Construction and Implementation of Foreign Language Teaching based on Virtual Reality Technology

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Abstract

The development and progress of technology brings good developing opportunity for foreign language teaching. This paper applied computer virtual technology into foreign language teaching, constructed the teaching model based on virtual reality technology, and deeply analyzed its main functions combined with the characteristics of foreign language, which will produce certain influence on foreign language teaching and achieve good teaching effects.

Keywords: virtual reality technology; foreign language teaching; environmental construction; implementation

1 Introduction

Virtual reality technology, also known as man-made environment, creates new research field for the development of human-computer interaction interface, provides new interface tool for the application of intelligence engineering, offers new description method for the visualization of large-scale data of various projects [1]. The advantage of this technology is that, computers generate a kind of man-made virtual environment composed of computer graphics, or computers simulate some reality scene to generate vivid "virtual environment", thus make users feel indulging in virtual environment in vision [2]. Over decades of development, the current virtual realty technology has several application forms in education, including virtual objects, virtual browse, virtual zoom, virtual process, virtual experiment and virtual role. The interaction of these applications and the complexity of scene is as shown in figure 1. It can be found that, the interaction of virtual experiment is strong and its scene is relatively simple, which leads to its wild application. However, applying virtual reality technology in experimental teaching need to change the previous experimental course design, since the traditional experimental course is teacher-oriented and the initiative of students is greatly limited [3].
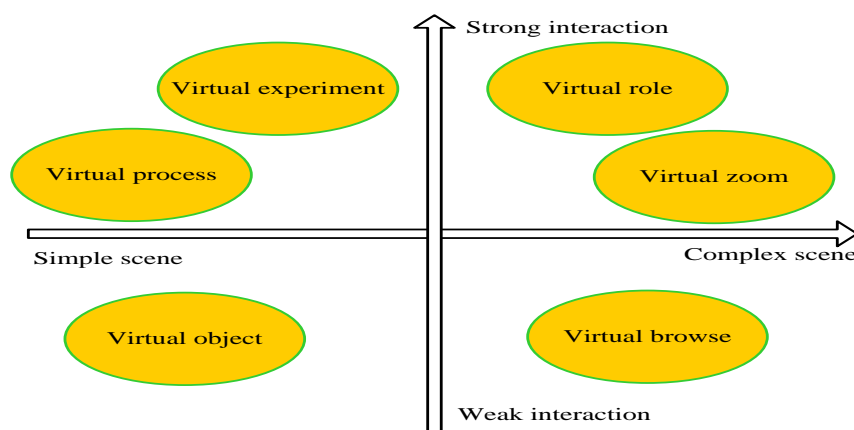

FIGURE 1: The comparison of virtual reality technology application in education

Language is an abstract and regular symbol system with high organization and the ordinary grammar ability of human. English is a strong applicable and instrumental subject. For non-English speaking people, English is too hard to learn; they has poor comprehensive application ability of English, improper grammar application, and the practical language environment for English is unreal; therefore, the implementation of English situational

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teaching becomes pale [4]. However, the birth of virtual reality technology brings new spring for foreign language teaching. It can create various problem situations and provide various information resources for students, provide multiple channel and all-around stimulus, and enhance the cognitive competence and innovation ability of students; therefore, foreign language teaching feels just like a fish in water. Virtual reality technology highlights its unique charm in foreign language teaching.

2 The Background of Virtual Reality Technology Applied in Foreign Language Teaching

Virtual reality (VR) in information field is the hot spot of scientific and technological workers and study, development, application of industrial circle. Synonymous terms similar to virtual reality has virtual environment, artificial reality, cyber space, etc.. In fact, virtual reality is not a new technology, nor a new subject. But so far, its application in foreign language teaching is blank. Ivan Sutherland, the founder of computer graphics, gave out the classical description of virtual reality concept that we call today in paper of The Ultimate Display. Virtual world not only can provide vision, auditory sense, touch sense to make people feel being there, but also can make people precede natural collaborative interaction with the objects in virtual world in natural means [5]. Fully use of virtual reality technology in foreign language teaching to create teaching environment and adopting heuristic teaching, successful teaching and autonomous learning can simulate leaning enthusiasm and interest, broaden view, improve language coding and decoding ability of students; in addition, the foreign language comprehensive application ability of students can be improved by learning English in natural environment.

