

Research on the Application of Virtual Reality Technology in Handicraft Display

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Abstract: China is an ancient civilization with a long history of 5,000 years. It has created a splendid ancient culture. Traditional handicrafts are the treasures of China, which need to be protected and inherited. With the development of the times, modern concepts, aesthetics and lifestyles continue to impact the traditional culture, and excellent traditional culture is at stake. At the same time, modern technological civilization has brought new technology and new materials to the development of traditional cultures, which has brought the possibility of expansion. This paper mainly selected popular virtual reality technology to explore its application in handicraft display to innovate the non-handicraft display form with new network media; the live streaming platform can help open the "Internet +" handicraft sales channel; intelligent new technology can optimize the intangible cultural heritage display experience. This will help realize the interactive display of traditional handicraft with the support of virtual reality technology to show the unique charm of traditional handicraft.

1. Introduction

The information age poses both an opportunity and a challenge for the craft industry. Seizing the opportunity, innovating ideas and meeting the challenges are the inevitable choices for handicrafts in the new era. How to find a way out in the handicraft display in the interaction era and find a solution to the contradiction between traditional art and modern art innovation deserves our deep thought[1]. The information age is also the era of experience economy, and designers are beginning to notice the intangible value of the experience. The interactive virtual display takes the experience as the core, focuses on people, fully grasps the user's needs and satisfies the user's appeal to the emotions, which is committed to creating a good experience atmosphere for the users. It combines virtual reality and augmented reality technology, and is characterized by interactivity, immersion, real time, combination of virtuality and reality, imagination and enjoyment. It is necessary to apply interactive virtual presentations to handicraft display, innovate traditional one-way and no-feedback display patterns, and add experience and emotional factors to foster audience interest in traditional handicraft[2].

2. The Status of Traditional Handicraft Display in the Information Age

The current integrated application model of intangible cultural heritage handicraft and Internet is mainly concentrated on traditional websites, mobile APP, Weibo, WeChat public accounts and circle of friends. The scale of related industries is not large and the amount of content displayed is insufficient. Many displays on the Internet are built by related companies and institutions. In terms of content management, the amount of information is small; the update is slow; the popularity is insufficient; the display form is the same. Handicraft products have high historical value and cultural value, but they are not open to the public and have a long distance from the grassroots. Therefore, how to combine the new technologies of the Internet, increase the opportunities for people to experience the culture and increase effective publicity to attract people to participate in intangible cultural heritage deserves our thinking[3].

3. Interpretation of Interactive Virtual Reality Technology in the Era

After the agricultural economy, industrial economy and service economy, the experience economy came into being. In the traditional industrial era, the sales volume of a product lies in whether it is beautiful. Therefore, in the industrial age, the designer pays attention to how to reduce the cost of the product on the basis of ensuring the product modeling and function, but rarely considers the real demand of consumer. In the era of experience economy, consumers not only pay attention to tangible product styling, sense of touch and function, but also focus on feeling. This physical and psychological experience has attracted the attention of consumers. The interactive virtual display is dedicated to putting the user experience first and interpreting a new display design. The interactive virtual display design is divided into two parts: virtual reality display and augmented reality display. Virtual reality creates a virtual environment. Currently, it is mainly used in some exhibition halls, such as virtual space, virtual sea world and virtual interstellar, which can help users to quickly and intuitively understand some scientific knowledge with multimedia means. Different from virtual reality (VR), augmented reality is to insert virtual objects directly into the real environment, and is committed to seamlessly combining virtuality and reality to achieve an immersive effect. AR technology emerged in the early 1990s. The early AR operating platform was a desktop computer or workbench, and the display device was a perspective helmet. There were many limitations. With the rapid development of network technology and mobile devices, the application platform of AR technology has been broadened, especially in the application of handheld devices. It is quickly and easily accessible to the people, and has quickly become one of the most suitable platforms for product promotion and sales. It is possible for AR to interact with pattern recognition technology and sensor technology. Through various forms, such as positioning system, data gloves and body language, users can interact with virtual objects in the scene.

4. The Role of Virtual Reality Technology in Handicraft Display

Traditionally, the display of handicrafts is very old, which is mainly the display of window display racks with explanations and graphics. This often appears in museums and exhibition halls, which is not pro-people. These display designs only focus on how to complete an exhibition. For example, they truly restore the appearance, materials, functions and other contents of the exhibits, but transfer the real needs of the audience[4]. They do not consider how to display according to the psychology of the audience and do not focus on the part that the audience want to pay more attention to. Virtual reality technology has revolutionized form, content and model in handicraft.

4.1 Innovation in the display form.

After the popularity of the Internet, the use of computers and mobile phones has become more frequent, and the form of display has changed. In the past, the visual and auditory-based display was single and could not fully delight the audience. Especially the relatively simple exhibits like traditional handicrafts were placed in the showcase, and the historical atmosphere was too strong to make the audience interested. With the interactive virtual technology, the display form has a lot of room for development. Wearable devices, virtual glasses and interactive large screens are emerging in an endless stream. The display process fully mobilizes the audience's five senses, bringing an unforgettable experience to the audience.

