Analysis of the Emotional Design and Application of Educational Parent-Child Interactive Products

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ABSTRACT

In the realm of product design, when functional value reaches a certain plateau and stops increasing, there is a shift towards seeking intrinsic value. Users place greater emphasis on the experience of using a product. When designers conceptualize a product, they incorporate emotional and creative elements, paying attention to the emotional needs of the users. Emotional design is a "user-centered" approach, which includes the analysis and practical application of users' emotional factors. Through design, it enhances the spiritual needs that a product can fulfill and values the emotional feedback users receive after using the product.By employing qualitative analysis methods, this study examines the "quality" aspects of educational parent-child interactive products and the attributes of emotional design, comparing the purchasing tendencies of the target audience. Furthermore, we analyze three dimensions of design to provide systematic theoretical support for the design of parent-child interactive products. The results indicate that during the design process of parent-child interactive products, emotional design can enhance the user experience and encourage positive emotional responses from users.An in-depth exploration of emotional design in educational parent-child interactive products reveals its significant influence during the promotion of such products. The design revolves around the emotional needs of users, with the overall design process centered on improving user experience and focusing on the emotional value of the product.

Keywords: Emotionalize design, Educational parent-child interactive products, Emotional value

INTRODUCTION

Introduction to Emotional Design

Emotional design is a common application in the product design process, it is a design concept and method, and has been one of the important factors in the innovation of product design. Emotional design involves a variety of design elements, such as color, shape, material, sound and interaction, function, operation, etc. (Lin Li and Guo Zhuen and Yang Mingqing, 2023). It takes the user's inner demand as the main factor to design, and drives the user's emotional experience and satisfaction through the design of products, services, environments and other behaviors. Emotional design involves various design elements, such as color, shape, material, sound and interaction,

function, operation, etc. It takes the user's inner demand as the main factor for design, and drives the user's emotional experience and satisfaction through the design of products, services, environments and other behavior. Emotional design was firstly proposed by Donald A. Norman, a scholar in the field of cognitive science and human factors engineering design in the United States, in "Design Psychology", who discussed emotional design in three levels, namely, instinctive level, behavioral level, and reflective level. Emotional design emphasizes the creation of products or services that can trigger users' emotional resonance and emotional connection through design, so that users can feel pleasure in the use process (Lin Li and Guo Zhuen and Yang Mingqing, 2023).

Three Levels of Emotional Design Discussion

Instinctive Level Discourse
The core of instinctive level design is "five senses experience" and "the way to respond to the user"(Li Qianqian, 2023). The instinctive level is the most intuitive physical sensation that the product brings to the user in terms of touch, sight and sound. Through the use of elements and the appearance of the design, to provide emotional value to the user, to enhance the user's desire to consume.

Behavioral Level Discourse
Behavioral level products are mainly manifested in the functionality of the product, easy to understand, the sense of experience. Behavioral level design emphasizes the use experience of the product, pay attention to the utility of the product and the user's emotional experience, so as to make the user feel happy and satisfied (Huang Shuixian and Chen Hui, 2023), the user focuses on the functionality and utility of the product, need to meet the user's requirements for the product's functionality, and let the user in the process of human-computer interaction to enhance the positive emotional value that the user gets.

Reflective Level Discourse
Reflective level design corresponds to the user experience and product, and the design has more creative value in form and content. Designers add product stories and other design techniques into the product design process to promote the user's psychological recognition of the product and enhance the sense of identification with the product. Reflective level design is related to environmental factors, hot information, social issues, etc., and relevant factors are extracted and applied to the design process, so that users can generate memory points and thoughts through the product.

The Importance of Emotional Design

The Development of Emotional Design in Product Design
Emotional design emphasizes the concept of "human-centered" design, which is the future development trend of product design and occupies an important position in the field of design. How to design a product so that users can

directly feel the emotional resonance, so as to guide the behavior of the users. These are the problems to be solved directly by emotional design (He Lang, 2023). Designers will integrate the technical methods of perceptual engineering, emotional calculation and design evaluation into the design process, and increase the emotional factors in the products through theoretical analysis and emotional information analysis and processing, so as to meet the users' perceptual needs for aesthetics, experience, comfort and so on.

Emotional engineering is a theoretical technique proposed by Mitsunori Nagamachi, a scholar at Hiroshima University in Japan, and Kenichi Yamamoto, former chairman of the Mazda Motor Group (Lin Li and Guo Zhuen and Yang Mingqing, 2023). Sensory engineering draws on theories from human-computer interaction, design, psychology, and other disciplines, and applies the emotional design elements derived from the analysis of user behavior and mental activities to product design to increase the emotional bond between the design and the user.

Emotional computing is a way of simulating and recognizing human emotions through computer technology (Lin Li and Guo Zhuen and Yang Mingqing, 2023). In the process of emotional design, designers analyze and process the user's physiological activities, emotional fluctuations, and other information through computers by means of emotional computing, so as to project the user's active psychological state. The use of emotional computing can better transform emotional elements into product elements.

