

# Research on the Design of Virtual Simulation Teaching Platform in Business Education

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**Abstract.** This study aims to design and study a virtual simulation teaching platform for business education, in order to improve students' practical abilities and learning motivation in the business field. In this study, a demand survey and analysis were conducted on the virtual simulation teaching platform in business education, clarifying the challenges and needs faced by students in business learning. According to the training requirements for business professionals, the college stipulates that after completing the basic professional courses, students are required to undergo a one week comprehensive business training course, allowing them to experience the real corporate environment, touch real positions, feel the workflow of the enterprise, recognize the ideas and accumulated experience of enterprise management. Students can play the role of entrepreneurs or managers in a virtual environment, engage in various business activities, and receive feedback and evaluation based on their own decision-making results. Through conducting experiments and questionnaire surveys, we evaluated the impact of virtual simulation teaching platforms on students' learning motivation and practical abilities. The results indicate that the platform has shown significant advantages in improving students' learning enthusiasm, enhancing practical and decision-making abilities. Students have a very positive experience of learning business knowledge and skills in a virtual environment, believing that this learning method is more vivid and interesting, and it is easier to apply the learned knowledge to practical situations.

**Keywords:** Experimental teaching; Virtual reality; Simulation system.

## 1 Introduction

In teaching, experimental teaching is an intuitive and vivid method, which shows the abstract process of people's understanding and discovery of a certain knowledge and principle through experimental means, so that students can understand, recognize and master a certain knowledge and principle in a short time and lay the foundation for mastering other knowledge. Because experimental teaching is intuitive and operable, it can stimulate students' curiosity and desire to explore, and gradually form students' rigorous and realistic scientific attitude in the experimental process, guide students to master the skills of standardized operation, and cultivate students' ability of observation, analysis and hands-on operation. Experimental teaching plays an important role in promoting students' knowledge transfer in the teaching process and plays an important role in the whole teaching[1]. At present, there are still some defects in teaching conditions and objective reasons such as variability, complexity and isolation. It is impossible to apply any experiment to teaching, and it is impossible for students to complete every experiment. At the same time, in the current school education, students lack

practical ability to some extent. In order to make students understand these difficult experimental designs and operations as much as possible in the teaching process, we usually use multimedia teaching methods fully, reasonably and effectively in teaching, which can save teaching time, reduce the cost of experimental teaching and improve its experimental teaching quality. At present, in addition to the Internet-based multimedia education and training applications that combine multimedia technology with network communication technology, what people explore most is the combination of multimedia technology with Virtual Reality (VR) and simulation technology to generate a highly realistic and interactive virtual world teaching system, so as to promote the further implementation of experimental teaching [2].

## **2 Virtual simulation technology**

### **2.1 Development characteristics of virtual simulation technology**

The development of virtual simulation technology depends on the progress of virtual reality and simulation technology. Virtual reality is a kind of virtual world established by multimedia computer system, which enables people to be immersive and get interactive experience with the environment. Virtual reality technology integrates computer graphics, image processing and pattern recognition technology, artificial intelligence technology, sensing technology, network technology, three-dimensional modeling technology, etc. It changes the digitized information processed by computers into information forms with various forms that people can feel. By expressing the sensory world such as vision, hearing, touch and even smell, users can browse and interact with this generated virtual world object from their own point of view by using natural skills and related equipment. Traditional virtual technology does not pay attention to the study of human perception and simulation of the model. Modern virtual technology emphasizes reality and simulation more, which brings people new concepts and methods of human-computer interaction. It has become possible to simulate the sensory stimulation and psychological feelings of the external environment with computers. Simulation technology is a key technology in virtual reality technology. The key of virtual reality is to provide people with a virtual spatial and environmental expression that can truly reflect the changes of things and objects. This expression is based on simulation and simulation, so simulation technology can also realize and predict the scenes and changes of things in the actual environment in the simulation environment [3-4].

### **2.2 The main way of applying virtual simulation technology to experimental teaching-simulation system**

The main characteristics of applying virtual simulation technology to experimental teaching are as follows: firstly, through the application of virtual simulation system, we can design the instruments to be used in the experiment through three-dimensional modeling, so that students can have a preliminary understanding and understanding of the instruments to be contacted in the upcoming experiment, which can deepen students' impression of the experiment, improve the speed in the actual experiment and ensure the smooth progress of the experiment. Secondly, the application of virtual simulation system can save a lot of money. Many experimental instruments are expensive, and the experimental effect is particularly prominent in schools with limited financial resources. For example, dam collapse experiment in

environmental science and aircraft missile operation experiment in aerospace science, as long as you have such a simulation experimental system, you can complete such teaching tasks without worrying about teaching investment. Thirdly, the application of virtual simulation can also complete many dangerous experiments, and avoid unnecessary casualties, such as hydrogen nuclear reaction experiments, car collision experiments and so on. Fourthly, many experiments with long periods can be completed by using the virtual simulation system. For example, in agricultural planting, the growth period of crops is long, and it is time-consuming to observe their actual growth. We can use the virtual simulation on the computer to observe their development laws and infer their growth results [5].

We introduce virtual simulation technology into experimental teaching to develop a virtual simulation system suitable for experimental teaching, so that the traditional system will become more effective under the guidance of such technology. Virtual simulation system is a learning mode that uses computer virtual simulation technology to simulate teaching environment and teaching content. Multi-disciplinary virtual simulation practice teaching is a kind of inquiry teaching mode, which takes students as the center, cultivates students' enterprise operation ability and comprehensive quality, and makes decision-making design with problem-oriented teaching method. In the teaching process, fully mobilize students' initiative of independent innovation and integration into the role, and teachers only assume the role of support and service, discover and correct students' shortcomings and deviations in the learning process in time, and urge students to achieve their learning goals. The teaching mode of virtual simulation experiment is shown in Figure 1.

