Feasibility Study on the Application of Virtual Reality Technology in Art Design Teaching

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Abstract: The application of virtual reality technology in the field of education can largely make up for the shortage of traditional education practice and effectively improve the efficiency of classroom teaching. Based on this, this paper takes the application of virtual reality technology as the breakthrough point, explores the feasibility of art design teaching, introduces virtual reality technology into the actual art design classroom, makes the art design classroom present a new form, stimulates students' enthusiasm and initiative in learning, and cultivates compound high-quality art design practice.

1. Introduction

Virtual reality technology, also known as spiritual realm technology, is a new practical technology that has appeared in the 20th century. The introduction of virtual reality technology into practical education classroom makes up for the gap of traditional teaching, and the three-dimensional teaching display process, so that the learning process can be vividly presented in front of students, so that students can more easily understand and accept theory and technology. Virtual reality technology is applied to art design teaching. Through the production of simulation teaching program, we can use its interactive and vivid performance effect to elaborate complex and difficult theoretical knowledge and deepen understanding. At the same time, virtual reality technology can provide more assistance in practical teaching, and improve the actual classroom practice teaching efficiency through the practice teaching of specific simulation environment.

2. Overview of the Development and Application of Virtual Reality Technology

Virtual reality technology mainly refers to computer tool simulation, which constructs a sensory function based on human vision, hearing, touch and so on, and simulates a real world-like environment, enabling users to experience the situation, thus giving users a perspective without dead angle. Virtual reality technology is a collection of many kinds of science and technology, including computer graphics technology, computer simulation technology, artificial intelligence, sensor technology, display technology, network parallel processing and so on. It consists of a variety of technology sets to form a high-tech simulation system. In the 21st century, virtual reality technology, computer network technology and multimedia technology are called three major network technologies, which have extremely deep development potential, can greatly change people's production and lifestyle, bring great convenience, and have important development significance. On the basis of the broad development of virtual reality technology, its application has gradually penetrated into various fields of social production and life, such as film and television, education, shopping and so on, and has shown good development results in various fields, which has aroused more prominent attention. The development and application of virtual reality technology is shown in Figure 1.

In 1965, Sutherland proposed → Started HDM research in 1966 → Developed the first HMD in 1968 → Myron Krueger proposed AR thinking in 1975 → Data gloves developed in 1985 → 1986 system research success → 1990 Siggraph Conference Determines VR Technology Development → VR has been used in many fields since the 1990s
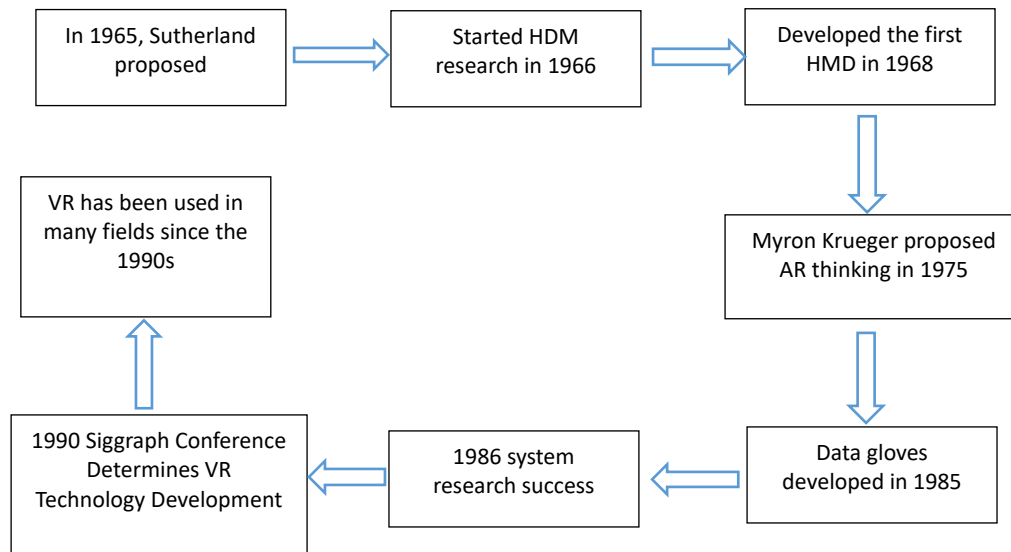
Figure 1 Development of virtual reality technology

In recent years, more and more attention has been paid to virtual reality technology. Of course, art design teaching in China has also realized the unique advantages of this technology. Combining with the development trend of diversification of art design teaching in China, simple multimedia teaching method can not meet its needs, and the demand for innovation of art design teaching is increasing. The application of virtual reality technology in art design teaching is a new exploration. In this situation, virtual reality technology has been applied in the art design teaching of domestic universities. However, due to the lack of various conditions, the teaching still continues the traditional classroom mode. The application of virtual reality technology in form can not really improve the teaching effect of art design in Colleges and universities.

