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THE APPLICATION OF VIRTUAL TECHNOLOGY IN THE LEARNING PROCESS

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Annotation: The modern world, which is rapidly changing under the influence of the latest technologies, is pushing to change approaches and find innovative methods in teaching, as well as apply them in education. This article examines the concept of virtual reality and analyzes the effectiveness of its application in the educational process. The virtual environment allows for the safe modeling and research of various subject areas without leaving the classroom, which can expand learning opportunities and find comprehensive and effective methods for developing the knowledge and skills of students and teachers.
Keywords: Interactive learning, immersion, immersion, 3D simulations, virtual labs, educational games, sensors, simulators and simulators.

ПРИМЕНЕНИЕ ВИРТУАЛЬНОЙ ТЕХНОЛОГИИ В УЧЕБНОМ ПРОЦЕССЕ

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Аннотация: Современный мир, стремительно меняющийся под влиянием новейших технологий, подталкивает изменять подходы и находить инновационные методы в обучении, а также применять их в образовании. В этой статье будет исследоваться понятие виртуальной реальности и анализироваться эффективность ее применения в образовательном процессе. Виртуальная среда позволяет безопасно моделировать и исследовать различные предметные области, при этом не выходя из кабинета, что может расширить возможности обучение, и найти разносторонние и эффективные методы для развития знаний и навыков учащихся и учителей.
Ключевые слова: Интерактивное обучение, погружение, иммерсивность, 3D-симуляции, виртуальные лаборатории, образовательные игры, сенсоры, тренажёры и симуляторы.

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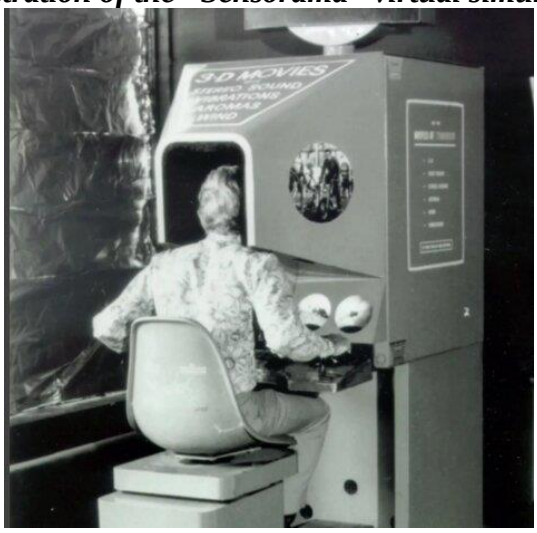
The history of the emergence of virtual reality begins several decades ago and includes various stages of development of technologies, concepts, and the application of virtual environments. Virtual reality concepts appeared in literature at the dawn of the 20th century, when the fantasy writer Robert Heinlein described in his story "The Platform" the possibility of creating an artificial environment perceived as real. And in 1945, American inventor and engineer Morton Helling put forward the idea of creating "Sensorama," an electronic machine that simulates sensory perception. Such as touch, smell, hearing and vision. However, only the remote device that affects hearing and vision, called "Sensorama," was invented by Morton Helling in 1965, which was one of the first steps to create virtual reality.

Illustration of the "Sensorama" virtual simulator



In turn, the term "virtual reality," popular in the modern world, was introduced by the American scientist Jared Lange, the creator of computer games. An important milestone in the development of virtual reality was the creation of the first helmet by Ayven Sazerland, which generated images using a computer, which also allowed you to change the position of your head. Undoubtedly, the popularity of computer games, as well as the ability to simulate various complex and dangerous processes, served as a means of teaching and training in many fields and directions, such as medicine, scientific research, training personnel such as astronauts, pilots, etc., gave a great impetus to the development of the topic of virtual reality. Since the 2010s, with the creation of Oculus VR's Oculus Rift project: virtual reality glasses, as well as subsequent HTC Vive and PlayStation VR devices created by HTC and Sony Interactive Entertainment, accessibility and interest in VR technologies has spread to a wide range of consumers. Currently, the virtual reality market continues to grow, with industries such as computer games, education, and industry serving as the main engine for the development of VR technologies. VR is actively used in educational institutions and for corporate learning.
Due to the fact that virtual reality is a relatively young area of information technology, there are a number of aspects that can slow down the application and implementation of virtual reality technologies in the educational process. The main drawback of implementing VR technologies is the cost of expensive equipment and software. However, the modern emerging

