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Research on Assisted Teaching Based on VR——Taking Chinese School English Course as an Example

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Abstract

VR has advantages in simulating the real context, and its application in the field of education has attracted increasing attention. This research aims to explore the possibility of combining VR technology with basic English education and its impact on learning interest and effect. The study discusses that VR can be combined with multiple application modes in English learning, and with the background of English learning content, a set of teaching mode of VR English learning content for students is designed, and a questionnaire survey and analysis are carried out. The comprehensive results show that the combination of VR technology and English education has brought new possibilities to the concept of student-centered education, and VR technology can become a more commonly used auxiliary method for English teaching, providing students with immersive, situational and interactive experiences.

Keywords: *VR, English education, Student-centered, Narrative*

1. Introduction

With the rapid development of computer information technology, many scholars have proposed that today's society has begun to enter the "R era". In the key tasks of the "2018 Education Informatization and Network Security Work Points", the Ministry of Education clearly included VR technology in the annual key tasks of education informatization. Strengthen the research on the use of VR technology, fully integrate its advantages into oral English teaching, and promote the effect and quality of immersive teaching to be fully improved. VR is based on sensing technology, 3D controller technology, and electronic devices such as sensors, using computer information technology to organize application data exchange activities, allowing users to obtain auditory, visual, and tactile sensory information while capturing images. Simulate an environment with a high degree of simulation and can perceive virtual reality, and then bring it into a realistic environment like the real world, allowing users to have an "immersive" feeling. VR technology mainly has three characteristics: immersion, interactivity and imagination. From the perspective of technological development, among VR, AR, and MR, VR technology is currently receiving the most attention [1].

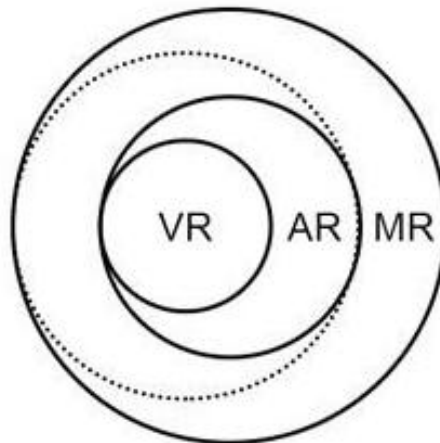


Figure 1. VR, AR, MR relationship diagram

The application of VR in various fields is inseparable from the development of hardware equipment. The following are the three main categories of VR devices, including display devices, input devices (that is, what we often call peripherals) and shooting devices. Display devices are generally divided into mobile terminals, external and all-in-one head displays. At present, their representative product types are VR eye box, PC VR (that is, a VR display device that needs to be connected to a computer host) and a VR all-in-one machine with an independent CPU, which is equivalent to a small computer. Judging from the market situation,

the VR glasses boxes that bloomed everywhere in the early days have gradually withdrawn from the market, replaced by VR all-in-one machines with higher cost performance and more convenient operation (Figure 2).