3 Construction of Foreign Language Teaching Model Based on Virtual Reality Technology

In foreign language teaching, fully use of virtual reality technology can maximize designing the real environment of concrete matters to replace the abstract language description. It can also provide environmental material that is more real than book reading and teacher teaching. Thus, students can receive language information and image information at the same time to help them understand target knowledge, strengthen the formation of schema thinking, promote organic connection of new information and previous knowledge, finally, generate new thinking activity and achieve the purpose of interacting with environment. Learners can achieve autonomous learning, cooperative learning, mutual observation, mutual function and full interaction, autonomous construction of knowledge structure in natural foreign language environment. Thus, learners can turn negative receiving of knowledge information into positive exploration and thinking, achieve self-development and self-improvement in construction and transformation of knowledge, cultivate their innovation ability and progressing consciousness for lifelong learning, enhance confidence and sense of achievement, finally, enhance comprehensive language application ability. Psychologist Wundt pointed out that, what plays the leading role in language mentality is feeling rather than thinking. Therefore, the stimulus accompanied with concept and presentations that are induced into consciousness should contain component of feeling as possible. People perceive language materials, first, perceive the whole language materials in the specific language environment and then pay attention to some part or key point. Therefore, the application of virtual reality technology can create real and natural foreign language teaching environment, and implement multi-dimensional integrated teaching model. The content is as shown in figure 2:
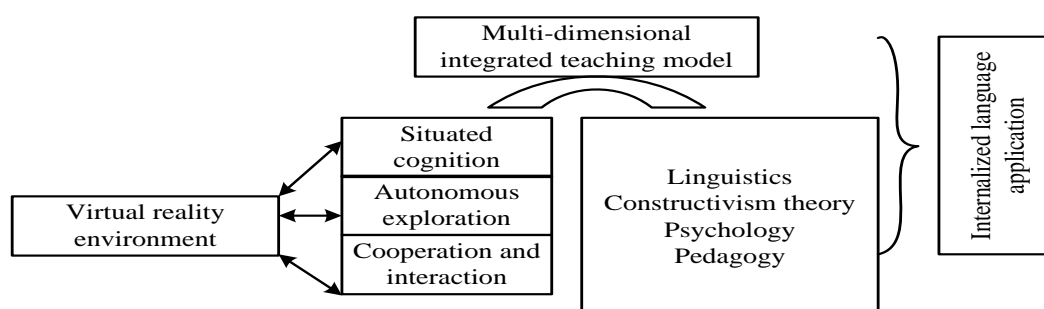

FIGURE 2: Multi-dimensional integrated teaching model

A. AUTONOMOUS EXPLORATION LEARNING ENVIRONMENT

In learning environment of visual network, students can gain diversified, figurativeness and objectivity integrated learning resources rather than simplex and boring one according to the specialty and charm of visual reality technology. In studying, students can choose learning module that they like based on their demand, thus to achieve the purpose of varying from person to person and individualized teaching, awake the autonomous learning of students to the largest extent and return initiative to students. In environment of virtual learning, learning is controlled by learner themselves. Meanwhile,

establishing virtual teaching environment can also gain the same sense of achievement, help students to overcome tension and inferiority, realize human-computer interaction, effectively use teaching resources, change negative situation brought by insufficient teachers; in addition, it can satisfy students with good foreign language basis and help students to learn self-regulation. Students can learn self-assessment according to the various conditions provided in learning environment, adjust learning objective, method and progress in time based on the feedback, thus to make learning be more conforming to the individual characteristics, motivate the exploration enthusiasm of students, inspire students thirst for knowledge, benefit individual education and speed up individual development.

B. COOPERATION AND INTERACTION LEARNING ENVIRONMENT

Cooperation and interaction learning environment is to fully cooperate and interact between human and computer, human and human using virtual reality technology. It is superior to the traditional teaching in aspect of breaking through space and time limitation. Virtual reality technology can create interaction learning step, break the fence between school and society, realize the effective connection with social teaching resource, promote cooperation, help to construct cooperative consciousness and interpersonal relationship of students, and cultivate students' psychological quality. At the same time, in such virtual learning environment, teachers can decompose learning mission, and student groups can shoulder relative learning mission, exchange thoughts and feelings in learning process, complement each other's advantages, achieve interactive and cooperative learning and fully play initiative, enthusiasm and innovation.