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VR equipment and applications market offers a range of options, from affordable to expensive. For example, Google has developed a device called Google Cardboard that can turn an ordinary smartphone into a VR app broadcaster. To do this, you need to purchase Google Cardboard virtual reality glasses and download the app with the same name to the smartphone, thus installing a smartphone with a special compartment in glasses, you need to download the selected virtual reality experience into the app. Such equipment is one of the most budgetary ways to use virtual reality. The following negative aspects of virtual reality include the human body's susceptibility to the intense influence of its sensory sensations. There is a personal susceptibility to virtual reality, in some cases, it can lead to nausea, dizziness, and disorientation. Despite the difficulties listed above, virtual reality technologies are currently in a developing state, and the use of virtual technologies can significantly raise the level of education to another, high-quality level.

Moving on to the attractiveness and necessity of using virtual reality in the educational process, the following characteristics can be identified - immersiveness, interactivity, safety, increased motivation for learning.

The word immersiveness comes from the English word immersion - "dip" is a characteristic of the experience in which a person feels part of an artificially created environment, regardless of whether this environment is virtual or supplemented. In the context of technologies such as virtual reality (VR) and augmented reality (AR), immersion describes the degree to which the user perceives the virtual environment as real, feeling completely immersed in it. Virtual space allows for the consideration and study of processes and objects that are difficult to observe in the real environment.

Modern education, focused on the fact that the student is an active participant in learning, requires the application of new innovative and interactive methods. Virtual reality allows you not only to be an observer, but also to participate in various processes simulated in this environment, for example, in laboratory work on physics or chemistry. At the same time, VR technologies allow you to maintain safety during dangerous experiments, hone skills and gain experience, regardless of the complex algorithm, without causing harm to the student and others. As a result, virtual reality can be used to teach students with disabilities. Since the impetus for the development of virtual reality was the immense popularity of computer games using virtual reality, there is a large set of tools for creating educational games in a virtual environment. I use elements of gamification, which is a relevant direction in modern education, increasing the interest and involvement of modern students.

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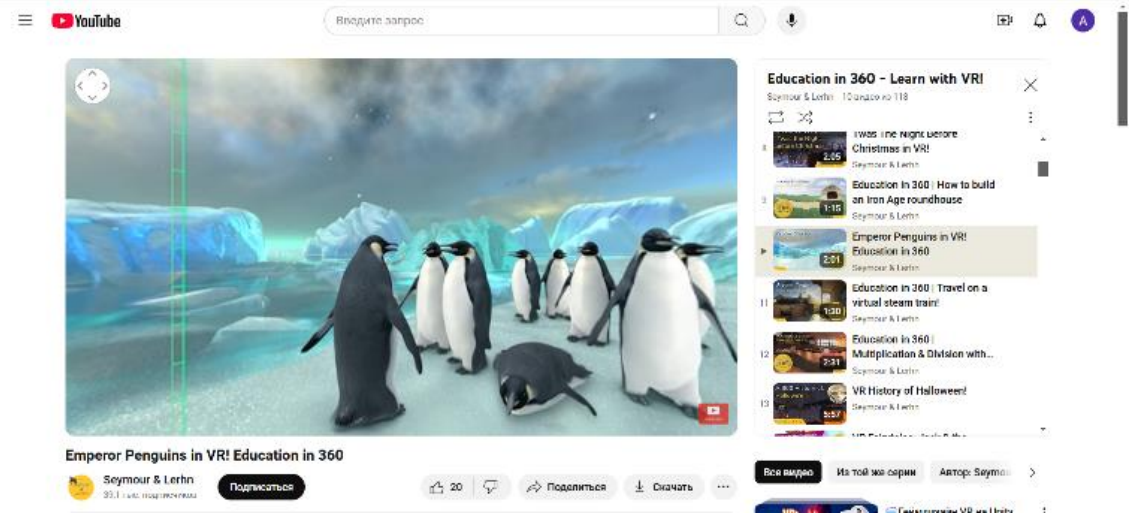
The potential for using virtual reality extends to a wide range of educational subjects, such as geography, history, physics, chemistry, and mathematics. 360-degree videos are very popular and trending for development, which users immerse in on Wednesdays, which can be useful for history or art lessons, as a student can walk around the gallery or museum without leaving the classroom. For example, the youtube video hosting allows you to download and has a large database of 360-degree videos. In turn, virtual laboratories can be useful in physics or chemistry lessons, where students can perform an experiment and analyze its consequences.



