Application of VR Technology in Vocational Collegespractice Teaching

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Abstract: As a comprehensive application technology, VR technology has brought a certain impact on education and teaching through the combination of multiple information technologies. In the practical teaching of higher vocational colleges, this technology is applied in a wide range of fields. The feasibility of VR technology in the practical teaching of higher vocational colleges is analyzed, and its practical application and application in practical teaching are discussed. The same strategy is to improve the quality of teaching and promote the all-round development of higher vocational colleges.

1. Introduction

With the science and technology continuous development, teaching technology has also undergone corresponding changes. VR technology is another new teaching method after multimedia technology. VR technology, also known as VR, is an operation for feasibility analysis of complex data in a computer, which is characterized by imagination, interaction and immersion [1]. It has practical applications in the installation of computer hardware equipment, CNC cars, and e-commerce, and attention should be paid to combining teaching with economy and computing to build a networked teaching system, which is conducive to improving the level of the entire training and teaching.

2. The Concept of Vr Technology and Its Application Advantages

Simply put, VR technology is essentially a computer simulation system, which is based on computer technology and immerses users in a realistic virtual world by constructing dynamic stereoscopic scenes and simulating physical behavior [1]. With the rapid transformation of computer information technology, in the field of art teaching practice. Its advantages are concentrated in the realization of contextualization in the classroom, and good interactivity, especially the ability to clearly show the art design institute Emphasis on the sense of space and logical attributes, etc., which helps to achieve better teaching effects.

From the perspective of technological development, the origin of VR technology is relatively late. It came into being at the end of the 20th century. It can be understood as a comprehensive new technology that combines human-computer interaction, computer sensors, three-dimensional space display, multimedia technology, and network information. technology. The development of VR technology, this technology has been able to create a lifelike virtual environment, immersing users in it, and making it difficult to distinguish between true and false [2]. With the simulated environment and perception, it generates, it shows strong interactivity. Perceptual and autonomous advantages. The virtual environment mentioned here is essentially a dynamic visual 3D virtual space constructed with the aid of a computer system, while the analog perception refers to the perception that users experience when immersed in it. This perception is diverse, including not only the visual perception of images, but also touch, movement, hearing, and even taste, smell and other different perceptions. In computer information technology rapid development, especially the rise of human-computer interaction technology, VR technology is currently being promoted and applied in different fields. Among them, the field of education is an important application object of VR technology, including well-known virtual classrooms, virtual libraries, virtual exhibition halls, virtual distance education,

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virtual movie halls, etc. VR technology can be classified into four categories, namely, an enhanced system, a desktop system, a network distributed system, and an immersive system [2]. Among them, due to technical and financial constraints, the systems currently used in the education field are mainly desktop and enhanced systems, and most of them are the former [1].

3. The Feasibility Analysis of the Vr Technology Application in Practical Training and Teaching in Higher Vocational Colleges

3.1 Building a Vr Education Platform

Build a VR education platform that can support virtual learning, make full use of computer visualization technology, visualize teaching content and evaluation results, and use the immersive, interactive and conceptual nature of VR technology to stimulate students' initiative, cultivate their innovative thinking, and improve its learning efficiency [3]. Therefore, in the entire education and teaching process, the use of visualization methods to present learning content, interactive learning in the VR environment, and objective methods for real evaluation, achieving the educational and teaching goals of environment virtualization, process interaction, content visualization, and evaluation objectivity.

3.2 Build a Virtual Training Base

The use of VR technology to build an advanced professional virtual training base allows students to experience learning in a simulated environment like a real workplace, breaking the constraints of time and space [3]. Create all kinds of extremely realistic virtual objects for practical training and teaching, so that students can learn and feel efficiently and intuitively. Simulate work scenarios, strengthen training content, and avoid safety risks, especially for those training projects that require high conditions, cannot be done in reality, or are highly dangerous.

