

## PROSPECTS FOR MODERNIZING THE EDUCATIONAL SYSTEM USING VIRTUAL REALITY TECHNOLOGIES

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### ABSTRACT

The article discusses the prospects for modernizing the educational system using virtual reality (VR) technologies. VR technologies open up new opportunities for creating immersive learning environments, improving students' practical skills, as well as for personalized and adaptive learning.

**Keywords:** virtual reality, educational system, immersive learning environments, personalized learning, practical skills, distance learning, creative thinking.

### INTRODUCTION

The modern educational system is undergoing significant changes due to the introduction of digital technologies, and one of the most promising areas is the use of virtual reality (VR) technologies. Virtual reality opens up new opportunities for learning, making the process more interactive, immersive and effective. Thanks to VR technology, students can not only gain theoretical knowledge, but also actively apply it in practice, immersing themselves in simulated educational situations. This article will consider the main areas of application of virtual reality in education and the prospects for its use to modernize the educational system.

#### 1. Creation of immersive learning environments

One of the key opportunities for using VR in education is the creation of immersive (immersive) learning environments that allow students to fully interact with the virtual space. Instead of traditional lectures and presentations, students can "immerse themselves" in the learning material. For example, in biology classes, they can travel through the cells of the human body or study the structure of DNA, literally being "inside" these objects.

Virtual reality technologies make it possible to reproduce complex concepts that are difficult to explain based on theoretical material alone. For example, in physics or chemistry classes, students can observe how complex molecular reactions work by visualizing them in real time. Thus, VR helps to better absorb complex concepts and makes learning more fun and visual [1].

#### 2. Improving practical skills

The use of virtual reality makes it possible to improve students' practical skills by simulating real-life situations. For example, in medical schools, students can practice performing surgeries or diagnosing diseases without exposing patients to risks. This is especially important for complex and risky procedures that cannot be performed without practice.

In other fields, such as engineering or architecture, VR allows students to design and test building or car designs in a virtual environment, making the learning process more practical

and effective. This approach not only reduces the cost of equipment and materials, but also gives students more opportunities for practical training [2].

### **3. Personalized learning and adaptive courses**

One of the most important areas of development of VR technologies in education is the ability to create personalized and adaptive courses. Thanks to VR, the educational process can be adapted to each student depending on their level of knowledge, preferences and pace of learning. For example, in virtual reality, it is possible to develop scenarios that will change depending on the student's progress, allowing them to study in depth those topics in which they are experiencing difficulties, or to speed up the learning process in those topics that they have already mastered.

VR technologies allow you to create educational programs that are not only interactive, but also motivating, giving students the opportunity not only to read or listen to lectures, but also to actively interact with the material. This approach contributes to a deeper and more qualitative assimilation of knowledge [3].

### **4. Distance learning and globalization of education**

VR opens up enormous prospects for the development of distance learning and the globalization of the educational process. Thanks to virtual reality, students can participate in educational processes from anywhere in the world, and at the same time experience a sense of personal presence. This allows access to leading educational resources and programs, regardless of the student's geographic location.

In addition, VR allows the creation of virtual classrooms where students can not only listen to lectures but also interact with the teacher and other students in real time. This makes the learning process more accessible and flexible, especially in the context of the COVID-19 pandemic, when many schools and universities have switched to a remote format [4].

### **5. Development of creativity and innovative thinking**

Virtual reality technologies contribute to the development of creativity and innovative thinking in students. The virtual environment allows students to experiment with different scenarios, models and approaches, which contributes to the development of out-of-the-box thinking and the search for new solutions.

For example, in the field of design and architecture, students can create virtual building projects, test their resistance to various loads and experiment with shapes and designs. In the field of art, VR provides the opportunity to create three-dimensional works, allowing artists to realize their ideas in new forms and formats.

### **6. Problems and challenges of introducing VR into education**

Despite the enormous potential of virtual reality, its introduction into the educational system faces a number of problems. One of the main problems is the high cost of equipment and software. VR technologies require special devices (virtual reality helmets, controllers, etc.), which may be unavailable to schools and universities with limited budgets.

In addition, it is necessary to train teachers in the use of VR technologies in the educational process. This requires both technical training and a revision of traditional teaching methods. Teachers will have to master new tools and develop methodological approaches that will effectively combine traditional teaching methods with virtual ones.

Virtual reality technologies open up great prospects for modernizing the educational system. They allow creating immersive learning environments, improving students' practical skills, personalizing learning, and developing creative thinking. However, successful integration of VR into the educational process requires solving such problems as the high cost of equipment and the need to train teachers [5].

Taking these challenges into account, the prospects for using virtual reality in education remain very promising. The development and availability of VR technologies will play a key role in creating a more interactive, effective, and accessible education for future generations of students.

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