Design evaluation is an important research field in affective design, which aims to assess the effect and quality of affective design through scientific and systematic methods, establish evaluation indicators through design evaluation, set up goals, signals, and indicators, and deduce the phenomenon with product design goals, and then deduce the goals of product design with the phenomenon.

User Experience Enhancement of the Product

"Human-centered" product design is a caring way to express emotions, and it is a practical way to maximize the catering to the psychological needs of consumers (He Liu, 2023). Focusing on the user's feelings as the key elements of product design, we constantly design products according to the user's emotional demands, so that users can produce pleasant, positive and positive emotional feedback, and innovate the emotional experience of the product memory points, so as to achieve the enhancement of the sense of user experience.

Impact of Emotional Values

Products and consumers to achieve emotional resonance, emotional empathy, so that consumers can get emotional release and pleasure through the product (Yang Wei, 2023). In the functional value, emotional value and asset value provided by the product for the user, when the product's function is developed and perfected, the emotional value of the product that can show the product's unique memory points brings greater opportunities for the product to attract the emotional needs of potential users.

Positive emotional value for the user is the embodiment of the user's individual satisfaction of emotional demands, the product is the emotional bond between the user and the design, good emotional design can make the product closer to the user. Neglecting the emotional elements of the product will reduce the emotional value received by the user, which will lead to the lag of the product and the forgetting of the user, which is the impact of emotional value on the user.

EDUCATIONAL PARENT-CHILD INTERACTIVE PRODUCTS

Current Status of Educational Parent-Child Interactive Products

Explanation of Educational Parent-Child Interactive Products

There are two key points for educational parent-child interactive products: educational function and parent-child interaction. The product should expand its emotional value based on its functional value, rather than abandoning the functional value and turning to the emotional value (Yang Wei, 2023). To meet the needs of the product's educational function, the expansion of emotional value, through the product's behavioral level, instinctive level, reflective level of in-depth analysis, into the user's emotional aspirations, so as to enhance the user's interaction with the product's parent-child interaction, to obtain positive emotional feedback, and to satisfy the value of the parent-child interaction needs.

- Status of product development

  With the development of the current market of educational interactive products for parents and children, the demand for children's toys has shown a progressive rise in the situation, parents will not only focus on the use of the product level, more attention to the product can bring to the children's groups how the positive emotional point. Through the survey found that the current market of educational toys in the product function and content is relatively single, not well integrated into the educational nature, can not reflect the fun of teaching (Fei Shenli and Hua Wushuang and Fu Jiayi and Tang Caiyun, 2023).

- Product interactivity, the existing puzzle class parent-child interactive products, with the interactivity is too common, a single, reducing the emotional value of the children's group when using the product.
- Product experience, the current manufacturers of educational parent-child interactive products, the pursuit of batch and large-scale launch of products, ignoring the comfort of the use of the group, and most of the products lack of humanization, user experience processing. In the puzzle class parent-child interactive products in the actual process to add emotional design, through the integration of user emotional appeal factors, so as to enhance the sense of user experience of the puzzle class parent-child interactive products.
- The monotonous nature of the products, the market puzzle interactive products for parents and children lack of attraction, unable to meet the psychological needs of children's groups. In the period of children's

enlightenment, cognitive activities include attention, memory, thinking, perception, language, imagination, etc. Most of the children's cognition comes from the "five senses experience", and the products on the market in terms of cognitive activities can't meet the user's cognition and development.

Users' Demand Points for Educational Parent-Child Interactive Products

Primer
The design of educational interactive products needs to be characterized by enlightenment and education. The growth and development of children is a developmental process, and their understanding of cognitive things is different in different growth periods (Cui Yalin and Zhang Qian, 2023), so their acceptance of educational interactive products also varies. Enhancing children's cognitive ability, promoting children's physical and mental development, and intellectual development are the positive feedbacks that products can bring to children's user groups.

Emotional Value
Puzzle parent-child interactive products not only need to meet children's aesthetic needs, give children emotional care, but also to promote children's intellectual development and interaction with parents (Fei Shenli and Hua Wushuang and Fu Jiayi and Tang Caiyun, 2023), to provide users with emotional value, through the product instinctive level, behavioral level, reflective level of the design, incorporating the user's emotional aspirations, so that the user in the use of the process of getting emotional value. Based on the user's feedback from the emotional calculation, the design is closer to the user by reflecting on the sensory experience and innovative design.

The Application of Emotional Design in Educational Parent-Child Interactive Products

Understanding the Use of Emotional Design
Emotional design is one of the design techniques in product design, which can be understood as design with feelings, a psychological concept. Emotional design extracts the user's emotional demands as the key design elements and integrates them into the product design process, so that the design has a "temperature". In the design of educational parent-child interactive products, after qualitative analysis of user research and analysis, emotional design elements are integrated to meet the emotional needs of users, provide emotional value and generate product memory. The application field of emotional design not only includes the functional value of product design, but also includes interaction, service and other contents.

