

Application Research of Virtual Reality Technology in Modern Education

Peihua Su

Xi'an International University, Xi'an, Shaanxi, 710077

Keywords: Virtual reality technology; modern education; distance education; simulation experiment

Abstract: With the rapid development of modern information technology and multimedia technology, a variety of new educational models based on modern information technology have emerged. The emergence of virtual reality technology has opened a new chapter for the development of informationization and networking in modern education. On the basis of expounding the concept and characteristics of virtual reality technology, this paper discusses the advantages and functions of virtual reality technology in modern education from three aspects: teaching concept, teaching method and teaching content. Finally, the concrete application of virtual reality technology in modern education is tentatively proposed, which provides a useful reference for promoting the application of virtual reality technology in modern education.

1. Introduction

Traditional teaching models have been difficult to adapt and meet the needs of modern education. The single paper teaching materials, the one-way infusion teaching methods and the teaching content of the fine workmanship seriously affect the improvement of teaching quality. Under this situation, the reform and innovation of education and teaching has become imperative. The emergence and application of virtual reality technology has solved these problems well. Practice has proved that the education and teaching methods based on virtual reality technology are more suitable for the modern educational needs of large-capacity and fast-paced. Therefore, the majority of educators and researchers in related fields attach great importance to virtual reality technology and vigorously promote its application in the field of education and teaching.

2. Basic overview of virtual reality technology

Virtual reality technology refers to the use of computer technology to provide learners with a perceptible three-dimensional virtual environment in which learners can perceive and communicate with each other through visual, auditory and tactile sensations, resulting in an immersive feeling. As a technology that aims to strengthen human-computer interaction, virtual reality technology integrates the advantages of computer graphics, human-machine interface technology, artificial intelligence technology and visualization technology to enable learners to immerse themselves in virtual reality. In the environment, stimulate learning motivation, enhance learning experience, and achieve contextual learning. Specifically, virtual reality technology has three prominent features: 1) interactivity, which can achieve very close interaction with natural skills; 2) immersion, which can make learners completely immersed in the virtual reality world; 3) imagination, can Make many scenes in the real world that are not present or difficult to detect.

3. Application value of virtual reality technology in modern education

The application of virtual reality technology in modern education has great advantages and functions. The learning situation, learning resources and learning tools in the modern education teaching mode based on virtual reality technology have all been comprehensively reformed. This kind of innovation can effectively apply to traditional teaching concepts, teaching content and teaching methods, making it more perfect and more in line with the development trend and

requirements of modern education. It should be emphasized that this advantage and role will not be “self-extended”. Teachers need to constantly enrich themselves, actively accept virtual reality technology, update teaching concepts, improve teaching methods, expand teaching content, and comprehensively improve their comprehensive quality. .

Compared with the international advanced teaching concepts, there are still big gaps in the existing educational concepts in China. The application of virtual reality technology helps to promote the development of China's teaching philosophy and achieve the integration with international advanced teaching concepts. This is of great practical significance for both the sustainable development of China's education and the promotion of socialist spiritual civilization. From the teacher's point of view, the auxiliary teaching function of virtual reality technology is very powerful. This means that teachers must completely break the traditional "three-center" teaching philosophy and encourage students to learn and explore independently. However, this is not the same as the teacher's role in the teaching process is weakened. On the contrary, the education teaching mode based on virtual reality technology puts forward higher requirements for teachers' comprehensive quality ability. Teachers should not only learn the operation and application of virtual reality technology, but also play multiple roles as interpreters, guides and organizers. The requirements of virtual reality technology for teachers' quality ability are not fundamentally different from constructivist learning theory, situational learning theory, and self-directed learning theory. It can be seen that the application of virtual reality technology in modern education can help teachers develop teaching concepts and gradually integrate with the world's advanced teaching concepts.

For a long time, China's education has adopted teaching methods based on teacher explanations. The form is single and boring, and it is difficult to stimulate students' interest in learning. The application of virtual reality technology provides a favorable opportunity for the improvement of traditional teaching methods in China. With the support of virtual reality technology, human-computer interaction can be fully realized, so that students' visual, auditory, tactile and other senses are involved in the learning process. At the same time, the application of virtual reality technology can also make more effective use of advanced teaching methods and means such as group cooperative learning methods, competition learning methods and online learning methods, and stimulate students to participate fully and participate in the whole process, and achieve new breakthroughs in teaching methods.

Due to the embarrassment of the traditional teaching model, the teaching content set by educational institutions is very limited. For example, the content of the textbook is mainly in the form of words, and many things are difficult to express. For example, in the experimental teaching, based on the consideration of the student's personal safety, experimental cost and other various factors, only a small number of experimental items with high safety factor, easy operation and low experimental cost are set. This is not only not conducive to stimulating the interest and motivation of students' learning, but also easily causes the problem of knowledge breakage, affecting the systematic, comprehensive and in-depth study of students. The imaginary features of virtual reality technology can make the teaching content that textbooks cannot express into an exaggerated form. In addition, the experimental equipment in virtual reality technology is virtual and can be reused without regard to cost. In short, with the help of virtual reality technology, many teaching materials that are difficult to express or difficult to operate in the experiment can be displayed in a concrete and visual way, so that the teaching content can be comprehensive and diversified, thus providing students with richer and more learning. Perfect teaching resources.

