of laboratory tasks in a virtual laboratory include:

• illustrations and confirmation of the validity of the studied laws;

• the possibility of self-assembly schemes, the calculation of the parameters and monitoring processes;

• ensuring complete safety of the experiments, and clean air in the classroom;

• the possibility of individual performance tests, which can not but affect the development of independence of pupils, their design skills and technical ingenuity;

• implementation of virtual labs during class time eliminates the barrier between the theoretical and practical sessions, thereby increasing the efficiency and quality of training, activization of independent informative activity of students;

• Information and educational virtual laboratory provides wide opportunities in the experiments the research nature, which allow to use them as a supplement to the real laboratory facilities in certain, methodically justified situations;

• computer laboratory provides students personal experience in dealing with unusual and problematic situations.

Conclusion

The main value of the virtual labs is its substantive content. Excellent navigation, color palette, fast loading and high reliability of the virtual experiments are only auxiliary elements transfer and adaptation of knowledge. Virtual labs are "empty table", in which a student with special instruments can create lab facilities, arrange them as necessary to each other, to establish links between objects, set their initial values. In fact, a laboratory can create virtual based on the same laboratory module different interactive model.

Thus, the virtual process in today's secondary education is directed to the use of a rich pedagogical potential of traditional training provided transferring it to a new level - the level of virtual computing. In addition, the study of new areas of knowledge through educational simulations in a virtual information-educational laboratory the students activated self-employment in the knowledge of the phenomena of the world, forming the ability to independently find solutions to emerging problems in the process of life, readiness to apply this knowledge in practice. Consequently, the use of virtual laboratories, contributing to the development of independence of pupils, is an integral part of the success in the implementation strategy of the electronic educational computer products.

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