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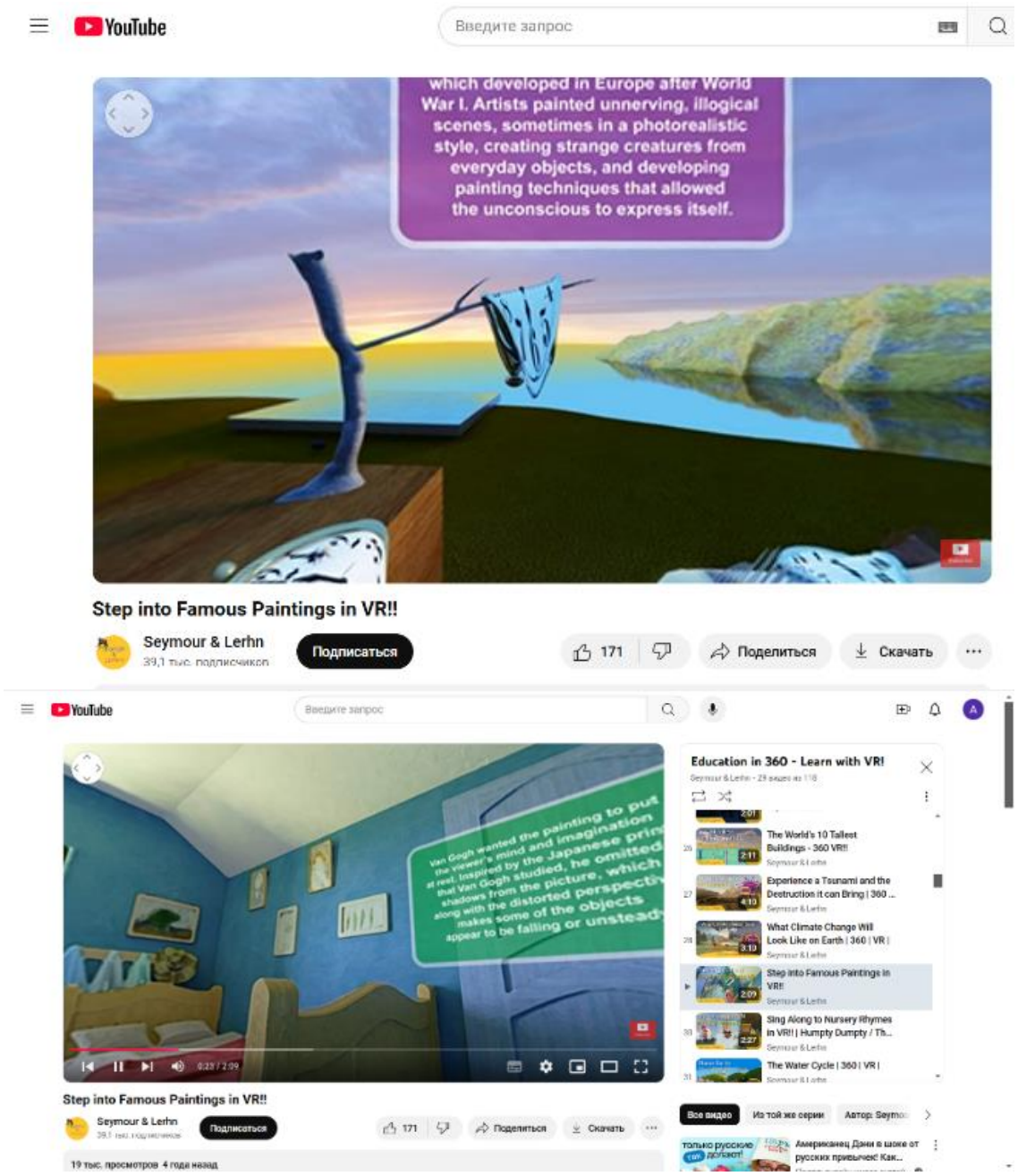

360 Video Screenshots from Seymour & Lerhn's YouTube Channel

Undoubtedly, virtual reality technologies are new and unexplored, especially in the context of education, and their implementation may face difficulties related to the value and adaptation of this technology among teachers and students, but one cannot ignore the important positive aspects of VR technologies, which allow us to bring the educational process to a new level.

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