3. Feasibility of applying virtual reality technology to art design teaching

3.1 Feasibility of hardware equipment of virtual reality technology

In recent years, the hardware equipment of virtual reality technology has become more and more mature, various kinds of technology are more and more abundant, and its functions are more and more abundant, which provides hardware equipment conditions for the application of art design teaching. The application of virtual reality technology in art design teaching requires sufficient funds to purchase hardware equipment and use it for later maintenance costs, which is one of the key problems encountered in the application of virtual reality technology. The state provides strong support for the field of Applied Science education, reduces the pressure of renewal of school teaching funds, and provides financial support for the application of virtual reality technology. It also provides sufficient information and application guidance for the application of virtual reality technology, and deepens users' understanding and support of virtual reality technology. At present, the price of VR glasses, the hardware equipment of virtual reality technology, has been very low, which greatly meets the teaching requirements of art design. It can use VR glasses controller for teacher-student interaction to ensure the teaching experience effect.

3.2 Virtual Reality Technology Courseware

Virtual reality technology has three important characteristics, namely, interaction, also known as autonomy, imagination, also known as multi-perception, immersion, also known as presence. As shown in Figure 2.
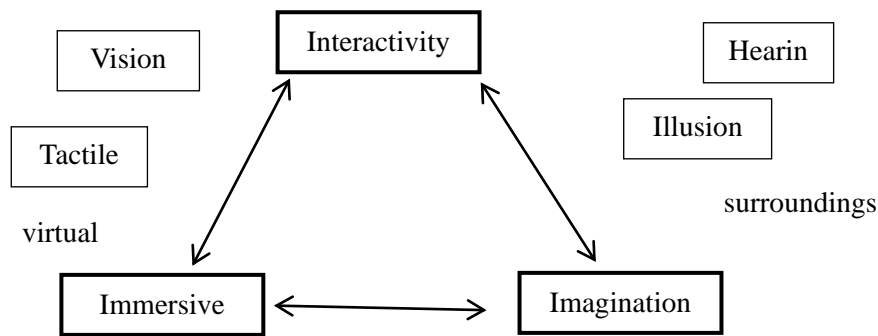
Figure 2 Virtual reality technology features

Based on the important characteristics of virtual reality technology, it can provide immersive teaching reflection for art design teaching, make virtual reality technology courseware, and improve the efficiency of art design classroom teaching. Virtual reality technology courseware breaks away from the constraints of space, and provides interactive communication platform for teachers and students by creating three-dimensional realistic simulation space, which also improves the experience of teachers and students. Virtual reality technology courseware provides feasibility for art design teaching. It enables teachers and students to construct a simulation courseware with artistic effect maps, so that students can be immersed in the situation, and strengthen the benign interaction between teachers and students, so as to facilitate students to grasp complex knowledge and skills faster.

3.3 The Feasibility of Displaying Works of Virtual Reality Technology System

Virtual reality technology system emphasizes the dominant role of human in the virtual system. By using keyboard, mouse and single-dimensional digital information in the computing environment, it constructs a simulation environment of multi-dimensional information, guides people to immerse themselves in the environment created by virtual reality technology, enlightens people's knowledge of complex things, and sublimates them. Understand and learn new skills. The virtual reality system mainly consists of the following modules, including detection, user, feedback, sensor, virtual ring, 3D model, control, real world, modeling module and so on. The specific template pattern is shown in Figure 3.
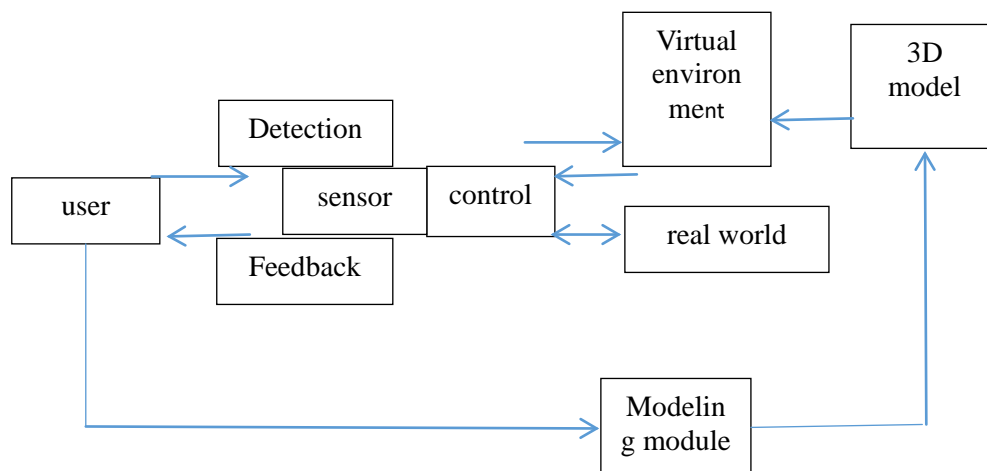

