# Research on the Application of Virtual Reality Technology in International Business Negotiation

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**Abstract.** Virtual reality technology is a computer simulation system that can create and experience virtual world. It is a frontier science and research field that integrates simulation, computer graphics and sensing technology. With the rise of the concept of "Metaverse", it has developed very rapidly in recent years. The field of education will also be deeply influenced by virtual reality technology, especially in the application of teaching scenes has many advantages and development prospects. In this paper, combing the development process of the existing virtual reality technology and reconstruction of scene technology, this paper expounds the development course of immersive virtual reality technology, and then, based on the characteristics of international business negotiation course, analysis on the problems existing in the teaching of this course are summarized and introduced the use of virtual reality technology in teaching of Chongqing negotiations case scenarios, and finally, this paper analyses and summarizes the future and difficulties of applying virtual reality technology in curriculum teaching.

**Keywords:** Virtual Reality Technology · Scene Restoration · Application of Negotiation Teaching

## 1 Introduction

1946 the world's first computer was born. In less than 100 years, computer science has developed rapidly. Scenes that once existed only in human imagination are realized. In recent years, virtual reality technology has developed very rapidly.

Virtual reality technology is an interdisciplinary frontier science integrating simulation, computer graphics and sensor technology. It may replace traditional information technology, or make IT a leap forward.

In 1992, the concept of "Metaverse" appeared in *Avalanche*, a science fiction describing the virtual reality world. Since then, the concept of "Metaverse" has swept the world with the progress of technology. Major technology enterprises around the world are scrambling to virtualize and digitize the real world. Virtual reality technology has made rapid development in this process, based on extended reality technology to provide immersive experience, first made a breakthrough in games.


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With the rapid development of information technology towards intelligence, education circles are also deeply affected by it. In terms of teaching, the traditional teaching model has been unable to meet the needs of students' learning, and it has become an imperative task to explore new teaching models by using information technologies such as the Internet, big data, artificial intelligence, and virtual reality. Among them, virtual reality technology can break the barriers of time and space, and has irreplaceable advantages in the application of teaching scenes, so become a new tool to explore teaching mode.

## 2 Introduction of Virtual Reality Technology

### 2.1 Virtual Reality

Virtual reality technology refers to the use of computer simulation system to generate a virtual world, so that users can feel the real existence of objects in the real world, and can be immersed in the virtual environment. It is also called a virtual world because the world seen by the user is simulated by computer technology, not the real world.

### 2.2 Virtual Reality Technology

The core of virtual reality system is dynamic environment modelling, which is built by combining real environment and application data. Based on virtual dynamic environment, 3d image is generated, and the 3d image refresh rate is higher than 30 frames/SEC [3].

Virtual dynamic environment and 3d image generation are the key for users to have an immersive experience. After that, the 3d image is transferred to the user through the display, sensor, and the development of the application system, finally the virtual environment is transferred to the user through the system integration to achieve human-computer interaction. Virtual reality technology basically completes the development through the above process. See Fig. 1 for details.

### 2.3 Application Scenarios of Virtual Reality Technology

#### 2.3.1 Scene Restoration

Scene restoration is a special art form originally developed from drama performance [2]. Scene restoration, as the name implies, is to show the scene that existed in the past and has disappeared now, or is extremely difficult to observe by the microscopic eyes [4]. Scene restoration is also often referred to as landscape display, which presents specific effects with objects, models, etc.

The virtual reality technology of scene restoration mainly collects data through field investigation and literature collection. Using the data collected to build virtual reality models, make scene, and run it on VR platform to complete system integration. See Fig. 2 for the specific process.

Virtual reality scene restoration technology can provide users with image and intuitive interface, so it has a wide range of applications in product simulation, urban planning, fire rescue and other fields.

