Museum Immersion Interactive Design:

Taking the Children Art Gallery Exhibition as an example.

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Abstract. Art is the museum's collection, and education is the heart of the museum. The management of the museum is aimed at 3E: "Educate, Entertain, Enrich". In the 1960s, the theory of interaction was put forward. From the 1980s, museum exhibitions began to focus on audience participation. In the face of the challenges of the children's museum in new century, how should new strategies be used to transform resources? It is the subject of contemporary museums. Through cross-disciplinary cooperation in culture, entertainment, education and technology, using storytelling and cutting-edge technology, and adding Ecstatic experience to build a 4E model for future museum operations, that is, using the technology of immersive interactive devices , can better present the new look of the exhibits, generate a new dialogue mode, and highly enhance the joyful experience of the audience in contact with the exhibits.

In this study, through in-depth interviews with museum practitioners and expert consultations, the SHE curatorial design model for children's art gallery space are put forward, and they are actually applied to project planning. Then, by observing the museum audience experience, the narrative power of immersive interactive devices and the effects of cutting-edge technology are verified. Responding to and surpassing the concerns and needs of the parent-child audience of contemporary museums, inherited and followed in museum education.

Keywords: Discovery learning, interaction theory, immersive design, SHE design model.

1 Introduction

The management of the museum is aimed at 3E: "Educate, Entertain, Enrich". Education gives rationality to visits, entertainment stimulates the motivation for exploration, and enriching museum experience is the primary concern of holistic operation [1]. The technological revolution is advancing with the times. In addition to iterating the museum's brand image, through storytelling and cutting-edge technology through cultural, entertainment, education and technology cross-domain cooperation, constructing a future museum visit model will be even more enjoyable (Ecstatic) experience, while driving innovative applications in education and experience. Here, especially the use of immersive interactive devices such as Augmented Reality (AR) and Virtual Reality (VR) can present a new look of the exhibits, generate a new dialogue mode, and highly enhance audience contact pleasant experience of exhibition.

The learning outcomes of the audience are mostly potential transformation experiences, such as changing the established thoughts or attitudes about things, paying more attention to certain things or phenomena, deepening their love or curiosity, and seeing the world from a more open perspective, etc. (Packer 2006) [2]. Children, however, are seen as the seed target for cultivating aesthetic experiences. Therefore, the application of digital technologies such as animation, games, somatosensory interaction, and operating experience to the planning of children's museum will further enable children to fully open their senses of sight, hearing, touch, and even sense of smell. With a sense of immersion, interaction, and theater, in the pleasant atmosphere of education and fun, enrich the wonderful experience of visiting the museum.

1.1 Theory of Interaction

In the 1960s, British pioneer of new media art Roy Ascott put forward the concept of interaction theory, thinking that creative works of art should take a completely open form of expression; designers should not only express their views unilaterally, but also participants are invited to enter the work; interact with the work and enjoy the creative and imaginative in-depth experience process [3].

1.2 Interactive Art Traits

The main characteristics presented by interactive art are: (1) Interactivity, which can be modified, simple, and feedback; similar to the exploration of toys; has the feeling, atmosphere, experience, and use of creating abstract emotional concepts Those who resonate. (2) Immersion, the viewer through the link, immersing the senses in the equipment like a full penetration. The user may equip virtual equipment to create a virtual reality like a dream. Therefore, how to design with the most direct interface and perfectly integrate with the work is the goal of interactive design. (3) Imagination and Creativity, through intellectual practice to complete a kind of idea that is different from the past, out of nothing, and unexpected whimsy, can generate original imagination and new creativity. (4) Hyper Media, which goes beyond the traditional narrative

style of traditional media. As long as the cursor is moved to media such as sound, video, animation, movie graphics, and text, users can use the Hyperlink technology. Obtain cross-domain and interdisciplinary perceptions from sound, light, interactive programs, and even smell [4].

1.3 Immersive Experience

Over the past decade, neuroscience has uncovered a wealth of new information about our senses and how they serve as our gateway to the world. This splendidly accessible book explores the most intriguing findings of this research. With infectious enthusiasm, Dr. Rob DeSalle of the American Museum of Natural History illuminates not only how we see, hear, smell, touch, taste, maintain balance, feel pain, and rely on other less familiar senses, but also illustrates how these senses shape our perception of the world in aesthetics, art and music [5].

An immersive experience is "the perception of physical existence in a non-physical world." When it comes to virtual and augmented reality, this is twofold. This article will completely define what elements define an immersive experience and what steps you can take to improve your immersion in your next virtual or enhanced experience.

1.4 Immersive Element

Immersion depends on our sensory use, especially four of them: vision, sound, touch and smell. Virtual reality uses vision, sound, and touch.
(1) Sight: Virtual reality headsets block peripheral vision (or use surround headphones to enhance it) to focus the wearer's attention on what happens directly in front of them. Augmented reality uses headphones or smartphone displays to add virtual elements to the real world.
(2) Sound: Virtual reality headsets include sound-suppressing headsets, forcing the wearer to focus on the sounds of the virtual world. Augmented reality provides sound for everything that happens on the screen.
(3) Touch: The accessory of the virtual reality headset provides tactile feedback to the wearer. Other examples of using touch include vibration and rumble when picking up an item or bumping with something in the virtual world. Due to the limitations of augmented reality technology, augmented reality rarely uses touch to increase immersion. All these different elements combine to create an immersive experience.

2 Literature Review

Gail Ringel, deputy director of the Boston Children's Museum, mentioned in the article "Designing for Children" that if the learning content set by the museum exceeds the understanding ability of children's audiences, even through interactive or fun learning methods, they cannot be miraculously learned [6].