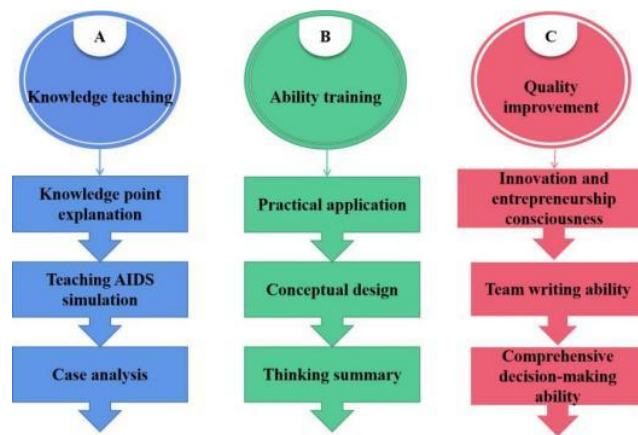


Figure 1. Virtual simulation experiment teaching mode

### 3 Platform construction ideas

#### 3.1 Platform Framework Design

Virtual Reality (VR) technology is one of the core technologies for implementing a virtual simulation teaching platform. Through VR technology, students can immerse themselves in virtual business scenarios, experiencing authenticity and immersive experiences. VR

technology includes Head-mounted display, handle, location tracking and other devices, which are used to create a realistic virtual environment so that students can interact with the virtual world and make business decisions and operations. The platform takes the business processes of upstream and downstream enterprises in the supply chain as the main line, takes modern manufacturing enterprises as the core, and relies on service institutions such as administrative units and financial institutions to create a panoramic business ecosystem. The frame design of the platform is shown in Figure 2.

### Commercial panorama

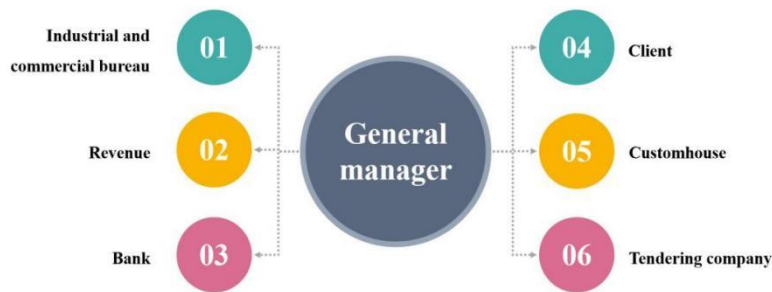


Figure 2. Framework of Virtual Simulation Experiment Platform

As can be seen from Figure 2, the platform is mainly divided into two parts: peripheral service organizations and core manufacturing industries. Students can work in various positions in institutions on the platform, experience the collaborative work of different institutions in the commercial society, recognize the business processes and management processes of enterprises, and train their executive ability, comprehensive decision-making ability and innovation and entrepreneurship ability in business management. The platform focuses on simulating the internal structure of manufacturing enterprises, and the main functions of its seven departments are as follows [6-7].

### 3.2 Training course system construction

According to the training requirements of business professionals, the college stipulates that after completing the professional basic courses, students should conduct a one-week comprehensive business training course, so that they can experience the real enterprise environment, touch the real post, feel the workflow of the enterprise, and recognize the ideas and accumulated experience of enterprise management [8]. According to the hours of the training plan and the nature of the business comprehensive training course, the training course can be divided into the following stages, as shown in Table 1.

Table 1. Training courses

Training stage	Learning point	Suggested class hours
Registration and registration of enterprises	Understand the internal institutions of enterprises and	5

	their corresponding functions.	
Enterprise formation	Orientation of production line, organization personnel and product research and development	5
Enterprise operation and management exercise	Understand the business process of the enterprise and the relationship between organizations, and complete the tasks required by the post.	9
Actual combat summary	Summarize the effective cooperation between departments in the process of enterprise management in actual combat.	5

### 3.3 Construction of teaching staff

The platform involves many disciplines, majors and courses, so the platform also puts forward higher requirements for teachers. Schools should continuously carry out relevant knowledge training on virtual simulation experiments for professional teachers, and actively encourage teachers to go deep into enterprise learning, so that professional teachers can continuously expand and optimize their knowledge system on the basis of consolidating their existing professional knowledge and master the latest development trends and cutting-edge information of their majors. At the same time, it is necessary to absorb and transform the relevant scientific research achievements of business majors, so as to enrich the virtual simulation training projects and further enhance students' innovation and practical ability. In addition, excellent teachers from other majors can be recruited to form a team of teachers with different professional backgrounds to complete the teaching tasks together [9-10].

## 4 Conclusion

With the development of virtual simulation technology such as three-dimensional modeling technology and action interaction technology, the system applied to experimental teaching will continue to innovate. Compared with the traditional system, the application of virtual simulation system in experimental teaching provides learners with an intuitive, interactive and autonomous exploration and learning method, which will greatly improve the teaching environment, improve teaching efficiency and save teaching costs. With the maturity of virtual simulation technology and the use of its development system, we believe that it will become an important technical means in our experimental teaching and even the whole modern teaching in the near future.

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