# The Research on Simulation Platform of Practical Teaching in Higher Vocational Colleges Based on Vr Technology

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**Abstract:** Today, with the Development of Science and Technology, the Traditional Classroom Teaching Model Can No Longer Fully Satisfy the Students 'Desire to Acquire Knowledge, and the Students' Autonomy in Learning is Limited. as an Emerging Technology in the Field of Education, Vr Uses Interactive Technologies, Human-Machine Interface Technologies, and Other Technical Means to Allow Learners to Spontaneously Engage in Inquiry Learning with Computers, or Cooperate with Other Learners. in Such a Virtual Learning System, Learners Can Obtain a More Realistic Learning Experience and Establish a Set of Their Own Knowledge Systems in the Continuous Learning Process. Vr, as a Teaching Medium, Provides More Effective Learning Opportunities in Collaboration with Teachers. It is a Powerful Medium to Strengthen the Classroom and Requires the Active Participation of Students. Based on the Analysis of Vr Technology, This Paper Studies the Construction and Application of the Training Teaching Simulation Platform in Higher Vocational Colleges.

### **1. Introduction**

At the End of the 20th Century, Vr (Virtual Reality Technology) Began to Take Shape Gradually, Relying on the Development of Computers, and Gradually Developed into a Brand New Comprehensive Information Technology. At the Beginning of the 21st Century, with the Development of Computer Software and Hardware Technology, Vr Has Gradually Entered Our Lives and Has Been Widely Used in Various Fields, Such as Medicine, Art, Design, Real Estate, Military, Archeology, Entertainment and Many Other Fields. Innovation and Development Have Brought Huge Economic Benefits to Society. with the Rapid Development of New Media on the Internet, Opportunities for Face-to-Face Communication between People Have Gradually Decreased, and More Communication Has Been Done through the Internet. and This Kind of Boring, Blunt and Passive Interaction Using Computer Language is Also Difficult for Ordinary Users to Accept. the Emergence of Vr Technology Has Changed This Situation. the Three-Dimensional Virtual Environment Constructed by Vr Allows Users to Obtain a More Realistic Experience on the Basis of Breaking through the Constraints of Space and Time. in Terms of Degrees, Vr Has Shown People New Ways and Possibilities [1]. Therefore, Vr Technology, as a Modern High-Tech Technology with Computer Technology as Its Core, Has Been Widely Regarded by Society as One of the Important Disciplines of This Century, and It is Also One of the Important Technologies Affecting People's Life and Learning.

### 2. Overview of Vr Virtual Reality Technology

### 2.1 Definition and Concept of Bim

Virtual reality technology integrates a variety of scientific technologies such as computer graphics technology, computer simulation technology, sensor technology, and display technology. It creates a virtual information environment on a multi-dimensional information space, which enables users to have an immersive sense of immersion, with environmentally sound interaction capabilities and help inspire ideas [1]. It has the following characteristics:

1) Multi-perception: refers to the interaction between a variety of sensors and the virtual environment of multi-dimensional information [2]. In addition to the visual perception of computers, there are also auditory perception, tactile perception, motion perception, and even smell, taste, perception, etc. The ideal virtual reality should have all the perceptual functions of a human body.

2) Presence: refers to the anti-touch of the human body through a variety of sensors, so that participants have an immersive feeling in the virtual environment and feel the real degree of existence as a protagonist in the simulated environment [2]. The ideal simulated environment should reach make it difficult for users to distinguish between true and false.

3) Interaction: It means that while participants control and touch things in the virtual environment through multiple sensors, the virtual environment counteracts the participants through sensors, and each information exchange is mutual. The operability of the objects in the simulated environment and the feedback from the environment are mutual, and such operations and feedback are real-time [3].

4) Autonomy: refers to the virtual environment designed and created by the participants according to their own needs. It plays a leading role in the operation of virtual reality and is designed and manufactured according to the real world's physical and physical laws of movement [1]. In virtual reality, various the operation of things must conform to the objective laws of reality.

#### 3. Advantages of Vr Virtual Reality Technology in Teaching

In the entire learning process of students, it is actually not a simple input, storage and extraction of information, but a process of interaction between new and old experiences. It needs to go through creating scenarios, establishing hypotheses, collecting information, trying to explore, verify hypotheses, and earnestly [3]. Everyone can experience and feel for themselves. It is actually more convincing than empty abstract preaching. There is a fundamental difference between active interaction and passive indoctrination. With the use of modern electronic information technology, virtual reality can establish a variety of virtual laboratories, which has advantages that are incomparable to traditional laboratories:

### 3.1 Save Costs

When it comes to virtual reality systems, the first thing people think of is expensive electronic equipment and high development costs, which they think are too expensive [4]. However, taking into account the cost of hardware and software sharing and savings in building construction, as well as reuse and savings in material costs, the unit cost of its tests is relatively low. For some high-end experiments, we are unable to carry out many experiments due to the hardware constraints of equipment, site, and funds. The use of virtual reality systems can enable students to perform various experiments without leaving the home. Especially for experiments that consume more expensive materials, the cost is greatly saved.

### **3.2 Avoiding Risks**

Many students are exposed to the experiment they are learning for the first time. There are often various dangers in real experiments or operations. If they are not careful, they may agree with very serious consequences, and this pressure often allows It is difficult for students to receive the proper teaching effect due to stress or failure [3]. Using virtual reality technology to conduct virtual experiments can not only allow students to clearly and vividly observe the entire process of the experiment, but also experience the feeling of on-site operation. Students can safely perform various dangerous experiments in the virtual experiment environment, and can repeat the test until the teaching purpose is achieved.