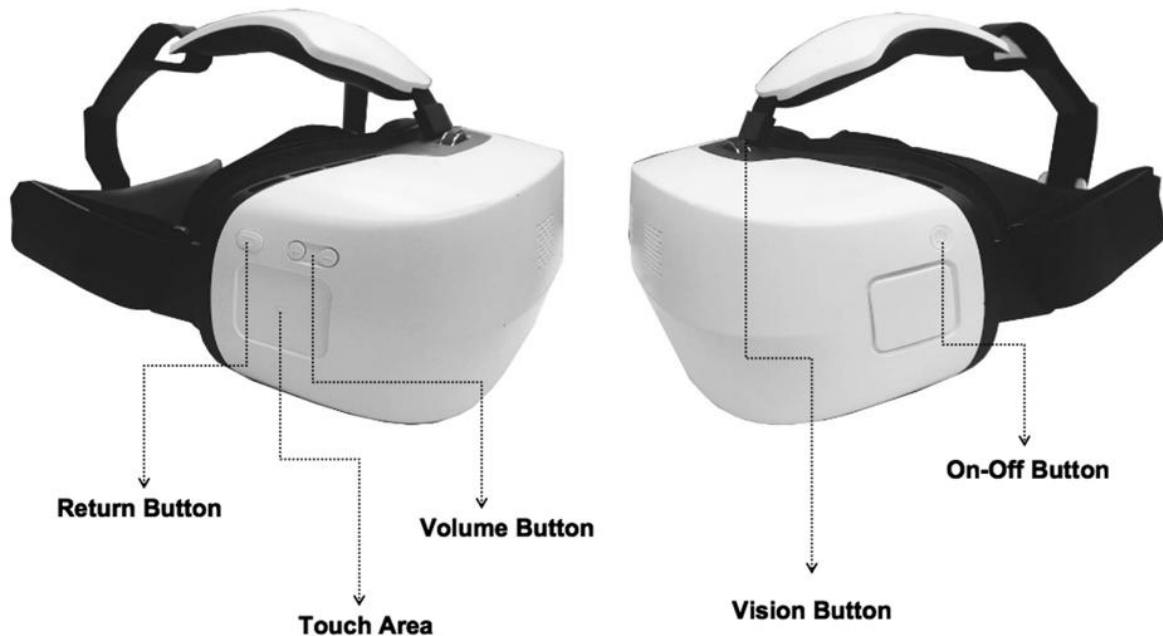


Figure 2 . VR all-in-one machine

2. Common VR resource content forms

At present, the four most important forms of VR resource content are videos, live broadcasts, games, and applications. If classified according to the presentation of resources, videos and live broadcasts can be classified as VR resources for immersive viewing, while games and applications can be classified as interactive programs [2]. At present, VR video and VR games have the largest number of achievements, while live broadcast and applications have just started. Of course, regardless of the form, the quantity, quality and cost of resources are the core factors restricting the promotion of VR applications.

2.1. VR video

Generally, it can be divided into three forms: 3D effect video, 360-degree panoramic video, and real interactive video. Technically , additional bandwidth is used toward High-Definition

(HD) and Ultra-High-Definition (UHD) videos, two-and multichannel stereoscopic videos, and, more recently, 360° videos for better viewing experience [3].

2.2. VR game

VR technology not only makes games more realistic, but also allows players to immerse themselves more. software games are targeted to school classrooms they must be usable and likeable by all students. Usability of virtual reality games may be a problem because these games tend to have complex user interfaces so that they are more attractive [4].

2.3. VR Live

Due to the relatively lower threshold for content production and more explicit user needs, VR live streaming is considered the most likely breakthrough for VR content.

2.4. VR application system

scientists and engineers are exploring advanced applications and uses of immersive systems that can be cost-effectively applied in their fields [5]. VR applications have entered our lives. For Android and IOS systems, you can download VR applications on Google Play and App Store respectively.

3. English immersion teaching mode based on VR

The discussion of the application of VR in language teaching should be because in the past two years or so, both the government and the general public, both the technical and teaching circles, have almost unanimously realized that the era we live in has begun to enter in the era of immersive computing and artificial intelligence, VR eliminates the traditional separation between user and machine, providing more direct and intuitive interaction with information [6]. VR technology, as a highly immersive media, is not only a brand-new media presentation technology, but also will become a revolutionary node of educational technology and a weapon of innovative educational means to serve the field of education. A typical virtual reality system is mainly composed by the 6 parts: computer-generated virtual reality and processes systems, software application systems, and virtual reality related to the theory and technology, input and output man-machine interface devices, users and databases [7].

3.1. Student-Centered Teaching Activities

The development of the traditional oral English teaching mode generally uses a unified teaching mode. Teachers seldom consider the personal situation of students, it is difficult to guarantee the quality of learning, and students' interest in English is gradually wiped out. The development of immersive teaching based on VR technology makes the oral English class more vivid and flexible, allowing students to be in it, to better carry out oral English learning. And these scenes are very helpful for students to expand their knowledge and improve their oral expression ability. It also avoids the inefficient situation of oral English teaching under the traditional teaching mode.