Figure 3 Virtual reality system composition

In the future virtual reality technology system, the information processing system composed of

multi-dimensional sensors can seamlessly meet people's diverse needs, and be applied to the actual teaching process, so that teachers and students can get a more pleasant experience, especially through the display of virtual reality technology system works, to enhance learning and continuing learning. By integrating virtual reality technology into art design teaching, students' numerous art design works can be displayed in a three-dimensional way through an external control server. Combining with the theme of art design, the virtual reality technology can create a matching environment, foil the creativity and imagination of art design works, consolidate students' confidence in continuing learning, and stimulate students.

4. Application Strategy of Virtual Reality Technology in Art Design Teaching

4.1 Innovation and integration of virtual reality and situational interactive teaching mode

Traditional art design teaching, like other traditional classes, has great shortcomings in practical teaching, and the indoctrinated teaching method can easily shackle students' thinking, which is not conducive to students' artistic creation. The emergence of virtual reality technology caters to the demand of art design teaching. Through innovation, it integrates virtual reality with situational interactive teaching mode, forms virtual reality teaching classroom, improves the rigid art theory teaching classroom, and also makes up for the lack of practicality in traditional art design teaching. On the one hand, the combination of virtual reality and situational interactive teaching mode makes the art design teaching classroom refreshed. It can directly act on the art design teaching activities, and directly provide targeted professional art teaching guidance to students. In art design teaching, we should integrate virtual classroom with real classroom and form complementary teaching methods to promote each other. At the same time, the innovative integration of virtual reality and situational interaction teaching mode highlights the practice of art design teaching, strengthens the practice teaching of art design, and focuses on training students' practical ability of art design. On the other hand, in the teaching of art design, the teaching content, method and process of art design should be further clarified by integrating virtual reality with situational interactive teaching mode, and the corresponding requirements should be determined according to the actual needs of talent training, so as to determine the target level that each classroom student needs to achieve, and to plan the corresponding assessment. Standards, determine the teaching standards of art design. In a word, the application of virtual reality technology in art design teaching should be student-centered, actively guide students' learning activities, and exercise people's theoretical and practical abilities through the combination of virtual and real environment.

4.2 Constructing a Differentiated Virtual Teaching Environment

The application of virtual reality technology in art design teaching should construct a differentiated virtual teaching environment, provide inspiration for students to master technology and gain experience, and improve the teaching efficiency of training students' art design talents. On the one hand, according to the current situation of art design teaching in China, we can see that the content of each classroom is very different, and the requirements for the construction of classroom teaching environment are also different, so it is necessary to construct a differentiated virtual teaching environment. Therefore, in the actual application process of virtual reality technology in art design teaching, we should combine the characteristics of each classroom content, construct a differentiated virtual teaching environment, reflect the direction of art design specialty, highlight the difference of simulated teaching content, and cultivate students' differentiated teaching ability. On the other hand, in the application process of virtual reality technology in art design teaching, the construction of differentiated practical learning mode should be based on the specific training objectives of art design specialty, differentiated planning of teaching syllabus, teaching plan, teaching content and so on in each teaching period, and the establishment of operable virtual teaching environment. Break through the difficulties of art design teaching.

4.3 Focus on guiding students to design and participate in learning

In the application process of virtual reality technology in art design teaching, we should combine the characteristics of art design teaching, pay attention to guiding students to participate in design learning, accumulate experience and lessons through students 'practical participation experience, so as to form art design skills that students can master in the Soviet Union. Therefore, in the application process of virtual reality technology in art design teaching, we should design an interactive experience environment that conforms to the objective law, in order to accurately reflect the virtual teaching environment, and give timely and accurate feedback to learners' action and behavior response, and master skills through the feeling of operation in the real environment.

In conclusion, under the new teaching environment, the application of virtual reality technology in art design teaching has its unique advantages. Based on the current situation of art design teaching in Colleges and universities, this paper puts forward some effective strategies for applying virtual reality technology to art design teaching, including integrating innovation with reality and situational interaction. Teaching mode, construction of different virtual teaching environment, focusing on guiding students to design and participate in learning, striving to enhance the theoretical and practical nature of art design teaching, entertaining teaching, stimulating students' enthusiasm and initiative in learning and understanding, and cultivating high-quality talents who really meet the needs of society.

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