3.3 Conduct Professional Skills Training

Traditional skills training methods have high activity costs and are accompanied by certain risks. It is an expendable teaching activity, and the application of VR technology can effectively alleviate this problem. It simulates real work scenes, conducts skill training, realizes the display of real-time, dynamic three-dimensional and realistic images, perceives behavior and actions through multi-sensory functions such as hearing, vision, and touch, and forms information corresponding to computer data and feeds back to the human five senses [4]. Improve their professional skills, professionalism, and psychological quality. The application of VR technology reduces the high teaching costs, enriches the characteristic teaching content, and ensures the safety and efficiency of training [4]. In various skill training, VR technology-based teaching methods will become more and more inclined.

3.4 Presenting Changes in the Micro-World Environment

Use VR technology to produce and demonstrate some unseen changes in real life (such as the carbonization of concrete), allowing students to personally control these unseen changes through technical equipment, in-depth understanding of abstract theoretical knowledge, and feel the charm of the micro world [5].

4. Ant Colony Algorithm Application

The ant colony algorithm is a population-based simulated evolutionary algorithm proposed in recent years, inspired by people's research results on the behavior of real ant colonies in nature. It is a random search algorithm and was first proposed by Dorigo et al. [3−4]. Ant colony algorithm can be used to solve a variety of different combinatorial optimization problems, especially suitable for multi-point non-deterministic search in the solution space of discrete optimization problems, such as traveling salesman problem (TSP), secondary allocation problem (QAP), job scheduling problem

(JSP), etc.; in addition, it is also widely used in application research such as communication network load problem and water science [5]. It is versatile and robust and is based on the overall optimization method [6]. Based on the characteristics of ant colony algorithm in solving TSP problem [7], this process is mapped to the feature selection problem. Feature selection can be regarded as the process of finding the optimal path in ants foraging. Each feature is equivalent to the node that the ant passes through when foraging. Each feature has two flag states: 0 or 1. 0 means that the feature is not captured. Selected, 1 means selected, the rest can be deduced by analogy. The labeling states 1 and 0 of these nodes constitute the foraging path of the ant. The quality of the path (the selected feature subset) is evaluated according to the fitness function. Ant colonies cooperate through the pheromone remaining on each feature node, and finally find a better foraging path (corresponding to a better feature subset). The problem of feature selection is abstracted into the process of finding the optimal path when the ants are foraging, and the ant colony optimization algorithm is used to solve it.

5. The Vr Technology Practical Application in the Training and Teaching of Higher Vocational Colleges

5.1 Vr System for Computer Hardware Equipment Installation and Maintenance

For the installation and maintenance of computer hardware equipment, in the design process, three-dimensional modeling software is used to truly restore various hardware equipment in the computer system. In the process of using the system, teachers in higher vocational colleges will enter the entire scene from a first-person perspective and can roam around a computer. Use the mouse to rotate, zoom in on the components, and use realistic 3D animation plus explanations to demonstrate the installation and debugging process of the standard computer [7]. During the demonstration, the teacher can fast forward, slow down, and pause at will. Simulate the actual computer hardware maintenance. When a certain target is selected by the mouse, the name and information of the component can be confirmed. With the continuous development and progress of science and technology, advanced VR systems can be fully put into this function, so that students have a feeling of being in a virtual environment, as shown in Figure 1. In the actual operation, students can close the visual and auditory senses or other senses to provide a brand-new, virtual sensory space, using positioning systems, data gloves and various controlled input devices. The use of this technology can avoid the surrounding environmental interference and give vocational students a real experience and experience [7]. They can demonstrate and explore in the teaching simulation, and then simulate this model through a computer. During the process of calculation, the output level is reduced to a certain extent.

