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APPLYING IMMERSIVE DESIGN IN VIRTUAL EXHIBITION PLATFORMS OF CULTURE AND ARTS: A CASE STUDY OF WONDERS OF CHINA

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Wonders of China is a cultural and artistic virtual exhibition platform based on mobile devices, which collects and organizes cultural and artistic works from all over China and shares them with all users through the Internet. This paper takes the Wonders of China application as an example to analyze the immersive design elements of cultural and artistic virtual exhibitions from four aspects, providing references and insights for the design and development of more virtual exhibitions.

Key words: *Immersion Experience, Virtual Exhibition, Interactive Display, Wonders of China*

INTRODUCTION

The outbreak of COVID-19 in 2019 had a significant impact on exhibition halls worldwide. To control the epidemic, museums and art institutions suspended operations and implemented strict measures upon resuming work. In response, many exhibition halls turned to new media platforms to develop virtual exhibitions for online promotion. Well-known foreign museums, such as the Louvre, British Museum, and Metropolitan Museum of Art, have fully opened their online exhibitions, while domestic museums launched "cloud exhibition halls" for users to enjoy. However, virtual exhibitions generally exist independently, with few cultural and art virtual exhibitions on a third-party platform that aggregates exhibits from multiple institutions. To view all the works of art created by an artist, enthusiasts need to travel long distances, which is time-consuming and energy-consuming. Google Art Project launched a virtual reality touring platform called "Wonders of China" [1], which collaborates with 47 art and cultural institutions in China to provide users with the opportunity to explore China's top museums and popular art landmarks anytime and anywhere. In the era of normalized epidemic prevention and control, cultural and art virtual exhibition platforms offer a new way for art and culture enthusiasts to communicate with artworks.

PURPOSE

The purpose of this paper is to explore how online exhibitions can integrate elements of flow experience into their design, based on the flow theory proposed by Hungarian psychologist Mihaly Csikszentmihalyi [2]. By analyzing the presentation details of the Wonders of China App, this paper aims to demonstrate the significance of incorporating relevant immersive elements in online exhibition design to maintain user engagement, as these events require sustained user attention [3].

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RESULTS AND DISCUSSION

Firstly, the presentation of details is a significant advantage of virtual exhibitions. Offline exhibitions usually limit visitors from getting close to exhibits due to the need for protection, resulting in visitors not being able to appreciate the details of the artifacts or artworks. Moreover, large crowds can make it even more difficult for visitors to observe the details. However, in online virtual exhibitions, users can zoom in on the details without any restrictions on time or space. For instance, in the Wonders of China virtual exhibition, users can closely examine the details of artworks like the "Xian Yun Ye He Zhi Shi" painting. This painting is accompanied by a text introduction to help users understand the background and meaning of the work's creation. The color palette used in the work represents different emotions, which can be accurately perceived by users. By magnifying the image using the "+" icon, users can see the texture, brushstrokes, and other hidden details left by the artist. This experience is a great leap forward for art lovers and professional artists, who can closely examine the painting techniques and characteristics of the author. Overall, virtual exhibitions offer a detailed and in-depth experience that is not always possible in offline exhibitions, making them an essential tool for promoting and showcasing art and cultural heritage.

Secondly, effective storytelling is essential in virtual exhibition design to capture users' attention and evoke emotions. A good storyline requires a background with a sense of time and space, clear character settings, a complete story plot, and interesting developments. The Wonders of China App's "Grand Wedding Ceremony of Emperor Guangxu" exhibit showcases these storytelling elements effectively. The exhibit presents a comprehensive understanding of Emperor Guangxu's wedding through a cleverly constructed storyline that refers to the "Illustrations of the Emperor's Grand Wedding" painting to showcase the grandeur of the wedding in the Forbidden City. The screen zooms in on the corresponding scene during key storytelling moments, allowing users to immerse themselves in the story. Moreover, the story includes panoramic maps of the Taihe Palace, Wumen Gate, and other areas, as well as photos of the interior of the Kunning Palace and Qianqing Gate, allowing users to compare the painting with real-life locations. This combination not only breaks the separation between narrative space and art collections in offline exhibitions but also allows users to easily immerse themselves in the imagery and emotions of the story's time and space. Proper storytelling techniques can help users experience each event as if they were part of it, enhancing their virtual exhibition experience.

