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Analysis of The Impact of Interactive Design on Digital Museum Exhibitions

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Abstract: The development of times in the context of digital technology has been applied in many fields, increasing the possibility of the development of digital-based museum exhibition activities. This development enables relevant personnel to interact with the design, production, and manufacture of digital museum products, thereby providing users with an enhanced experience. Combined with practical thinking, this paper briefly analyses the interaction design in the development of digital-based museum exhibition activities. Secondly, it explains the influence of interaction design on digital-based museum exhibitions and puts forward the interactive design measures catered towards digital museum exhibitions.

Keywords: Interaction design; Digitization; Museums; Exhibitions

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1. Introduction

With the rapid development of informatization and digital technology, museum exhibition activities are experiencing unprecedented changes. The traditional static display method is gradually replaced by digital designs that provide an interactive experience. Not only does this transformation align museum exhibition work with the trend of the times but also greatly enhances the audience's participation and satisfaction. Through digital technology, museums can display exhibits more vividly and intuitively, while visitors can interact with the exhibits through digital devices to gain a deeper understanding of the stories and cultural connotations behind them. Not only does this facilitate a good physical and mental experience for the audience but it also enhances the attractiveness and influence of the museum's exhibition activities. At the same time, interaction design plays an important role in promoting the exhibition activities of digital museums, which accurately grasps the needs of the audience, innovates the exhibition forms, and injects new vitality into the innovative development of museum exhibition activities. With the continuous progress of technology and the increasingly diversified needs of the audience, interactive experience design will continue to play a more critical role in museum exhibition activities, facilitating a more vibrant and engaging visiting experience for the audience.

2. Analysis of interactive design

Interactive design aims to organize the behaviors of man-made systems, which involve two or more interacting individuals who communicate with each other through the integration of interactive content and refinement of the system's structure to achieve a common purpose. Therefore, interactive design acts as a vehicle for forming relationships between people, products, and services, with a high degree of usability and enhanced user experience. In the interaction design process, designers need to consider user needs, based on a human-centered principle to complete product design activities from a goal-oriented perspective [1].

3. The impact of interaction design on digital museum exhibitions

Exhibits in digital museums are mainly simple and meet the style requirements of the museum. In this regard, exhibits can be presented to the audience digitally, which not only increases the attractiveness of the exhibits but also fully utilizes their diversified forms. This way, the audience can access the exhibit's online channels and query any related information. Designers can utilize interaction design methods to increase the favorable impact on the exhibition work of digital museums.

Firstly, designers ought to utilize interaction designs that are more conducive to improving the audience's visual experience and people's attention by way of color matching and adding visual elements to the overall display layout [2]. Secondly, virtual reality technology and digital display technology are important interactive design factors in the exhibition activities of digital museums. Digital displays can be utilized to display a large number of videos, pictures, audio, etc. in the museum in the form of digital media. This enables the audience to have a more comprehensive understanding of the history of the exhibits. At the same time, virtual reality can be used to generate a virtual scene to provide audiences with a better experience [3].

Third, big data technology can be used to help designers retrieve information related to museum exhibits, analyze the data content, and grasp the audience's needs and feedback. Accurate product recommendations can then be implemented to effectively improve customer satisfaction. At the same time, designers can use big data technology to develop personalized guided tours according to the actual needs of the audience. Through interactive activities, the audience can actively participate in the digital museum exhibition activities [4].

4. Interaction design measures for digital museum exhibitions

Design elements should be enhanced to provide the audience with a good interactive experience. When carrying out interaction design activities, digital museums should pay attention to the competitiveness of the exhibition products in the economic market and build a complete interactive interface based on the products. The exhibition page's content can be enhanced by using design elements such as vibrant colors, pictures, animations, etc., to ensure the success of the exhibition activities of digital museums.

Firstly, the designer can develop exhibition pages that feature cultural relics by adjusting the relic size to appropriate proportions. The audience can then understand the dynamic effect of the exhibits more intuitively and associate real-life exhibits with virtual ones. Secondly, designers can use the exhibits as an organic carrier, using static display and plane display so that the audience receives information related to the exhibits. However, this process causes a lack of interest, and the audience's participation is relatively low. Therefore, interactive designs can incorporate digital technology and multimedia equipment so that the exhibits can be displayed interactively to enhance the subjective initiative and willingness of the audience to engage with the exhibit. Thirdly, the screen effect of the digital exhibition hall can be strengthened through the integration of virtual roaming, interactive projection, augmented reality (AR) technology, and virtual reality technology to provide an

immersive visual experience. Simultaneously, designers should prioritize the commercial goals of the museum and user experience goals, and tailor their design efforts based on the users' experience level.