4. Specific ways of applying virtual reality technology in modern education

The traditional learning model is strictly limited by time and space, and students can only receive knowledge transfer at a fixed time and place. With the support of modern information technology, learners can receive online education through the online platform, but the human-computer interaction of this online education is relatively poor, and it is difficult to stimulate students' interest in learning. The application of virtual reality technology in modern education can strengthen

human-computer interaction and promote students to invest more in independent learning and research and exploration. Whether you are a student at school, a person who has already entered the workplace, or a person with a special education, as long as you have learning needs and motivations, you can explore and learn independently through the online platform. Moreover, with the support of virtual reality technology, learners' learning experience on the network platform is like "immersive". Learners can choose their own teaching content and conversational situation with their own learning ideas and learning progress, greatly improving the autonomy of learning and thus improving learning efficiency.

In reality experiments, some high-cost or high-risk experiments are difficult to operate. Virtual reality technology can be used to demonstrate many inconvenient or difficult-to-operate experiments in real life, so that some profound knowledge can be visually presented to students before. This not only helps to stimulate students' interest in learning, but also helps students to deepen their understanding and memory of knowledge in the "realistic" learning scene. For example, some experiments in chemical experiments that are prone to explosions, burning, etc., do not have operating conditions in the school laboratory. Through simulation experiments, students can "personally witness" these high-risk experimental processes and phenomena. For example, in the use of the earth's crust, it is difficult for students to understand the principle of crustal movement only by the teacher's explanation. In the model laboratory, the whole process of crustal movement can be clearly and intuitively displayed, allowing students to pass the crust. The observation of the phenomenon of movement deeply understands the essential content of this knowledge point. At the same time, for some experiments, the experiments are complicated, and the experiments that need to be observed and recorded for a long time can be "finely cut" through the virtual laboratory, which not only allows the learners to visually see the whole process of experimental changes, but also greatly saves students' learning. Time and energy to improve learning. At present, the application of virtual laboratories in science education such as physics has gradually become popular and has achieved good teaching results. However, its application in the field of liberal arts is still very few. Researchers in related fields continue to explore the potential of virtual reality technology and increase its application in the field of liberal arts teaching. In addition, it must be mentioned that the virtual military training ground, which is similar to the virtual laboratory, is a military training for learners by constructing a real confrontation training environment.

The open and open education mainly uses modern information technology and multimedia technology as the teaching means. It changes the traditional teacher-directed teaching mode. The educators can learn through satellite TV live broadcast or computer network, and can also download teaching materials for self-study. After a long period of exploration, China's long-distance open education has been quite large and has achieved certain results. However, at present, the remote open education teaching resource management platform and network teaching resources are various in variety, different in shape and incompatible with each other. Therefore, relevant government departments and remote open education institutions are committed to the research of "cloud computing" integration technology, absorbing and introducing advanced network technologies at home and abroad, and optimizing the structure of teaching resources for remote open education. The author believes that the research and application of virtual reality technology should be increased in the research of remote open education teaching resources integration.

With the development of the Internet industry, the level of computer network technology has been greatly improved, and the requirements for the number and performance of network servers have also been significantly improved. However, due to the high cost of developing new servers, it is not easy to develop. Faced with the urgent need for high computing levels of computer resources, the idea of using existing computer resources to replace the independent computing power of developing high-end servers is the original concept of "cloud computing." The working principle of cloud computing technology is to combine a large number of mid-range and even low-end computer resources to form a huge resource service platform. Users don't have to think about how the resource service platform works internally. They only need to access the client to get the corresponding resource service. Moreover, it can be obtained at any time according to the use fee,

with high flexibility and low cost. However, the application of "cloud computing" technology can only improve the openness and sharing of distance education resources, and can not change the form of teaching resources. The remote open education system based on virtual reality technology can further enrich the form of teaching resources. The learner can perceive everything in the virtual world through various senses, so as to completely immerse in the virtual world, strengthen the learning experience and improve the learning effect.

5. Conclusion

The application advantages of virtual reality technology in modern education are obvious to all. With the informationization and intelligent development of modern education, virtual reality technology will be more widely used. It is foreseeable that in the future education and teaching field, virtual reality technology-based education models such as virtual laboratories, virtual classrooms, and virtual training grounds will exert great potential and inject new vitality into the development of modern education. However, the application of virtual reality technology in the field of modern education is not a one-step process, and it requires long-term exploration and practice. In particular, the key technologies for the application of virtual reality technology in modern education, such as dynamic environment modeling technology, three-dimensional graphics generation technology, system integration technology, etc., need to be further improved and improved. This requires researchers in related fields to strengthen research. At the same time, the majority of educators must also keep pace with the times and carefully study and apply this new technology with an open mind.

Acknowledgments

This paper is financially supported by the key industry problem plan fund of Shaanxi provincial science and technology department of China (Grant NO.2018GY-095)

References

- [1] Yu Jiejie. Online Open Courses Need to Be Established [J]. China Higher Education, 2015(24): 9-10.
- [2] Tan Yuanyuan, Sun Jia, Zhu Lu. Discussion on the Standards of Online Open Course Construction [J]. New West Xun, 2015 (2): 120-121.
- [3] Huang Chuanhui. Exploration on the Integration and Sharing of Open Education Resources——Analysis of Main Models, Mechanisms and Forms [J]. Research on Open Education, 2010(2).
- [4] Ji Changqing. Research on Distance Education Model Based on Mobile Cloud Computing [J]. Journal of Jilin Province College of Education, 2011, 27(1): 135-136.
- [5] Zou Ling. Research on the Application of Virtual Reality Technology in Modern Distance Education [J]. Continuing Education, 2017(4): 39.