Thirdly, virtual exhibition platforms in the cultural and arts field face a design challenge of presenting a large amount of information on small screens in a reasonable way. Gradual layer-by-layer display is a common method to reduce the complexity of information and improve user experience. The Wonders of China App, as a virtual exhibition platform, sets up interesting thematic categories, such as "What is Your Favorite Color?" and "Elaborate Carvings on Peach Pits." These categories construct diverse ways of connection, enabling users to choose the topics they are interested in and immerse themselves in the experience while engaging in deep learning and effective memory. For instance, the "What is Your

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Favorite Color?" category is divided into eight themes, and users can explore more than 8,000 Chinese cultural treasures according to colors. Clicking on a color block displays the corresponding artistic works of that color (Fig. 1). The "Elaborate Carvings on Peach Pits" section proposes a question on the left and displays related works with images on the right. Four options guide users to answer, and clicking "Learn More" takes them to the corresponding story plot for that theme (Fig. 2). Carefully analyzed and thoughtfully presented content leaves a deeper impression on users, making it easier for them to recall the information later. Overall, the topic settings of the Wonders of China App showcase its attention to detail in constructing an engaging and informative virtual exhibition experience.
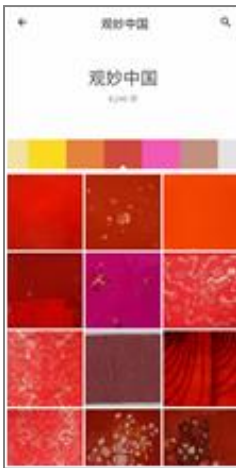

Fig. 1 Artwork in Red (Image Source: Wonders of China App)

Fig. 2 Introduction of the Question "Elaborate Carvings on Peach Pits" (Image Source: Wonders of China App)

Fourthly, virtual exhibitions often include panoramic exploration functionality, which can recreate a more realistic scene and leave a lasting impression of the environment in which artworks are presented. This functionality is typically used in virtual exhibition halls built on the basis of physical exhibition halls, which use professional equipment and technology to capture 3D data and spatial information and reconstruct them on the cloud to form a scene that corresponds to the physical space [4]. Users can navigate through the scene using arrow directions, zoom, or rotate to switch between viewing angles. The Wonders of China App provides panoramic exploration of indoor and outdoor exhibition halls and venues, allowing users to gain a comprehensive understanding of the cultural and developmental history of the internal architecture and external scenery of museums, art galleries, ancient towns, and gardens. The Shanghai Museum of Contemporary Art panoramic exploration experience starts with users being taken to the rooftop

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terrace of the museum, providing guidance that the exploration area is not limited to the indoor public display space. This approach enriches the viewing experience by allowing users to freely explore floors without exhibits or even the rooftop. With the continuous improvement and upgrading of virtual reality technology, the applicability and practicality of panoramic exploration functionality will continue to increase, providing users with a more realistic and comfortable exploration experience.

CONCLUSIONS

In conclusion, the advantages and characteristics of "cloud exhibition halls" have become apparent with the trend of normalized epidemic prevention and control. To keep users engaged, virtual exhibition design should focus on immersive experience and follow design principles to create the best psychological experience. Furthermore, cooperation with multiple cultural institutions may become a development trend for China's cultural and artistic virtual exhibition platforms, allowing for the exchange and display of digital cultural resources and promoting the dissemination of knowledge in culture, art, science, and the protection and inheritance of China's traditional cultural resources.

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ХЕ Ц., КОСЕНКО Д.
ЗАСТОСУВАННЯ ІММЕРСІВНОГО ДИЗАЙНУ У ВІРТУАЛЬНИХ ВИСТАВКОВИХ ПЛАТФОРМАХ КУЛЬТУРИ ТА МИСТЕЦТВА: ПРИКЛАД WONDERS OF CHINA

Wonders of China (Чудеса Китаю) — це культурно-мистецька віртуальна виставкова платформа на основі мобільних пристроїв, яка збирає та організовує культурні та мистецькі роботи з усього Китаю та ділиться ними з усіма користувачами через Інтернет. У цій роботі на прикладі програми Wonders of China аналізуються елементи дизайну культурних і мистецьких віртуальних виставок з чотирьох аспектів, надаючи матеріали та ідеї для проектування та розробки віртуальних виставок.

Ключові слова: *досвід занурення, віртуальна виставка, інтерактивна експозиція, Wonders of China.*