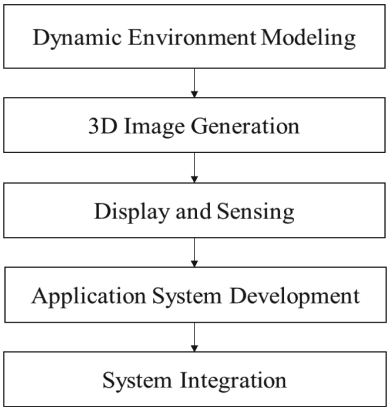


**Fig. 1.** The process of virtual reality technology

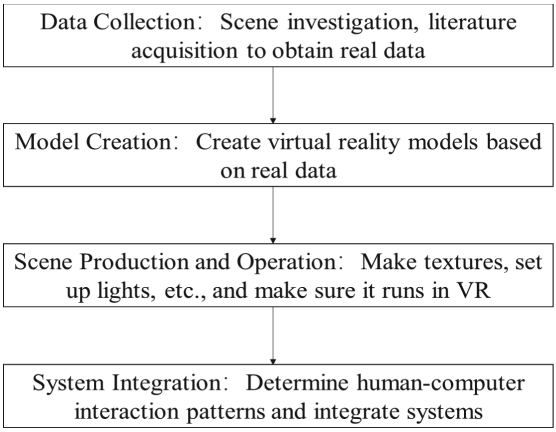


**Fig. 2.** The technical process of virtual reality scene restoration

### 2.3.2 Immersive Virtual Reality Technology

Immersive virtual reality technology refers to a three-dimensional virtual world through computer simulation, and then through the simulation of multiple senses such as vision, hearing, and even touch to create immersive experience for users [8]. Immersive virtual reality technology is one of the hottest emerging technologies, which is much more complex than virtual reality scene restoration technology, and can be said to be an upgraded version of scene restoration technology. Although filmmaker Heilig created a virtual reality system called Sensorama in 1956 to provide simultaneous visual, auditory, olfactory and tactile stimuli, computer monitors at the time were cumbersome, expensive, and the experience was not satisfactory, so it was not widely accepted [6].

Until 2012, oculus-Rift, SonyPSVR and other virtual reality devices for individual consumers came out one after another, enabling individual consumers to experience high-quality virtual reality products, attracting more and more commercial companies to

**Table 1.** Classification of Immersive V

| Immersive VR | |
|---|---|
| HMD (head mounted display) | CAVE (cave automatic virtual environment) |
| In a room-sized space, a projector projects A 3D image to all sides. The user wears a 3D eye to experience the immersion effect. The system updates the 3D image in real time by capturing the user's position and posture | In a room-sized space, a projector projects A 3D image to all sides. The user wears a 3D eye to experience the immersion effect. The system updates the 3D image in real time by capturing the user's position and posture |

enter the field, promoting the wide application of virtual reality technology in medicine, aviation, entertainment and other fields [10].

The technical route of immersive virtual reality technology is roughly the same as that of other virtual technologies, which is to first build 3d images through virtual dynamic environment, then build systems through display and sensors, and finally complete system integration. There are two main types of immersive virtual reality systems. One is Head Mounted Display (HMD), which projects images to people's eyes through a High-Definition screen to create a three-dimensional sense [11]. Meanwhile, sensors are used to track the user's head movement, and the processor updates the rendering images according to the head state [7]. The other is CAVE Automatic Virtual Environment (CAVE Automatic Virtual Environment), which uses projectors to project 3D images around a room-sized space. Users wear 3D glasses to experience immersion. The system captures the user's position and posture to update 3D images in real time [1]. See Table 1 for details.

## 3 Application of Virtual Reality Technology in International Business Negotiation

### 3.1 The Course Features of International Business Negotiation

International Business Negotiation is a specialized course with a certain general nature, which can be used as a required course for economic management majors. The total number of hours of this course is usually small, around 32, with 50% of theoretical hours and 50% of practical hours. The course is characterized by the relatively simple theoretical part, which mainly focuses on practical application, focusing on the performance of language and body to implement negotiation strategies. Because negotiation is implemented with the help of language, it also has some characteristics of language courses.

### 3.2 Problems Existing in the Teaching of International Business Negotiation

International Business Negotiation is a practical course. Compared with the traditional theory course, it is not good to simply use the teaching mode [5]. And because of its strong practical characteristics, students' enthusiasm and subjectivity need to be fully mobilized

to achieve good teaching effects. Therefore, the informatization of international business negotiation course is not smooth.

After years of practice and application of international Business Negotiation, most teachers believe that case teaching and simulated negotiation are the main methods to effectively improve the teaching effect. But there are also many problems in the process of practice.

### 3.2.1 Students Often Ignore Case Background in Simulated Negotiation

In order to better combine with specialty and reflect the comprehensiveness of negotiation, real cases in practice are usually selected for simulated negotiation. The background of these cases is usually very complicated, which requires students to actively prepare after class, go deep into the market and collect relevant information. However, in practice, students usually ignore the preparation work before simulated negotiation. Under the pressure of teachers, they randomly collect some information through the Internet, and the information they finally collect is not only poor in quality, but also completely substandard in quantity. It has a very bad influence on the later simulation negotiation.

### 3.2.2 The Use of Negotiation Strategies is Divorced from the Case

The application of negotiation strategy is the most important part in the simulation negotiation, which can exercise students' ability most. However, in practice, students often have fierce arguments about the price, and even the price has affected their own emotions [9]. They got angry with the students who did not give in before the class. The students ignored the fact that price was only one factor in the case and did not pay attention to other.

Or in the context of a case, in order to win the negotiation, unprincipled choice of tough tactics. And the context is that they are on the weak side. If they choose to be strong in practice, the negotiation will fail at the beginning.

The above situation leads to the separation of students from the case in the application of negotiation strategy, which affects the teaching effect of simulated negotiation.