4.2 Innovation in display content.

In the traditional sense, the display content is relatively simple and straightforward. For the purpose of display, only the parameters and historical background of the exhibit are presented to the audience. Some attractive content of the items is not displayed, and the contents are directly written on the exhibition board. The dense text and pictures are very flawed. Young children cannot understand these things at all. Young people are not willing to spend time quietly reading these words. The elderly who are deeply interested in traditional culture are suffering from physical problems. With bad eyes and dimly-lit museums, they cannot see the specific words on the board.

The panels perform practically no function. The interactive virtual display adds a dynamic three-dimensional model, and tells the history of the exhibits in a story-telling manner. You can see the craftsmen from the Republic of China "go to the scene" and teach you the craftsmanship process. You may be in Qing Dynasty and experience life at that time.

4.3 Innovation in display model.

The virtual reality technology display emphasizes the audience-centered principle. Under the premise of fully understanding people's needs, it breaks the traditional static exhibit display model, realizes the change of the audience from passive viewer to active participant, and establishes a two-way interactive information communication channel. In the new media era, the innovative design of traditional crafts display uses a variety of technical means to maximize the participation of people, so that the audience can deepen the understanding and memory of the display content of traditional handicrafts while interacting with the display information[5].

5. Application of Virtual Reality Technology in Handicraft Display

5.1 Simulated rendering optimizes the audience experience.

The virtual reality technology can build a high-simulation three-dimensional virtual space that can provide visitors with a real-world sensory experience, allowing people to interact with things in space in a timely and unrestricted way. They will be personally on the scene. Depending on the difference in the real and virtual interaction, virtual reality systems can be roughly divided into desktop type, augmented type and immersive type. The desktop virtual reality system creates a three-dimensional space with the PC computer platform as the core, and uses the computer screen as the observation window to assist the hardware input devices to complete the interaction between the viewer and the virtual environment. The digital museum that has emerged in recent years has enabled people to sit in front of the screen and enjoy a 360-degree panoramic view of various museum exhibitions, and enjoy the experience of being on the scene. The augmented virtual reality system can realize the superposition of the virtual environment and the real environment with the same picture and the same space, so that the participating audience can complete the real-time interaction with the displayed information in the vivid virtual reality scene. The immersive virtual reality system provides participants with a completely immersive experience that gives people the feeling of being in a virtual world. Full application of projection in a relatively closed space or the means of a headband display device can effectively enable people to immerse themselves in both physical and psychological terms without the external disturbance of the sensory system. The 3D cinema uses a stereoscopic projection system to realistically present stereoscopic images, giving the audience a strong sense of presence and making people feel like that they are in the film environment. 4D motion cinema is based on 3D cinema, which adds environmental effects, such as wind, rain and snowfall simulation. Combined with the use of dynamic seats, it can provide multiple sensory stimulations to the audience, enhancing their immersive experience.

5.2 Interactive media drives audience integration.

Combining various kinds of multimedia display techniques with installation art, the audience's participation and the device itself becomes an inseparable organic thing to realize dynamic display. Qilongchao-New Media Art Exhibition in Taipei Palace Museum creatively applied new media technology to the exhibition of ancient paintings, and carried out a new interpretation and deconstruction of cultural relics. An interactive device in the exhibition takes picture of "Spring Morning in Han Palace" as a blueprint. With the face recognition technology, the audience enters the world of pixelated animation and feels the fun of interacting with the scenes of the dynamic artifacts. Multi-touch technology breaks through the traditional human-computer interaction model with input devices, such as keyboard and mouse, and single-click operation, making the digital interface more like a physical platform that can touch and simultaneously sense multi-point movements. It is suitable for both hands and greatly improves the freedom and efficiency of

operation. The viewer can directly interact with the digital display information such as graphics and video by changing the touch gesture, and feel the magical and interesting multi-point input effect. "About China", which acquired third-class award for visual communication in the 2nd China Higher Education Design Competition in 2015, adopted an interactive design based on touch screen, which makes the production steps and process of printing craftsmanship, paper-making skills and other intangible cultural heritage skills into a computerized picture book with interactive functions. This allows the audience to have a more direct and visual understanding of the intangible cultural production techniques behind the ancient Chinese invention. Through the process and step-by-step display, it is easier for people to operate and understand it.

6. Conclusion

Digital media technology continues to get rid of the stale and bring forth the fresh, providing a rich selection of technologies for the display of traditional handicrafts. Virtual reality technology enables traditional craftsmanship to display with human-computer interaction, animation demonstration and video interpretation. It allows users to experience the traditional craftsmanship process as a producer, providing them with a new audio-visual experience. It plays a very good role in promoting spread and promotion of traditional handicrafts. The development of science and technology is changing with each passing day, and the system of interactive virtual display is constantly improving. With the development of science and technology, other technologies may be added to the interactive virtual display. Therefore, the research of this topic also needs to be updated with the times. Case analysis and the formulation of strategy need to keep pace with the times. It is believed that in the near future, virtual reality technology is only an innovation point of handicraft display. The handicraft display method with network technology and artificial intelligence technology will lead people into a more novel and interesting world, and open the mystery journey of art exploration.

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