

Research on Artistic Expression under Human-Computer Interaction Scenes

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Abstract: In order to meet the needs of economic development and the requirements of international production and the progress of scientific and technological, quickly respond to market dynamics and effectively convey information and achieve information interaction in various aspects, it briefly introduces the concept of interaction design and analyzes the related factors of interaction design in this paper. Finally, through the interactive design process of exhibition activities, the application manifestation of interactive design in display art is further studied, so as to enrich the theoretical system of interactive design.

1. Introduction

In China's feudal society, commercial activities were the main forms of display. They were mainly manifested in the shop guild and market trade and other aspects. In order to improve the sales volume and market competitiveness of commodities, some shops and guild organizations gradually began to pay attention to the publicity and image display of commodities, which laid a functional foundation for modern exhibitions. The traditional trade market began to gradually evolve to fixed shopping malls and large trade exhibitions, while retaining its three major functions: currency circulation function, information exchange function and entertainment function. Information exchange and entertainment interaction between people and objects in today's exhibition occupies a major position. With the continuous improvement of people's material quality of life, people are not only satisfied with passively receiving information when visiting, but also want to personally experience the process of displaying propaganda culture and feel the pleasure generated during the visit. Nowadays, the application of interaction design in China is still in its infancy. In recent years, the promotion and practical experience of interaction design are mostly applied to some design institutions. However, the interactive application of its design works is mostly in the design of interface, product appearance and product interactive behavior. From 1980 to 1995, interaction design was separated from ergonomics and became a new discipline focusing on interactive experience. The practice of interaction design is an extension of the earliest human-machine interface, which emphasizes the interaction of human-machine feedback information. Later, interaction design is extended to all design fields. Interaction design is human-centered. Through multi-mode intelligent interaction technology, it emphasizes the information feedback generated by people's cognitive psychology and subconscious mind.

2. Interaction Design

Interaction design is an interdisciplinary subject concerning human, computer (system) and environment. Like other design disciplines, interaction design focuses on appearance and form, but it pays more attention to user cognition, behavior and logic fields less involved in traditional design disciplines. Interaction design absorbs theories and research results from the fields of traditional design, cognitive psychology, ergonomics, computer science, usability engineering and engineering theory, and it uses scientific research methods and practice rules to form a corresponding knowledge system, rather than just a simple combination of these traditional disciplines[1].

Although the design practice and science of interaction design and engineering must be logical and

need careful planning and consideration, the interaction design is the product design discipline which is studied based on the user experience. It is a humanism career in essence, which focuses on how to satisfy the needs and expectations in the process of people interacts with the system and design products that look good, work well, and are pleasing to the user. Interaction design should be defined as human oriented design activities. Designers need to investigate users' expectations, needs and motivations and combine business, technology, industry opportunities, needs and constraints to create products that are useful to users in form, which are easy to use and have technical feasibility and business benefits.

3. Related Factors Analysis of Interaction Design

3.1. User and interaction design.

When using products or system services, users need to recognize product and system functions through real or virtual interactive interfaces, execute corresponding functional commands to complete corresponding business tasks. In the process of interaction, users need to know and understand the products they use according to their own cognition and understanding of business tasks and try to use such a “cognitive model” of themselves. It is precisely because users perceive corresponding products based on their own understanding that it is difficult for them to understand, learn and use design scheme based on business or functional logic. Great designers pay special attention to the user's perspective, understand users' knowledge, cognition, behavior, habits, psychology and other aspects. Moreover, module classification and logical organization of product functions are carried out based on users' thinking, and interaction behaviors are optimized by combining users' specific behaviors and psychology.

3.2. Business and interaction design.

Business is the business that needs to be dealt with in various industries, and it is also the realistic basis for the existence of various network products. With the development of communication technology, computer technology and Internet technology, businesses in various industries are also actively transferring to the network platform for corresponding applications. However, due to the characteristics of the computer technology platform, such transfer has certain functions and logic characteristics. Business logic needs to form a functional implementation model that is convenient for program implementation through hard efforts of product personnel, and then form an interactive interface model for users to understand and use on the basis of the functional model. The interface interaction model pursues the smooth cognition and use between users and system functions. The functional model will be organized according to the functional logic thinking, and the corresponding organizational restructuring will be carried out based on the cognitive model of user cognitive business, so as to form the interactive interface that users can use.

3.3. System function and interaction design.

The process of users completing related business tasks by using websites or app products is not the same as the process of completing the same thing in the real environment before, the final task can only be completed after the corresponding functions and system processing in the product. System function is not only an important link connecting business tasks to realize interactive operation with users, but also the basis of system interaction design. It has obvious background characteristics of computer and communication technology. Whether the functional modules and functional logic of the whole system are scientific and reasonable, the module design system and operating efficiency directly determine the performance of the product, and the stability of the system function directly affects the user's experience of interacting with the system.

4. Light and Shadow Effect in Interactive Form

When we carry out interactive design of display space, props and colors, light and shadow effect is

also an indispensable link in interactive design of display. Lighting design can change the display space atmosphere, strengthen the display space environment emotional appeal, improve the functional space. Light and shadow shaping power can be used to highlight the image of exhibits and regional environmental atmosphere in the construction of exhibition space. Through the expansion of the visitors' vision and the sense of light and shadow color, the selectivity and order of their visiting route are guided, and the brightness and hue of light and shadow will have certain influence on the visual choice. By combining light and shadow with color, different forms of light and shadow can be projected on the wall to achieve the effect of expanding space environment and enriching space atmosphere. The brilliant lighting effect subconsciously affects the visitors' mood, visiting route, conscious behavior and other aspects. Different light effects affect visitors' attention and spatial association to some extent[2].