Fig.1 Application of Vr in Equipment Welding

5.2 The Vr Technology Application in Practical Training and Teaching--Taking Cnc Car as an Example

In the modern industrial system, numerical control and mechanization are the focus. These two core technologies can directly affect the quality of products [8]. Therefore, in actual numerical control training and teaching, higher vocational colleges should consider how to deliver the latest and most practical innovative technology in the current society to students. The application of VR technology can solve this problem well. For example, in teaching demonstrations, through the basic understanding of numerical control equipment and various instruments, use the virtual platform to better understand this equipment. Close observations and experiments, CATIA technology builds a three-dimensional model of CNC equipment, and puts it into virtual training. It can enhance the effectiveness of CNC teaching and improve the quality of teaching [8]. The virtual numerical control and scene established under VR technology imitate the entire processing process. The definition of parts, workpiece clamping, and tool setting operations can enhance students' mastery of numerical control technology and solve the actual problem well. The problem of insufficient operation is shown in Figure 2. For example, the use of 3D animation display can carry out all-round transformation of the pilot, and the 360-degree all-round display of the scene makes the effect of the scene more real and vivid. In addition to the VR training of the machine tool, the students also assemble and connect its structure and electrical circuits, focusing on accumulating practical experience [9].

Fig.2 Application of Vr Technology in Nc Teaching

5.3 Establishing a Virtual Digital Model in e-Commerce

Part of the teaching in higher vocational colleges is mainly based on theoretical knowledge, with less practical content, which leads to a disconnect between theoretical knowledge and practice [9]. For example, in accounting teaching, it only relies on language and calculation to transfer knowledge to students. In computer information rapid development and the advent of the era of big data, it also marks a corresponding change in the teaching methods and teaching methods of higher vocational colleges. Establish a variety of virtual training environments and use VR technology to achieve the best teaching results for the parts that cannot be achieved in traditional teaching. In the teaching of e-commerce majors, teachers can use the Internet to establish an e-commerce system and establish a virtual digital model of goods [10]. Students can buy on the Internet, choose appropriate products, and build three-dimensional objects through stereo glasses and related projector equipment, as shown in Figure 3. Although it is not possible to display more in-depth information on a plane, you can only view information from different perspectives through glasses, and the resulting differences will give students a more realistic feeling. A rational simulation environment should be invested in a computer to create a three-dimensional virtual environment. What you feel and see in such an environment looks like real, and it is difficult to distinguish between true and false [10].

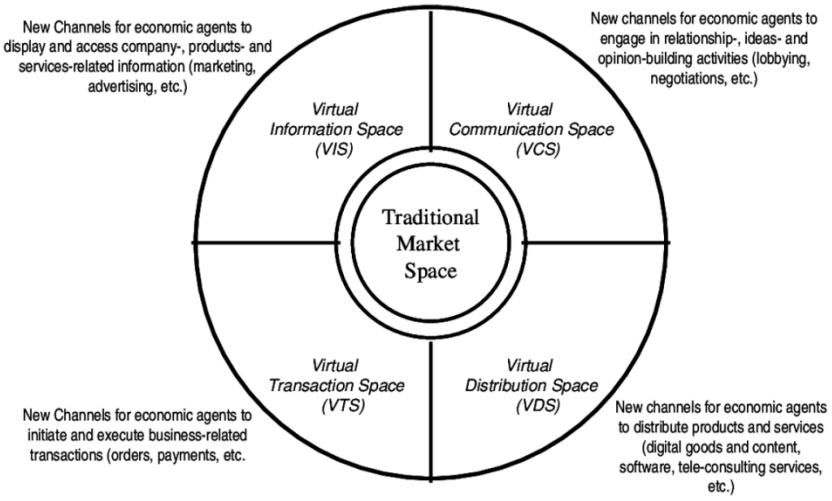

Fig.3 Establishing a Virtual Digital Model in e-Commerce

6. Summary

In short, under the big data, there is still a lot of room for the development of VR technology. For higher vocational colleges, strengthening the application of VR technology is a form of education and teaching environment. To truly realize the training of higher vocational students, it is necessary to combine economy with teaching technology, conduct standardized training teaching, and construct a networked teaching system. This is an important strategy in the current teaching development of higher vocational colleges.

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