### 3.2.3 The Negotiation Environment is not Realistic Enough

In the course practice of International Business Negotiation, some schools lack special practice classrooms, and students can only make temporary negotiation tables by moving desks. It is difficult to form a real atmosphere of negotiation when negotiators sit randomly at a patchwork negotiating table. Students are also easily influenced by other students in the negotiation process, thus affecting the effect of simulated negotiation.

Some schools have special training classrooms, such as a special negotiation room, where students can conduct negotiation simulation. However, the limited capacity of the negotiating room is not conducive to the observation and learning of other students, and the environment is single. The negotiating room is much better than the temporary negotiating table in the classroom, but it is still not realistic enough, and it cannot change the appropriate scene through the transformation of cases.

### 3.3 Application Scenario of Virtual Reality Technology During International Business Negotiation

According to the above analysis, we can find that the course Of International Business Negotiation takes negotiation as the research object, and the scene of negotiation is simple, but the background is complex.

In practice, students are often unable to complete the preparation of negotiations, the negotiation process is often divorced from the actual situation of negotiators, and the simulated environment of the school is not realistic enough. Several reasons together lead to the simulation negotiation cannot achieve the desired effect.

So, it's very important to put the student in the context of the case. Simulated negotiation itself is meaningful. For this reason, scene restoration in virtual reality technology can bring a certain sense of immersion, but also has a certain popularization significance due to its relatively low price.

#### 3.3.1 Static Virtual Reality Scenarios

The course International Business Negotiation can use static virtual reality scenes for scene integration. For example, MAYA software is used to collect relevant information and conduct 3d modelling. The model is converted into modelling language files by MAYA software plug-in, to obtain VRML files of static models.

#### 3.3.2 Dynamic Virtual Reality Scenarios

The international Business Negotiation course also has the option of using dynamic virtual reality scenarios. This kind of scene making can enhance learners' experience to a greater extent. Code design includes variable definition, system initialization, and event handling [13]. In variable definition, eventIn variable and eventOut variable in VRML file are defined, and then the connection between eventIn variable and eventOut is established through system initialization. Finally, eventOut variable is processed through event processing, and the modified variable is passed to VRML file. Realize human-computer interaction. That is

```
Public class text extends script
// Variable definition
Public void initialize
// Establish a connection
Public void process event
// Process and modify the variable values, passing them to the VAML file [4].
```

### 3.4 The Application of Virtual Reality in International Business Negotiation

The practice during International Business Negotiation is mainly the re-interpretation of various real cases, or the simulated negotiation based on the background of a certain case [12]. In order to give students a better patriotism education and a deeper understanding of the logic behind the negotiation, the research group chose Chongqing negotiation,

**Fig. 3.** Relevant historical photos and film screenshots.

a famous historical event, to reconstruct the scene. Select Virtual Reality Modelling Language for scene restoration.

The Chongqing negotiations were very complex, taking 43 days, and the scene restoration can only recover very few parts of them.

So, the research team reorganized the historical events of Chongqing negotiation to sort out the most important context, including statements of Kuomintang and Communist about the current situation after the War of Resistance, Mao Zedong's records of his activities in Chongqing, Statements and appeals from political parties, groups and overseas newspapers compressed a month of negotiations in Chongqing into a period.

No. 101 Anli, Zhongshan 4th Ludian was chosen as the negotiation environment for modelling. In the early stage of modelling, documents such as Chongqing Negotiation Record and photos at that time were selected to collect data. At the same time, some scenes of the movie Chongqing Negotiation were referred to as shown in Fig. 3.

## 4 Conclusions

Virtual reality technology provides a solution to the reification of cases with complex backgrounds by building a simulated environment that makes students feel like they are there. In order to solve some outstanding problems in the current teaching, to improve the teaching effect, to achieve the teaching objectives.

In recent years, virtual reality technology has developed very rapidly. From static scene restoration to dynamic scene and then to immersive virtual reality technology, the simulated reality is becoming more and more realistic, and more and more senses can be used. But unfortunately, it's not cheap enough in terms of price.

Virtual reality technology is now widely used in teaching, such as medicine, geophysical science, physical education, etc., but it is rarely used in humanities and social sciences, and only exists in media art, language teaching, etc.

International Business Negotiation is a representative practical course of business, which uses many cases and projects for analysis and simulation, and requires students to have a high sense of immersion. From the practice of the research group in class, the practice of liberal arts is indeed facing a relatively large problem of visualization. There are few people doing it in the market and the price is high, so there is no basis for popularization. Therefore, we choose a case to try to design and solve this problem by myself. Limited by their own technical level, the results are not satisfactory. Expect to make a breakthrough in the future practice.

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My research team is now leading students to make a video of the course International Business Negotiation, especially the content of the Negotiation in Chongqing, which is planned to be played by students to truly reproduce part of this scene. I also led a student team to carry out three-dimensional scene work in the form of college student innovation and entrepreneurship project, and applied for a project of the Ministry of Education based on this. At present, the technology is not mature, and in the content of how to compress a large amount of background information into a short time display is a very big problem.

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