#### **3.3 Expand Space**

With the development of science and technology, the natural science knowledge that students need to master is more extensive and subtle, and under actual conditions, some experiments are difficult to achieve [4]. But the use of virtual reality technology can break the constraints of space and time. Without leaving the classroom in a virtual laboratory, students can go to the sky and sea, touch the

vastness of the universe and the depth of the ocean floor, and enter the interior of these objects to observe the movement of particles.

## 4. Construction of Vr Smart Teaching Center

In the professional teaching of airspace in higher vocational colleges, the VR Smart Teaching Center can effectively solve the shortcomings in the practical teaching link. Under the "Internet +" mode, the mobile intelligent terminal is used to achieve the perfect integration of real things and virtual objects, so that students can always experiments can be conducted anywhere through smart mobile terminals to improve students' learning interest and hands-on ability [3], to realize digital, networked and intelligent modernized teaching, and to innovate new models of "future classroom" talent training, as shown in Figure 1. It integrates a series of supporting equipment such as multimedia teaching resources, 3D virtual simulation software, VR headset hardware and interactive systems, resource management platforms, etc., creating information-based teaching, virtual reality training, autonomous learning, and efficient and innovative teaching practices the training mode solves the training management problems such as training equipment, coordination of teachers and students, high cost or high risk [5].



Fig.1 Vr Smart Teaching Center

### 4.1 Hardware Basics

The VR teaching and training cloud platform is based on the VR training and training integrated machine as the main teaching carrier. Through the VR teaching platform, the teaching and training modules are presented in the teaching with virtual reality technology. Integrate VR graphics workstation, VR stereo glasses, high-definition LCD display, input and output devices, audio, etc. on the hardware platform to seal the participants' vision, hearing and other feelings, and provide a new, virtual feeling space, through location trackers, manual input devices, sounds, etc., to enable participants to have an immersive, fully engaged and immersed feeling [5]. Students can quickly understand and master cabin services through virtual graduate post operations work process.

### 4.2 Software Platform

Is it possible to implement smart teaching with hardware such as an all-in-one? Really need to match the teaching software with massive courseware to effectively use VR means, otherwise no matter how good the headset and VR glasses will become furnishings for a long time. The rational development of teaching content and teaching resources is the basis for the efficient use of the platform [6]. Specifically, the platform should have a set of professional VR classroom teaching management systems that support all mainstream VR glasses or headsets on the market. It should be connected to the VR education cloud to integrate outstanding VR education content, as shown in Figure 2.



Fig.2 Vr Classroom Teaching Management System

### 4.3 Module Setup and Resource Development

The VR teaching and training cloud platform is aimed at the post of high-vocational flight attendant graduates, and divides the teaching training content of higher vocational majors into 9 modules: post foundation, cabin service, cabin safety inspection, on-board bump handling, and cabin pressure relief handling , Land (water) evacuation, first aid on board, emergency landing, fire treatment on board. Resource authors developed corresponding resources such as electronic textbooks, online learning resources, curriculum syllabus, curriculum knowledge point system, teaching guide, and question bank according to the division of modules [6]. The instructor arranges the teaching progress and teaching content according to these resources, and conducts training teaching in combination with the VR training platform.

# 4.4 Presentation of Teaching Functions

The VR teaching and training cloud platform can help students to learn the post operation knowledge of personnel in aviation companies in the form of VR videos in an immersive and autonomous way; the system has set up a professional advanced system that can push learning based on the students' mastery of this knowledge Tasks to enable trainees to advance from junior to senior positions in the way of breakthrough to achieve skills upgrading; the system sets up a complete set of assessment questions according to the professional skills assessment standards, which can be grouped by teachers in the background to set the assessment of students, and the system will give comprehensive assessment the system supports multiple students to play different positions and cooperate to complete a certain project task in the same scene, further improving students' teamwork awareness [7].

## 4.5 Management Function Presentation

The VR teaching and training cloud platform can implement multiple functions such as resource management, teaching management, learning management, and intelligent evaluation. The system can realize user VR video uploading, editing, management and other functions; teachers can use the platform to achieve remote training for students, release courses, post test questions, group multi-person interactive training, performance statistics, etc.; students can perform cabin interactive operations, practical training records, real-time assessments, question answers, results sharing, etc.; The system records the course training that students participate in online, which can perform data analysis and intelligently guide students [7].

VR is only a tool, education is the fundamental. VR makes education simpler, happier, and more efficient. Educational informationization is an important part of national informationization. It has far-reaching significance for changing educational thoughts and concepts, deepening educational reform, improving the quality and efficiency of education, and cultivating innovative talents.

### 5. Summary

The training simulation platform established by VR technology can simulate the training equipment and make the original expensive training equipment readily available, which effectively reduces the training cost. In the virtual scene, students do not need to worry about the danger caused by mistaken operation. At the same time, VR teaching breaks time and space and realizes the sharing of educational resources. In the era of VR teaching, a large number of high-quality resources are randomly selected, and are no longer subject to the rich and poor conditions of regions, schools and even families. Through VR teaching, students can freely travel between the microcosm and the vast universe.

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