How Emotional Design Can Be Used in Products

Use of Instinctive Layers Based on External Factors
For designers, emotional design at the instinctive level refers to the most intuitive feelings that products bring to consumers. Designers should focus on the

visual form of the product in the instinctive level design, stimulate positive emotions, and make full use of modeling, color, material and other techniques to strengthen the recognition of the product, because the feelings generated by the user when seeing the product is the user's own instinctive response, and when the user has a good feeling about the product's first impression, the instinctive level of the design has achieved its effect. Designers should take the user's feeling as the entry point of product design, and design the product in the sense of touch, vision and other sensory levels (He Liu, 2023). Under the perspective of instinctive level, the emotional design of educational parent-child interactive products will be designed and analyzed from three elements.

Modeling Element

The design of educational interactive products for parents and children should be based on the user's needs as the entry point of the product. According to the children's habits, preferences for analysis, the first priority preferred children's groups welcome and have the education and guidance, enlightenment development of animals, plants, microorganisms and other images (Huang Shuixian and Chen Hui, 2023). Through bionic design techniques, cartoon image design and other design techniques, to enhance the attractiveness of product modeling for users. In terms of visual sensory experience, we can adopt the non-angular modeling techniques to reduce the possible sharp edges of the product. Optimize the visual experience of the educational interactive products for users.

Color Elements

Color is the most direct sensory feelings between the user and the product communication, in the designer for the product design process, only in the color to achieve emotional communication and coordination, to give full play to the color in the product of the emotional embodiment of the children's groups in the emotional resonance (Huang Shuixian and Chen Hui, 2023). The choice of color for educational interactive products for parents and children is based on user research, which shows that children pay more attention to bright and warm colors that can attract their attention. In the choice of color elements for educational interactive products, we try to reduce the use of gray and dark colors, and adopt high brightness, high purity and warm colors for design.

Material, Process Elements

In the choice of material for the product, it is necessary to focus on the impact of the material on the user, and different materials give different feelings to the user (Huang Shuixian and Chen Hui, 2023). The tactile experience is directly affected by the material, and the experience enhancement comes from the physical properties of comfortable and gentle materials. Puzzle class parent-child interactive products in the use of process elements, should be the user's experience as a starting point, the product for the user for the children's groups, in the perspective of the product's process, should be used to

soften the processing techniques, for the product's frame need to be rounded operation, reduce the product's edges and corners.

Behavioral Layer Use Based on Human-Computer, Emotional Interaction
Behavioral level design is mainly embodied in 4 aspects: functionality, ease of understanding, ease of use and experience. Users pay more attention to the functionality and utility of the product (Li Qianqian, 2023), and the focus of behavioral level design is to focus on whether the user is satisfied with the realization of the use process. Behavioral level design is used to strengthen the hierarchy of the product in emotional design, and to enhance the user's satisfaction and experience by updating the function of the product and creative fun. The product is based on the logic of thinking and demands of the targeted user groups, and the product visual interaction, auditory interaction, and tactile interaction on the emotional design. Make the user in the puzzle class parent-child interactive products to obtain the functional value, complete the interaction between the user and the product, to achieve the behavioral level of the design goals.

The Use of Reflective Layers Based on Intrinsic Factors
Reflective design focuses on triggering emotional memories and giving meaning to the product. Reflective design can bring emotional cultivation and emotional value to the users in the long run, so as to come up with a more creative design (Li Qianqian, 2023). In the reflective design of educational parent-child interactive products, the design meaning of the product is considered and what positive guidance the product can bring to the user. Incorporate the design meaning into the product, emphasize the interactivity, human nature, hierarchy, and product story in the design process, build an emotional bond between the product, service, and user, and promote a deeper emotional exchange between the product and the user.

PROBLEMS AND TRENDS IN EMOTIONAL DESIGN

Problems Facing Emotional Design

Emotional design requires a large amount of emotional data and emotional knowledge as a foundation, and the current quality and quantity of emotional data are both lacking, which will limit the application scope and effect of emotional design (Lin Li and Guo Zhuen and Yang Mingqing, 2023). The existing limitations of emotional design will lead to challenges in the development of educational parent-child interactive products. The emotional appeal of users should be further enhanced to promote the connection between design and users.

The Future of Emotional Design

Based on the gradual improvement of emotional design in the current product design, emotional design is the future direction of product design, the current puzzle class parent-child interactive products emotional design is still in the

initial stage of development, the future emotional design concept will be more actively involved in the product design process.

CONCLUSION

By analyzing and discussing the emotional design of educational parent-child interactive products, the application of the elements of users' emotional appeal is analyzed from the three levels of emotional design. It analyzes that through the emotional design techniques, the educational parent-child interactive products can enhance the user's interactive experience and bring positive emotional feedback to the users, triggering the emotional connection and resonance between the products, users and services.

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