

просторі в процесі методичного вдосконалення педагогічної майстерності та розвитку інноваційної культури майбутнього менеджера освіти, оскільки саме ці категорії мають фундаментальне значення для вибору напрямків розвитку особистості й реалізації її інноваційного потенціалу.

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MODERN INFORMATION TECHNOLOGIES IN EDUCATION

In the process of higher education, information systems that use computer technology play a very important role, because full involvement in the educational process by observing the most realistic picture increases motivation and success in acquiring knowledge, stimulates brain activity. As one of the promising educational methods, modern information technologies offer a new educational environment - virtual reality (VR). It is modelled by a computer and is considered as a special information environment in which all objects are represented in three dimensions. A distinctive feature of this environment is the change of images in real time and the experience of the effect of presence. VR mimics both the effect and the reaction to that effect.

The works of S. Aksonov "Computer modeling and virtual reality", S. Bondarenko "Virtual network communities: the specifics of formation and functioning", A. Goshchinsky "Computer modeling and virtual reality" are devoted to

the functioning of virtual reality phenomena in various spheres of human life. Problems of virtual education are considered in theoretical and applied research in the directions of the general education (A. Petritsa "Correlation of virtual and real in educational experiment in the course of studying of physics in elementary school", S. Litvinova "Methods of use of technologies of a virtual classroom by the teacher in the organization of individual education of students") and professional education (A. Zasekin "Virtual communication as a factor of personal change of student youth", R. Pavlyuk "Formation of skills of future teachers of foreign languages for the implementation of virtual pedagogical interaction", N. Gnedko "Formation of readiness of future teachers to apply means of virtual clarity in professional activity").

The use of virtual reality technologies (hereinafter - VR-technologies) in education is a very promising method. After all, currently students process a huge amount of information, the assimilation of which directly depends on the effectiveness of the presentation. None of the educational methods can match the effectiveness of VR technology, which significantly improves and simplifies the learning process.

The students can interact with any objects, improve their skills in managing complex equipment, visit ancient places and take part in any historical events, find themselves in the human body and study its structure [1], conduct laboratory work and practical classes in the virtual world. All it will be even more accessible to you thanks to training programs based on VR-technology.

Improving the effectiveness of learning using virtual reality technologies is also because classes using modern technologies are of great interest, resulting in increased learning motivation and activity of students. As pointed out by one of the famous researchers of virtual reality O. Yukhvid, all reports on the implementation of various curricula based on BP-technologies report an increased interest of students in this form of classes and enthusiasm with which they prepare for each lesson, studying theoretical material. which will then be able to work in a virtual environment. In

addition, training programs based on virtual reality technologies are universal (i.e., when using such programs for different subject areas requires almost the same set of software and hardware), easily "embedded" in the traditional learning process and can be replaced real objects with their simulation models and interactive simulators, with which students can model different situations and find optimal solutions [2].

The combination of visualization and interactivity makes the method of learning with the help of VR effective. The experiment was based on the Human Anatomy VR Complete Edition application from Virtual Medicine, which allows you to interact with virtual models of human anatomy. Comparison of learning outcomes and levels of cognitive involvement of students was performed in the two groups. Participants in VR conditions improved the quality of learning (namely, memorization and reproduction) and engagement rates (cognitive and subject subscales) compared to those in traditional settings [1].

The main advantage of using this technology in education is the maximum involvement of students in the learning process. Such training programs give the greatest results, so one lesson in the virtual world successfully replaces dozens of regular ones.

Virtual and augmented reality technologies give students the opportunity to study subjects more deeply, analyse the consequences of world events, participate in archaeological expeditions and much more, and most importantly - in an entertaining way. AR and VR provide an experience that students do not usually have access to.

Experts highlight two undoubted advantages of learning in virtual reality - clarity and security. Thanks to the highest level of detail in VR, you can reliably show things that cannot be seen under normal conditions. For example, the fission of the nucleus before a nuclear explosion, or the process of awakening a volcano. In terms of security, in VR space, the mistakes that cost people their lives in the real world are not terrible in the virtual world. Therefore, now these technologies are used in the study of almost all disciplines.

The use of virtual reality opens many new opportunities in teaching and education, which are quite complex, time consuming or expensive with traditional approaches. There are five main advantages of using AR / VR technologies (augmented reality, AR, and virtual reality, VR, reality) in education:

1. *Visibility.* In a virtual space, you can view any process or object in detail without obstacles, which is much more interesting than looking at the pictures in the textbook. For example, through the application Anatomy you can study the structure of the body in the smallest detail, and Operation Apex will show all the riches of the underwater world.

2. *Concentration.* In a virtual environment, a person will not be distracted by external stimuli, which will allow you to fully focus on the material.

3. *Maximum involvement.* Immersive technologies provide the ability to fully control and change the scenario of events. The student can witness historical events, conduct an experiment in physics or chemistry, or solve a problem in a playful and understandable form.

4. *Security.* With the help of VR and AR technologies, you can perform a complex operation, control a sports car or even a space shuttle, conduct an experiment with dangerous chemicals and at the same time does not harm yourself or the environment.

5. *Effectiveness.* Researchers at the University of Maryland conducted a study in which they asked two groups of people to remember the location of certain images. During the experiment, one group used virtual reality helmets and the other used regular computers. The group that studied the image using VR-helmets showed a result 10% higher than the members of the other group [3].

The latest technologies also play an important role in educating children with physical, social, or cognitive impairments. After all, with the help of immersive technologies, you can create an inclusive learning environment, considering the needs and capabilities of each. This can be one of the important steps in democratizing knowledge.

With all the positive aspects of the use of BP technologies in education, their potential should not be overestimated. After all, in the most general form, virtual education is a process and result of interaction of subjects and objects of education, accompanied by the creation of a virtual educational space, the specificity of which is determined by these objects and subjects, and, accordingly, its existence outside teacher communication. , students and educational facilities is impossible or, in other words, a virtual educational environment is created only by those objects and entities involved in the educational process, and not visual aids or technical means, no matter how innovative they are. In addition, virtual learning programs cannot completely replace teaching in educational institutions, because in the end they are only an imitation of real actions and objects in the information space. They should be widely used in the study of the most complex topics of various subjects, as well as for training professional skills in various activities.

ЛІТЕРАТУРА

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