

INFORMATION TECHNOLOGIES OF VIRTUAL AND AUGMENTED REALITY IN EDUCATION

Development of the information technologies has led to a change in the ways the information is providing for students during learning. The use of virtual and augmented reality allows you to immerse yourself deeply in the digital information environment, which significantly improves the quality and efficiency of information memorization.

In recent years, virtual reality technologies have evolved, become widely used and are constantly being introduced into various spheres of life. Despite the spread of this technology as one of the experimental methods of teaching, very little research of virtual reality in education has been done. That fact can be explained by the complexity, high material costs of these studies, not only in our country but also abroad. Moreover, the modern education system demonstrates the contradictions between the use of pedagogical technologies based on virtual reality and the former stereotypes of educational practice. However, over time, these technologies will become an integral part of the educational process.

Virtual and augmented reality technologies give students the opportunity to study subjects more deeply, analyze the consequences of world events, participate in archaeological expeditions and much more, and the most important – in an entertaining way. AR and VR (augmented reality, AR, and virtual reality, VR, reality) provide an experience that students do not usually have access to. There are five main advantages of using AR / VR technologies:

- visibility (in cyberspace you can examine any process or object in detail, which is much more interesting than looking at pictures in the textbook. For example, through the application Anatomyuo you can study structure of the body in detail, and Operation Apex will show all riches of the underwater world.)

- concentration (in a virtual environment, a person will not be distracted, which will allow you to focus fully on the material.)

- maximum involvement (such 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 the problem in an understandable form.)

- safety (with the help of VR and AR technologies you can perform a complex operation, drive a sport car or even a space shuttle, conduct an experiment with dangerous chemicals and at the same time not harm yourself or the environment.)

- performance (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, the other one used ordinary computers. A group that studied images using VR-

helmets, showed a result 10% higher than members of the other group did.)

In addition, these technologies 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, taking into account the needs and capabilities of each. This can be one of the important steps in democratizing knowledge.

Due to the great interest in classes with the use of modern technologies, the efficiency of learning increases, which results in increased learning motivation and activity of students. As pointed out by one of the well-known researchers of virtual reality Yukhvid O.V., all reports on the use of VR-technologies report an increased interest of students in this form of training. They are more interested in preparing for classes, because they will be able to consider the subject in a virtual environment.

In addition, training programs based on virtual reality technologies are universal (using such programs for different subject areas requires almost the same set of software and hardware), easily "embedded" in the traditional learning process and allow you to replace real objects with their simulation models and interactive simulators, with which students can model different situations and find optimal solutions. Interactive intelligent educational systems, built on the basis of virtual reality technology, are also a means of activating students' educational and cognitive activities.

Such technologies make extensive use of cognitive computer graphics, the main task of which is to stimulate cognitive mechanisms, creative thinking, rather than unambiguous interpretation of knowledge. At the same time, the active use of virtual reality technologies is one of the system requirements that allow ensuring the maximum learning effect at a reasonable cost for the development of educational systems.

Thus, the use of AR / VR technologies allows to qualitatively and quickly train specialists in various specialties: aviation, engineering, medicine, remote control of technical means, etc. Virtual reality education allows you to visually conduct lectures and seminars, trainings, demonstrate to learners all aspects of the real object or process, which in general gives a huge effect, improves the quality and speed of educational processes and reduces their cost. Virtual reality technologies make it possible to make full use of the obtained information. Because it is known that a person receives 80% of information from the world through sight, while people remember 20% of what they see, 40% of what they see and hear, and 70% of what they see and hear and do. As a result, students are fully involved in the learning process, which increases their motivation and success in acquiring knowledge.