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Improving the Content of Professional Education of Students by Means of Virtual Technologies

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ABSTRACT

This article reveals the basic concepts of virtual reality and its system. The problems and risks in the use of virtual technologies, as well as its advantages in improving the professional education of students are indicated. The basic concepts of virtual and augmented reality technologies, the history of the creation of these technologies and their scope were revealed. Education based on virtual technologies is a trend in the modern world, which has influenced the creation of programs using immersive technology in education.

Due to the rapid development and expansion of the field of application of the latest computer technologies in various fields of human activity, virtual reality technologies or virtual technologies are of particular interest for consideration.

Virtual reality or virtual technologies (VR, from Latin virtus - possible and realis - actual) is the creation by computer technologies with the help of special technical means of a special environment that the user perceives as a real, real world with which he actively interacts [2].

With the help of systems and various tools of virtual reality, as noted by A.T. Sattorov, N. A. Penkov and K. Murodova, the impact occurs on the main sense organs: tactile, auditory, visual, thereby creating a high-quality simulation of the surrounding world, where the user, being a part of it, can control its objects and objects, be in the virtual world not as an observer, but as an active participant [3]. The created effects affect the user's consciousness and allow you to experience sensations that are close to real. This simulated reality with the illusion of being in an artificial world has several types of virtual technologies. If the image is accompanied only by sound and the user does not control anything - this is a passive virtual reality, with the examined virtual technologies, a limited choice of sounds, images, actions is possible, and already with interactive virtual technologies, you can control and choose any scenario [4].

The software and technological component, which are aimed at creating the illusion of being in the virtual world and allowing you to actively interact in it with complete immersion, is a virtual reality system.

A.T. Sattorov is right, he says that full immersion in virtual reality can be achieved only with the use of special devices that should effectively affect all senses. These include systems of sounds,

images, imitations of tactile sensations, control systems, direct connection to the nervous system. These systems are implemented through certain virtual technologies headsets [3]. Modern acoustic systems carry out the localization of sounds that are close to sounds in the real world.

A common means of immersive virtual technologies are specialized helmets / goggles that completely hide the user from the real world. 3D video is displayed on the display at the level of the user's eyes. The gyroscope and accelerometer track the rotation of the head and transmit data to the computer system, which, depending on the readings of the sensors, changes the picture on the display. Previously, the source of 3D images was mainly a computer and a user platform (PlayStation VR). At the moment, a smartphone has begun to be used, which made it possible to reduce the cost, since they are more high-performance, processing even the "heaviest" 3D content, the smartphone display has a fairly high resolution. Popular glasses virtual technologies BOX 2, with attached smartphone [1].

The use of virtual reality technology in the field of education began in 2016 to improve the professional education of students, for example, in Germany, with the help of virtual technologies, medical students could view small details of the body and various phenomena that cannot be seen clearly in real life [5].

Currently, virtual reality can be created using VRML, a special coding language that can also be used to create multiple images and interact between them.

Augmented Reality (AR) is a technology that allows the gadget to independently improve the existing reality. Its application can be seen on mobile phones when they independently update applications or their system functions. It is also used in various applications, in particular those related to photography.

The sphere of education is one of the most promising for the use of augmented reality technology. In particular, it is used in the study of large-scale or very complex objects as 3D modeling. The technology can also be used in conjunction with real-time objects. For example, to show the description and composition of any object or layout (human skeleton, car, etc.) [1].

Virtual and augmented reality is unique technologies: each of the technologies strives to improve the professional education of students. Thus, the use of virtual and augmented reality technologies in student education, especially in special education, has a number of the following advantages:

1. Visualization of the material - a more detailed consideration of processes and objects that in real life require the creation of specific conditions.
2. Increasing interest and motivation - virtual and augmented reality involves learning in a playful way, which allows you to achieve the highest involvement of students in the process of special education.
3. Safety - the ability to hone specific types of skills without risk, without harming yourself and others.
4. Concentration - when working in virtual reality, all external stimuli are excluded, resulting in a more effective assimilation of educational material.
5. Equipment cost. Not every educational institution has the financial capacity to purchase real models.

There are also disadvantages of using virtual technologies in improving the professional education of students, such as:

1. The emergence of difficulties with adaptation to these technologies and their impact on the health of students. When using virtual and augmented reality technologies, it is possible to manifest reactions of individual characteristics of the body, such as dizziness, disorientation,

etc.

2. The need to change educational programs at the state level to achieve an effective result from the use of technology. As a result, there is a need to support the introduction of these technologies by the state.
3. Creation of high-quality virtual lessons. When introducing virtual and augmented reality technologies, individual content must be created for each academic discipline [5].

Despite this, in order to increase the level of students' motivation, it is possible to use virtual and augmented reality technologies to improve professional education. The choice of methods for implementing these technologies is carried out based on the specifics of a particular area of training, which can be characterized by a number of the following features:

1. Obtaining knowledge through the study of disciplines of general education and a special cycle.
2. Formation of professional skills.
3. Development of critical thinking, analytical skills, attention.
4. Participation in research activities.
5. Knowledge of techniques for expressing one's own position and its argumentation.

Improving the professional education of students based on virtual technologies

The acquisition and improvement of professional skills by students is carried out by solving situational problems in practical classes. In teaching professional disciplines using virtual and augmented reality technologies, it is possible to create situational models in virtual reality, for example:

1. Scenarios of communication with clients in a professional discipline (For example, if it is an economic one, when creating a model of "Banking").
2. Development of skills while improving the professional education of students based on virtual technologies
3. Creation of visual theoretical aids in the form of video materials, films.

Virtual and augmented reality technologies for improving the professional education of students can be used in the following formats:

- Stationary education, involving the use of technology directly in practical classes.
- Distance education, in which virtual reality technology can act as a student's immersion in an audience where he can attend various types of classes - lectures, group and individual.
- Blended education - the creation of applications available for smartphones aimed at self-study of topics, repetition and consolidation of educational material.

Thus, virtual and augmented reality technologies are currently promising areas for the development of education, especially when improving professional education. Already, these technologies are used in many educational institutions and are increasingly being introduced into all spheres of human life. The use of these technologies in education has more advantages than disadvantages, however, it is necessary to use technologies correctly, based on the specifics of specific areas of training and academic disciplines. The development of virtual and augmented reality technologies in education largely depends on the level of state interest in this issue. Many programs based on virtual and augmented reality technologies are implemented at the experimental level. In order for these technologies to be used in the real educational process, it is necessary to transform curricula while improving the professional education of students.

At the moment, the high efficiency of virtual and augmented reality technologies is applicable to disciplines from the natural science cycle. Virtual reality gives good results when the main goal is to memorize the material and develop practical skills. In the event that the main goal is analysis and comprehension, virtual and augmented reality technologies are inferior to traditional teaching methods. In improving the professional education of students, the use of these technologies is possible, but their use is limited due to certain specifics.

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