C. SITUATED COGNITION LEARNING ENVIRONMENT

Virtual reality technology can present invisible change, untouchable object or dangerous place, even the impossible event in nature or real life in front of students. Thus, students can rapidly perceive teaching content that is more concrete and perceptible through various stimuli, to present the principle of direct observation and enhance teaching efficiency. The whole classroom constructs a humanized learning environment, and students can study in natural and friendly environment [6]. For instance, in learning atmosphere of visual foreign language classroom teaching, students can exchange and discuss the cause of American civil war and the abolition of slavery with Lincoln in virtual foreign language situation, understand cultural background, local customs and practices, means of expression, communicative skills of foreign countries, solve the problems of language application. Students effectively input knowledge by their own positive action. Situated

cognition learning in a real language environment helps learners to positively construction of knowledge and frequent output of language, play initiative, enthusiasm and innovation, become the subject of cognition, strengthen learning interest and activate potential.

4 Characteristics of Foreign Language Teaching Model Based on Virtual Reality Technology

A. COMMON VIRTUAL REALITY TECHNOLOGY IN FOREIGN LANGUAGE TEACHING

With the development of scientific technology, virtual technologies such as Q TVR, VRML, Cult3D, Viewpoint, etc are gradually applied into foreign language teaching. Among these new visual technologies, some provide panoramic schema, some provide 3D environment, some do not need special equipment and some need specialized hardware and ancillary facilities [7]. Whatever, they all aim to provide lifelike virtual environment for learners to enjoy and feel the language learning revolution brought by scientific technology.

B. THE APPLICATION OF VIRTUAL REALITY TECHNOLOGY IN FOREIGN LANGUAGE TEACHING

Knowledge Acquisition
Knowledge acquisition is to place students into virtual reality system in which they learn language, feel the charm of language, and thus internalize them into their own language learning and comprehensive application ability. Students can find the virtual objects that are relative to the scene that can not be seen in daily life with the help of virtual technology, thus find learning breakthrough. At the same time, students can visualize and concretize the hard point of knowledge and abstract objects, turning from negative to positive and difficult to simple. Virtual reality technology can play the subjective initiative of students to the largest extent, make them do real-time interactive learning based on their own demand, change the traditional means of teaching and learning, enhance students' self-presentation initiative, inspire learning enthusiasm and enrich imagination, improve understanding ability, knowledge construction ability and master ability.

Training of Foreign Language Interaction Skills
Imersion and interaction is another characteristic of virtual reality technology. In the created virtual foreign language world, students can shoulder roles in such an environment, fully place themselves in virtual learning environment, form learning motivation, devote into learning with enthusiasm [8]. Students can effectively exchange with people they like. In the exchange process, they can make flexible use of language materials through simulation. It is beneficial for the cultivation of foreign language communication. Students can do training of

listening, speaking, reading and writing any time any where with virtual reality technology, thus to strengthen consciousness of language application, enhance comprehensive application level more rapidly, and follow their inclinations without bounds.

Distance Foreign Language Network Teaching
Over the years, foreign language teachings in our countries lag far behind the developed countries in aspects of theory and practice. In west, in 60s, structuralist turned the teaching key point to cultivation of language ability dominated in listening and speaking; after 70s, the mainstream of foreign language turns from listening and speaking method into communication method, therefore, the key point of teaching turned from cultivation of listening and speaking ability into cultivation of language communication ability; however, our country learned advanced experience from abroad till 80s; after 90s, the foreign language teaching in developed countries entered higher level, and various advanced technologies were applied in foreign language teaching. In fact, visual technology has another form, that is, foreign language distance teaching, which is familiar to people, since it is the most applied new teaching pattern in current stage. It can be foreseen that, the development and application of new generation of network technology is bound to make a leap on the current basis, realize seamless joint of foreign language teaching and visual technology, bring new atmosphere for traditional foreign language teaching, expand the

time and space of foreign language teaching, gain more knowledge beyond expectation from virtual world. The new virtual foreign language teaching will break the limitation of space and time; provide more interactive virtual environment, wonderful diagram, voice and image, more intelligent distributed visual scene [9]. We can foresee that, foreign language teaching based on virtual technology is bound to spring up like mushrooms, and inject vitality into the traditional foreign language teaching, thus to bring a teaching revolution.

5 Conclusion

This paper introduced virtual reality technology into foreign language teaching, established relative teaching model, organically combined language learning and virtual technology, stated every module of model, which can promote improvement of foreign language teaching, learning atmosphere, and learning effect, and generate positive effect on cultivation and generation pattern of foreign language cultivation.

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