3.2. Content Creation and VR Usage Time Allocation

Under the VR technology, the immersion teaching of spoken English can be carried out well, and the original content and expanded content of English can be well presented in front of students. In the process of carrying out oral English immersion teaching, teachers usually adopt task-based teaching. By arranging corresponding learning tasks for students, they guide students to carry out good learning in a targeted manner and promote the corresponding improvement of oral English.

At present, the VR we use is relatively cumbersome. After group tests, the time of using VR in classrooms generally does not exceed 10 minutes.

3.3. Interaction between students and teachers through the medium of VR

The interaction of students and teachers through the medium of VR can create a more immersive learning experience and provide more engaging and interactive teaching methods. The following are ways students and teachers may interact in a VR environment: Virtual character interaction: Teachers can play virtual characters in a virtual environment, such as foreigners in English role-playing, or historical figures, etc. Students can interact with these virtual characters to practice language expression and communication skills.

(1) Real-time question and answer: In the VR classroom, teachers can ask questions through the virtual whiteboard or virtual display screen, and students can use virtual pens or gestures to answer. This approach can increase student participation and promote thinking and classroom interaction.

(2) Virtual experiments: For science courses, teachers can lead students to conduct virtual experiments, observe and operate virtual experimental equipment, explore scientific principles, and deepen their understanding of knowledge.

(3) Virtual field trips: Teachers can lead students to conduct virtual field trips, such as visiting places of interest, inspecting natural landscapes, etc. Students can feel the real scene in the virtual environment, enhancing the learning experience.

4. The application of VR English teaching mode in China

VR English teaching activities are gradually being valued and applied in the field of education in China. With the continuous development of VR technology, this teaching mode is expected to play a greater role in English education in China. In China, more and more educational institutions and schools are beginning to adopt VR technology for English teaching activities to provide a richer and more vivid learning experience.

4.1. Create a virtual classroom

Through the creation of virtual language learning scenarios, students are immersed in English learning scenarios. In daily life scenes, travel scenes, shopping scenes, etc., students can engage in dialogue, navigation, games and other activities with virtual characters to practice daily English speaking and communication skills. In terms of cultural experience, VR technology breaks the constraints of time and space and displays cultural elements, such as traditional programs, historical buildings, food culture, etc. Students can learn about the culture and characteristics of different countries through virtual tours, participating in festivals, tasting food, etc. Activities, thus increasing interest in English learning.

Virtual reality also has advantages for language pronunciation training. Provide voice pronunciation training through VR technology. The system can monitor students' pronunciation and give real-time feedback. Students practice pronunciation in a virtual environment, and they will be bolder and more confident. The VR system can correct voice errors, especially in continuous reading and plosive sounds.



Figure 3. Some pictures of VR course content

4.2. Build virtual learning communities

Through the connection of 5G network, students can realize remote real-time communication under the guidance of teachers. Students can communicate with English learning centers in other regions or countries in a virtual environment, expand the language environment, improve the ability of cross-cultural communication, and interact with real-time online partners to increase the fun of learning. The problems encountered in the study can be written in the message board, and the system will prompt the teacher to answer the questions in time.

4.3. Interactive Learning Function

Add interactive learning functions in the virtual environment, such as students can use virtual pens to write, practice pronunciation, use virtual gestures to make choices, answer questions, etc. These interactive features can increase student engagement and learning experience. Judging from the actual situation of Chinese students, their own basic level of learning is relatively shallow, and the number of words they master is about 3,500. In the traditional education model, the differences of students are easily overlooked. Objectively speaking, for some students with strong receptivity, they can adapt well in a short period of time and participate in English teaching activities. But the problem is that students with weak adaptability and introverted personality can neither express their own ideas nor integrate well into teaching activities, which ultimately leads to poor learning effects. The immersive teaching based on VR technology puts the right to speak in the classroom into the hands of students, making it easy for teachers to be student-centered. Choose the teaching mode that suits your level for yourself as figure 4. The journey map shows a 10-minute lesson, the contact points of the students with the English course content, and the interaction information

between them We developed a prototype to explore from a functional viewpoint the efficacy of interactive learning as an enhancement to classroom learning.

