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RESEARCH ARTICLE

Research on the Application of Interaction Design in Museum Exhibition

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Abstract: Interaction is a function that is considered more and more in the development of modern society. It originates from the inspiration and support of science and technology, which makes people pay more and more attention to the interactive significance of various services. Interaction can enhance the sense of participation and deepen the experience, and intelligent interaction design is the key to forming this experience. As the condensation and exhibition of museum culture, it creates a concentrated expression space for the connotation of a region or a city, and how to use the interaction design function to make it express as much as possible is the focus of this article. This article will discuss its application methods and think about its application value by combining the specific cases of interaction design and interactive experience in museum situations.

Keywords: interaction; interaction experience; museum

1. What is interaction design?

Interaction Design, also known as interactive design, is one of the design fields that define and design the behavior of man-made systems. First of all, interaction design is a kind of technology, which focuses on using certain means (pointing to science and technology) to make products easier to use, so that people can get pleasure from the experience of products. It can be found that the design concept of interaction design itself has never left the people-oriented as the core, and further, the whole interaction design is built based on people's psychological and behavioral characteristics. Of course, interaction design itself involves many disciplines, including science and technology. Among all organic relations, artistic connotation occupies a considerable position, which just corresponds to the people-oriented characteristics of interaction design and the value compliance that people can get imagination and pleasure in the process of experience.

2. The interaction design in the museum display

The Museum is a non-profit, permanent institution open to the public for the service of society and its development. It collects, protects, researches, disseminates and exhibits the physical and intangible heritage of man and the human environment for the purposes of education, research and appreciation(Ma, 2018). Most of the traditional museum exhibits are warehouse-style, that is, the exhibits are simply placed on various tables without a sense of substitution, which leads to the fact that visitors often can not empathize with the exhibits due to the lack of guidance, thus losing their interest in exhibits and exhibitions. With the development of the times, museums shoulder the special mission of spreading national and regional cultures, and they have also made various tricks internally to reverse the embarrassing situation that this exhibition lacks attractiveness. Among them, interaction design, as one of the important sections, has also surfaced.

The most important content of the interaction design of the museum is how to get rid of the one-way communication problem of the traditional exhibition and display information transmission, and guide visitors to form a closer interactive relationship with the museum from their own perspective, so as to arouse their thirst for knowledge in the museum environment. According to this concept, a large number of related designs have sprung up, including the interaction between people and machines, people and the environment, and people and people, according to their medium of occurrence.

The interaction between human and machine was introduced with the development of multimedia technology, which is one of the most widely used interaction methods in museums at present. The application of interactive machines in museums can give people a fresh and refreshing feeling at the beginning, and stimulate the curiosity of viewers, so as to achieve the purpose of transferring exhibition contents. For example, the application of electronic virtual book-turning machine booth can attract viewers to experience the special pleasure of reading ancient books and materials inadvertently, and this pleasure itself can play a very good role in transferring knowledge. Secondly, the interactive machine can refresh the viewing experience and make the viewing more convenient. For example, by clicking on the materials in the museum, you can easily know the overview of exhibits and activities, the opening time and other important information, which greatly reduces the labor cost.

In order to continue to increase the viewing experience, it is essential to achieve as much immersion as possible. To make this goal a reality, it is necessary to expand the scope of interaction design and work hard on the environment of the exhibition area, which includes using various installations and facilities to create a special atmosphere for a characteristic exhibition area, so that viewers can immerse themselves in their visual context with a deeper feeling. Of course, this requires considerable creativity and skill, in order to show the features of exhibits or exhibits accurately and imaginatively to the viewers. For example, in the 2010 Shanghai World Expo, the German Pavilion made a delicate interaction design through multimedia device technology. Viewers will first enter a virtual scene,

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where all kinds of trains, cars and pedestrians are filled with elements that represent and highlight the vitality of German society and the spirit of urban culture. At the same time, they give realistic noises in hearing, thus deepening their real experience in this virtual scene, and making people feel immersive.

