Application of VR Technology in Environmental Art Design

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Abstract. This paper first describes the characteristics of VR technology and its realization in art design. Secondly, this paper analyzes the practical significance of VR technology in Environmental art design (EDA), and finally discusses the practical application of VR (hereinafter referred to as VR) technology in EAD. In a word, the application of VR technology in EAD (hereinafter referred to as EAD) is helpful to the development and improvement of EAD.

Keywords: VR, EAD, Application

1. Introduction
With the development of computer technology, its application has penetrated into the field of art design, especially the application of VR technology in EAD has achieved more remarkable results. With the help of VR technology, people can intuitively feel the effect of EAD, which further displays the embodiment of EAD on the design concept of people-oriented. Therefore, it is of great practical significance to study the application of VR technology in EAD and combine modern EAD with VR technology so as to improve the ability of modern EAD.

2. Overview of VR technology
2.1. Application characteristics of VR technology
VR technology also plays an important role in EAD. The application features of VR technology mainly include efficiency, interactivity, artistry, invasion and multi perception, as shown in Figure 1 below.
2.2. The realization of VR technology in art design
VR technology can be customized according to the needs of customers. Through 3D dynamic modeling technology, different virtual scenes can be built and set up. The main steps and implementation flow of the application of VR technology in EAD are shown in Figure 2.

3. The practical significance of VR technology in EAD
3.1. Meet the actual needs of EAD
The application of VR technology in EAD constructs a three-dimensional virtual environment with interactive characteristics, which enables users and products to interact and communicate in the virtual environment, and helps to tap the depth of creation and design. In EAD, the design scheme can be improved according to the design requirements and design objectives. Using VR technology, the real object or the original nonexistent model is displayed in the form of virtual. According to the design work scheme, the design model is presented, which is convenient for the designer to modify and adjust, and improves the efficiency and accuracy of the design scheme. This process is simple and low-cost, which can make the construction party or customers feel the feasibility of the scheme through virtual technology.

3.2. Visual display of environmental art and design works
VR technology creates a lifelike and vivid virtual environment by building a software and hardware platform, which enables users to experience the all-round stimulation of touch, hearing and vision, activate the brain activity, enable users to have an insight into the design works in a highly concentrated state, deepen memory, and greatly enhance the screen sense of the virtual environment.
3.3. Realize the communication of EAD
VR technology can realize intercommunication, construct virtual environment and space, and realize the communication between man and machine without obstacles. Imitating all kinds of application behaviours in the real world in the computer system is of great benefit to the improvement and optimization of construction works. In addition, users can perceive the practicability and effect of the design works in advance through the virtual world, predict and deal with the possible problems after the completion in advance, so as to make up for the deficiencies in the design of works and give full play to the forward-looking advantages of EAD.

4. Application of VR technology in EAD

4.1. Application of VR technology in the construction of environment space model
Compared with the traditional environment art design tools, using VR technology to build environment space model can complete a large number of original models in a short time. The advantages and disadvantages of the two are shown in Figure 3.

![Figure 3. Advantages and disadvantages comparison](image)

**Figure 3. Advantages and disadvantages comparison**

**Scheme determination** → **AutoCAD drawing plan** → **Sketchup**

**Production executable animation, renderings** → **Auxiliary design process** → **Adjustment of light and material in the process of virtual reality technology platform aided design**

![Figure 4. Main steps of spatial model construction in EAD](image)

**Figure 4. Main steps of spatial model construction in EAD**

In the process of building environment space building model based on VR technology, by inputting the corresponding building size data, we can quickly build the required building model. For example, the import of various formats of materials to simulate object files, to improve the efficiency of EAD, and effectively save the design cost of environmental art. The main steps of spatial model construction in EAD are shown in Figure 4.

4.2. The application of VR regional positioning technology in EAD
In EAD, it is necessary to solve the problem of regional positioning and modeling of indoor and outdoor landscape design. The first important problem to be solved by VR technology is the positioning and modeling of indoor and landscape projects. Through the VR technology to locate the project, create a two-dimensional plan of a certain area location, then according to the scene planning in the two-dimensional plan, build the three-dimensional spatial structure, and build the model according to the corresponding data standards, and finally render the video frequency or static frame.
map that meets the needs. Therefore, in the design of environmental art, using the regional positioning of VR can quickly complete the accurate positioning of three-dimensional scene, and realize the design of scene and object in space.

5. Conclusion
The application of VR technology shows more intuitive content and better effect. VR technology will bring new impetus to the rapid development of EAD, make the design products of environmental art more humanized, and fully show the charm of EAD. With the further development of technology, the effective integration of modern EAD and VR technology will further realize the visual management of modern EAD, improve the overall level of art design, and provide continuous impetus for the development of modern environmental art.

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