4.1. Characteristics of light and shadow design in interaction.

(i) Drama. Strong lighting effects and rich changes can effectively highlight the characteristics and value of exhibits and make them be more attractive to visitors. The contrast between the brilliant colors and various lighting techniques in the exhibition space makes the space environment and exhibits have more dramatic colors. Through the contrast of light and shade and the combination of free transformation of point, line and surface, the unique modeling elements are formed and the unified order relationship is formed. Different lighting technologies and the application of multimedia forms should be designed according to the bright and weak contrast of light and the unified coordination of colors, so that the light effect can be better displayed and visitors can enjoy a higher level of artistic visual enjoyment. (ii) Artistic quality. Light and shadow render the scene atmosphere of exhibits and space environment through artistic expression techniques. Visitors can also feel the artistic atmosphere of space environment when watching exhibits. The Russian pavilion has a hollow-out shape that is clear and delicate through the projection of light, like a dream golden castle. The night light effect has become the protagonist of the Russian pavilion's appearance. The clever relationship between light and shadow and color gives visitors a vivid and beautiful visual experience. (iii) Dynamics. The display space is a three-dimensional space. Generally, the expression form of light and shadow in the space is in a static state. However, according to the overall environment of the exhibition area and the needs of interactive entertainment of visitors, the light and shadow effect will also present a moving state. Using the contrast and change of different state of light to adjust and achieve a novel and rhythmic visual effect. The dynamic nature of light and shadow can also be designed according to the human body's movement track and the experiential relationship between light and shadow, which enables visitors to achieve the best state of communication with exhibition information while generating interaction.

4.2. The expressive power of light and shadow in interactive environment.

(i) Layers of space. Through the virtual and real transformation of light and shadow, the contrast of light and shade can enrich the spatial level of display and form an independent "small space" in the display space. Unreasonable lighting effects can also destroy its spatial hierarchy. The artistic treatment of the display light space is to highlight a certain part of the display space with the use of light and shade contrast, so that visitors can form a visual focus and it can highlight the shape, color and texture of the exhibits. Other exhibits and display space naturally weaken the visual impact, which making the space primary and secondary. (ii) sense of order. The guiding effect of light effect is to make use of the color, brightness, strong change and gradual change effect of light and shadow to cause the visual change of visitors in the exhibition space. It has the order of visual choice and the guide of tour route for visitors[3].

5. The Representation of Sound in Interactive Form

To use the sense of hearing to feel the vision and use a specific sound with emotional color to express specific content, it should express consistent with the theme of the exhibition of feelings,

mood and pleasure. The language of each country contains distinct culture and rich artistic connotation. Therefore, sound effects have a wide range of thematic choices and diverse forms of artistic expression[4,5].

5.1. The sound of the rendering display environment.

In the audience-oriented interactive design, auditory language is the most vulnerable to external interference when visitors participate in the process. In each link of the interaction process, various reasons, such as crowd interaction, inappropriate environment, mechanical equipment failure, will cause all kinds of negative factors that hinder the transmission of auditory information. These negative factors become interference factors of sound performance in interactive forms. Due to the interference of external environment and its own factors, it greatly affects the information transmission efficiency generated by audience-oriented interactive devices when interacting with visitors. Therefore, in order to improve the effect of information transmission in audience-oriented interactive devices, it is necessary to optimize interactive audio media, improve interactive regional environment and adapt to the characteristics and hobbies of visitors through multi-dimensional communication mode. In the interactive process of interactive design, various forms of expression should be used to overcome the possible interference factors. At the same time, interactive links and entertainment interactive equipment should be tested and verified for many times.

5.2. Interactive sound of auxiliary display items.

It has been said that sound is a wonderful reproduction of the great natural world, which is a peculiar effect formed by the general melody of the audio. Sound is an Abstract art that is expressed through continuity and change in time. Sound and image are completely interactive. Their interactive communication is through the communication between people's various feelings. Audience-oriented interactive programs make the images produced by the audience more fluid, which is not as reliable as the stable images brought by the vision. The image produced by the sound to the audience is often only retained for a short time and then may be changed or transformed for other reasons.

The German pavilion of Shanghai world expo is positioned as an experience pavilion. Visitors can interact by touching exhibits and listening to voices, which can stimulate their emotions and get novel experiences. Among them, the interactive design of sound effect makes a deep impression on visitors. The most direct transmission and communication of display information and visitors are carried out by virtual commentators. There has never been a more simple and humanized communication than language. Visitors hope to make a most direct and simple exchange of presentation information through voice, gesture and other new interactive forms. As the treasure of German pavilion, "power source" audio interactive game uses multiple channels to communicate and cooperate with visitors in a natural and cooperative way. Under the guidance of the host, visitors make the metal ball with interactive sensing swing back and forth by shouting and cheering together. The louder the sound, the faster it oscillates. Spherical colors and image changes show images from German cities.

6. Summary

Interactive design integrates the life scene and thoughts and feelings reflected in art works to form an artistic realm. Through successful integration of scenes and artistic conception of exhibits displayed in the exhibition, visitors can better feel the exhibition atmosphere and artistic conception from the perspective of vision, hearing and touch.

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