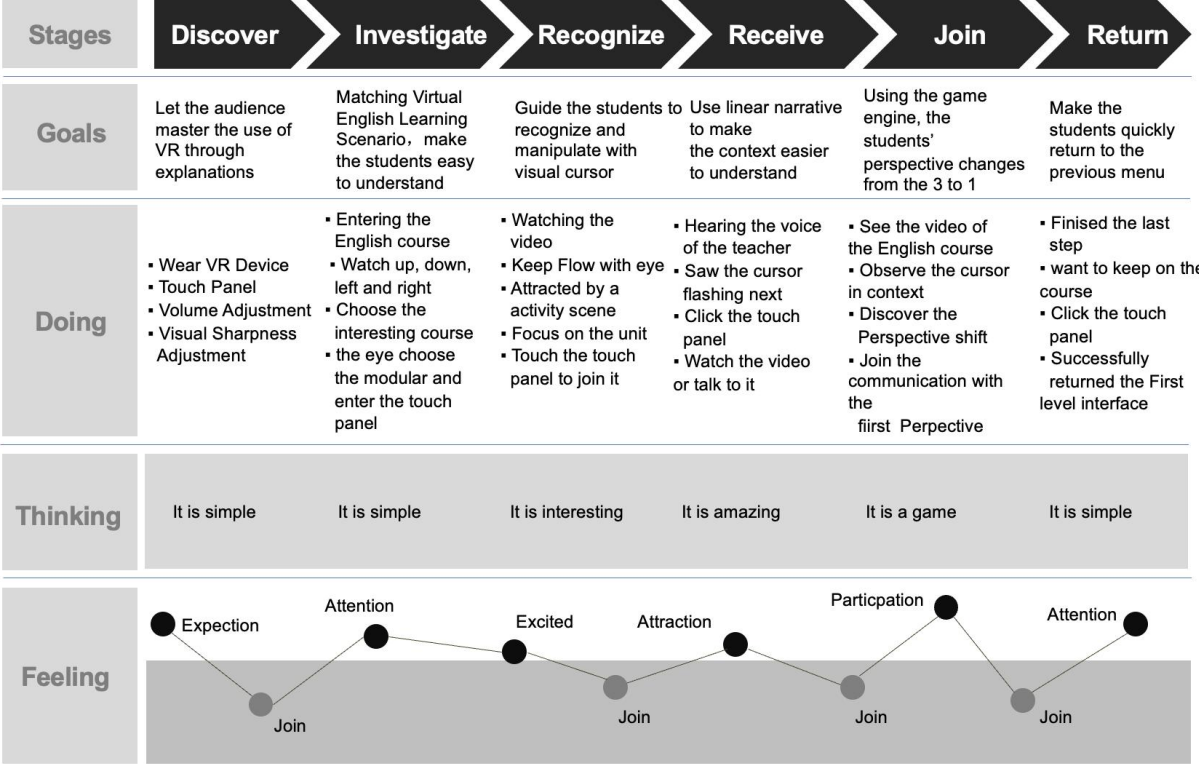


Figure 4. English course journey map

4.3.1. virtual characters

The interaction of virtual characters is a significant feature of constructing a virtual learning community. In the virtual reality environment, there are two types of roles. Virtual characters are an essential part of many interactive 3D graphics simulations [8]. Through linguistic intervention, the user can influence the autonomous characters in various ways, by providing them with information that will solve some of their narrative goals, instructing them to take direct action, or giving advice on the most appropriate behavior [9]. In the first type of role, students can choose their favorite virtual characters, including humans, animals, and plants. Through the virtual role-playing, students can reduce their worries about being mistaken by their peers or the embarrassment found by the teacher, at the same time, you can play the role you like, and you can also increase your enthusiasm for learning; the second type of virtual role can be English teachers, companions, and historical figures. Students can improve their language expression and language skills through dialogue and interaction with these virtual characters. Listening comprehension.