For popular mobile phone applications, digital museums should select the target user groups to develop exhibits accordingly and target groups between 12–18 years old and 18–45 years old. This way, the designers can incorporate gamified interactive methods in the development process to improve user participation and their emotional experience.

Designers should also pay attention to the characteristics of the product so that it can scan the physical collections within the museum. Through the use of information technology, they can facilitate the processing of these collections and establish a complete data platform. The information about the collections can be listed along with the integration of text images and audio-visual content to ensure that the collections are smoothly presented on the mobile application. At the same time, designers should also consider the fun factor in the process of interaction design. The application is divided into different sections, each displaying the interactive features of specific content and topics. This aims to stimulate the user's enthusiasm to understand the exhibits and enhance their subjective initiative. Moreover, the social sharing function of the application should be enhanced in the process of module design. Contents of the exhibits can then be shared through the museum's official account where museum staff can record any ongoing events daily, facilitating interaction and communication between museum staff and visitors. Subsequently, designers can utilize a combination of audio-visual experiences, texts, and images to improve the user's experience and add gamification interactive factors in the regular exhibit introduction session to deepen the user's impression and understanding of the history of the exhibits.

After confirming the product's function, the designer can control the museum's operation through the establishment of an information architecture diagram and adhere to the principle of priority setting. Focusing on the exhibit's information allows the designer to eliminate any confusion after the user enters the online museum through the simplification of the interactive design process. Firstly, it is important to design the handheld museum app through interactive design. Starting from the user login interface, users should be able to log in seamlessly and navigate the modules by just clicking and selecting. Secondly, designers need to set up two interactive portals for users to access the mobile app. Users can also opt to explore the collection first, gather information related to the collection, and play interactive games. The user should be able to access the game portals after appreciating the collection without having to exit the app.

Again, the designer can design the app based on the collection's usability, functionality, ease of use and experience, and appropriate deletion of unnecessary content. Users can then access the collection of real information and hidden functions to ensure that the user can enter hidden entrances during the account setup process. This allows users to access the app anytime and anywhere to view the contents of the collection. Once the user has entered the collection appreciation page, the system should appear in the default display mode so that the user can view the contents of the interface by simply swiping left or right. At the same time, the system should notify the user before opening the pop-up screen. Users can select the bottom right button to enable a pop-up screen at the top. However, the designer should pay attention to the size of the pop-up screen to prevent it from affecting the user's viewing. Designers can also provide recommendations to different users based on their preferences when liking or disliking certain content on the pop-up screen.

A reasonable setting of the museum layout and execution of user modeling work should be implemented. The online exhibition hall space should be fully utilized and at the same time, the interactive equipment in the physical museum should be increased to improve the artistry of the museum. Moreover, employing both online and offline museum design methods effectively expands the development space of the museum, thus attracting larger audiences.

To establish an ideal museum layout, designers utilize graphic interaction to create a good online museum

environment, by choosing the appropriate font size and font style. In this regard, they can create a brand image of the museum through logo design, and coordination of color and text, to deepen the user's impression of the museum. A connection between online and offline museums should also be established so that users can access the information they need on demand. The icon design process should focus on the interface's style, and strengthen the focus on the chart function to ensure that the icon's design is extracted from the museum elements in the museum. This represents the museum's sense of modernity and antiquity, by using simple color blocks, text, and lines. This also ensures that designers can enrich the museum based on the content of the functional module information concerning the exhibits so that users can access exhibit-related content easily.

Last but not least, designers can employ user modeling methods to provide users with corresponding characters. This ensures that designers can gather and utilize user information effectively, and design interaction modules that bridge the gap between users and the museum. At the same time, designers should also prioritize design elements in the modeling process to ensure the character model illustrates user expectations. This helps designers to understand the purpose and intention of users and design a framework based on user data and preferences. With this, the services provided by the online museum can match the user's mental model and behaviors, thus solidifying the foundation of the design of the digital museum.

5. Conclusion

Interactive design has a positive impact on digital museum exhibition activities, in terms of both interface design and user experience. Therefore, designers should strengthen the analysis of interaction design and understand its impact on digital museum exhibitions, to emphasize the importance of design elements and provide audiences with a good interactive experience. Designers should also pay close attention to the design of the online museum structure by simplifying the interactive design process and subsequently setting up a reasonable layout of the museum. User modeling work ought to be executed in a way that strengthens the interactive level of exhibition activities in digital museums.

Disclosure statement

The authors declare no conflict of interest.

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