The interaction between people is the difficulty of the whole interaction design, but because of its bold and avant-garde style, interaction between people is also a dripping expression of creativity. Visitors are not always isolated individuals in the process of visiting, which will naturally have an impact on other visitors. Museums can make use of this to design some exhibitions and displays in a unique way. For example, an exhibition hall in Hakone Museum in Japan has been specially designed. First, the exhibition hall is designed as a rugged terrain. In addition, the tunnel setting makes visitors feel like they are in a maze and meet other visitors unexpectedly, forming a subtle experience. At the same time, a blackboard is also provided in the exhibition hall to invite visitors to create freely, which is of course a direct expression of the interaction between people and museums.

3. The technology application

The interaction design of museums naturally includes many applications of front-end technologies, which are mainly in the field of multimedia, aiming at providing viewers with immersive experiences with multiple impressions. The following are some common types.

3.1 Holographic projection

Holography is a technology that uses the principle of light interference and diffraction to project an image on a holographic film to reproduce a three-dimensional object. Its imaging can be presented in mid-air, so that viewers can observe the exhibits from all angles. This transformation from two-dimensional to three-dimensional refreshes the viewing experience, and viewers can experience the virtual chronological space of exhibits in the real physical space.

3.2 Virtual reality technology

Virtual Reality technology (VR) has attracted much attention from the market and society in recent years. It is a brand-new technology developed from the computer field, and it is also a hot research topic at present. Through VR, a realistic three-dimensional space can be simulated, which provides viewers with visual and other visual simulations, and makes them feel immersive. Besides, the simulation function of VR is far more than that, and its core essence also focuses on the real-time interactive ability of simulation.

3.3 Somatosensory interaction technology

Somatosensory technology mainly means that people can interact with the surrounding devices or environment by directly using their limbs. Applying somatosensory technology to museums, a related case is that a 40×8m giant screen was built in the Supersensuous Museum in Yokohama, Japan. This giant screen also has somatosensory function. Viewers can not only experience the world inside the giant screen with immersion, but also interact with the world creatures inside the screen through somatosensory technology.

4. Problems needing attention in the application of interaction design in museum exhibitions.

4.1 The design must be based on the display content.

Interaction design does play an important auxiliary role in attracting visitors to deepen their viewing experience. However, if we pay too much attention to whether the interaction design itself is eye-catching or attractive enough, it is doubtful that the cart before the horse is put before the horse. The purpose of interaction design itself is not to usurp the host's role, let alone to show off its skills. In the design process, we should adhere to the principle of moderation and strictly take the service display content as the guide. Only when the visitors go out of the museum and are still deeply impressed by the exhibition content itself, we should

4.2 Adhere to the principle of people-oriented.

From the above, we can find that modern interaction design is increasingly dependent on science and technology, which often leads to a paradox, that is, do viewers feel culture or science and technology in museums? With the development of The Times, design has not only from two-dimensional plane to three-dimensional space so simple exhibits from drawings to space(Li, 2019). Technology itself is not completely zero-threshold, and some scientific and technological equipment may not be mature in the civil field, which causes some discomfort in the operation of the equipment. Faced with this situation, the museum should of course return to the essence of interaction design, adhere to the people-oriented service principle, and correct it in time when human-computer interaction has turned into a contradiction between human and computer.

5. Conclusion

To sum up, we can find the infinite possibilities that interaction design brings to the museum's display mode. If it can be used reasonably and intentionally, it can make the museum's exhibition glow with new vitality, and the museum itself can be more distinctive and attractive. However, as emphasized in the article, interaction design itself should not become an end in itself, but should actively adhere to the duty of serving the exhibition content and putting people first, which requires the joint efforts of museum managers and interaction designers. In the future, it is reasonable to believe that with the deepening of people's understanding of interaction design, the design scheme that is most suitable for exhibition layout can be selected from numerous roads, and the integration of interaction, design and exhibition can be realized.

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Conflict of Interest

The authors declare that they have no conflicts of interest to this work.

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