4.3.2. virtual scene

Generating 3D virtual scene plays an essential role in computer graphics and animation [10]. English learning scenes present a variety of scenarios, and VR technology can realize the virtual reproduction of any scene. The virtual scene provides the following types of scenes according to the learning needs of primary school students. Including school daily activities: students can simulate campus life, such as class, school, lunch time, etc., and practice daily oral English through role-playing and dialogue. In this scenario, students can interact with teachers and classmates in the virtual classroom, and students can simulate inviting classmates or teachers can participate in birthday parties, sports games and other activities to practice invitations and responses to strengthen listening and speaking skills. Daily activities at home: Students can simulate situations at home, such as having dinner with family members, shopping, celebrating birthdays, etc., to practice family language and communication skills. Shopping scene: By simulating a shopping scene, students can learn shopping terms, ask prices, payment methods, etc., and improve their communication skills.

4.3.3. Virtual Scene Narrative

The classroom scene this time is basically an online linear narrative, and the linear narrative method is relatively simple, which is more suitable for the way of thinking of ordinary students. Generally, time, space, or causality is the leading development in a linear sequence, which can guide students to focus on this main clue for interaction. During the process of interaction between people, objects and scenes, students' roles will also change, and they will walk away from the story. In the human story, experience a specific process from the perspective of the participants. The students jointly adopted the perspective of exploration and guided the students to perceive it in the story. The students even entered the situation with a relaxed attitude, let themselves integrate into it, and enjoyed the fun of learning.

Survey Questionnaire: "About the Application and Demand of VR in the Field of Language Teaching" on the Application Situation and Needs in the Field of Language Teaching. Due to the short distribution time, most teachers and students are relatively unfamiliar with VR technology, and only 21 questionnaires were returned. The main content and results of the questionnaire are as follows:

- (1) Languages taught include Chinese, English
- (2) The main applications of VR are pronunciation, vocabulary, and cultural teaching.
- (3) The main forms of VR resources used are immersive viewing.

- (4) The main teaching links using VR technology are auxiliary classroom teaching, online teaching.
- (5) Students' acceptance of VR technology: accepting is greater than not accepting.
- (6) If you want to develop VR Chinese teaching products, you hope to target: Chinese culture, Chinese vocabulary, situational learning...
- (7) Other suggestions: I hope to combine the cultures of various countries, simulate real-life experience, increase fun and challenge...

5. discuss

Facebook founder Mark Elliot Zuckerberg said that virtual reality "will become part of the daily life of billions of people", which is the life we will face in the future. Compared with the traditional education model, VR teaching has obvious advantages, both in terms of theoretical learning and practical operation, it has a lot of room for exploration. In terms of theoretical learning, it can concretize abstract problems and make theoretical thinking more evidence-based; in terms of practical operation, it can improve students' hands-on ability, provide students with an immersive learning experience, and enhance students' learning experience. The somatosensory in learning makes learning more interesting, safer and more active.

Combined with the research situation, based on the characteristics of VR technology and the pain points of English learning, refer to the excellent language VR products on the market, and cooperate with powerful VR companies to focus on VR language games, VR situational language learning, VR travel in China, and VR famous teachers. Select topics such as classroom live broadcasts and develop Chinese VR learning products step by step and in stages, serving global English teachers and primary school students with English learning needs.

"Father of virtual reality" Jaylen Lanier said "Although consumers can afford head-mounted display devices, there is still a long way to go before building a complete ecosystem." It is understandable Because, whether it is software or hardware, the development and promotion of VR products cannot be "immediate".

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