Research on Interaction Design Of New Type Products Based on Users' Interest Experience

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Abstract: User interesting experience is a method to meet users' emotional needs and an innovative idea in product interaction design. From the perspective of users' interesting interactive experience, this study will discuss and analyze the current situation of product interaction design, the aesthetic interaction concept of products, the design method and application theory of interactive products. The research method is a combination of literature research method and exploratory research method, taking the structure of "theory-practice-theory" as the research idea, and exploring new interesting product design through practical design. The practical design will design three new interactive products based on users' interesting experience, namely, a new swing bowl combining ceramic and metal technology, an integrated and convenient fruit tray, and a new interesting exhibition cabinet. This paper will combine theory and practice design to research and analysis, explore a fun interactive product design concept.

1. Introduction

1.1 The review of the present situation of the Product interaction design

The UserExperience, or UE or UX for short, began in interaction design when it was posted by Donald Norman, a cognitive psychologist in the United States. Fun design is a part of interaction design. Fun design is to add fun to the interaction design, so that users can have some fun interaction in the process of using the product and feel the fun in the user experience.

Now people talk about interaction design, mostly reflected in the human-computer interaction and other fields of science and technology, but few people pay attention to the interaction design of daily necessities, public products and other public products. However, in daily life, people are more curious about interesting products, and there is a lot of room for interesting interaction. Maslow's hierarchy of needs theory mentioned five levels of needs. Guo jipeng from tianjin university of technology proposed the hierarchy of needs of user experience based on Maslow's theory. As illustrated in Figure 1.

![Figure 1. The hierarchy of user experience needs](image1)

Guo jipeng proposed that feeling is the first step for users to experience the product. After the first step is met, the interaction experience of the product can play its role, including the practicability and
functionality of the product to users, which are the basic indicators of user interaction demand experience. The third level is emotional needs. At present, most of the products can meet the needs of the first and second level. When users meet the basic material level, what they need more is a kind of psychological and emotional satisfaction brought by the product. Compared with the social demand and the self demand, the emotional demand is closer to the life of the masses. Therefore, from the perspective of innovative interaction design of products, the sense of interest, plot and interaction of products are the important perspectives of product innovation at present[1].

For example, li Yang from chongqing technology and business university proposed a new-type coffee machine with a new interactive mode. As illustrated in Figure 2. This coffee machine provides users with services by simulating human voice, and provides users with a visual service by combining animation and other technologies with art[2]. However, some scholars have pointed out that the focus of interaction design is not convenient use, but interesting use experience[3]. Although this design concept proposes a new way of coffee machine interaction, it is only grafted by using image media and digital technology. In essence, it is still human-computer interaction and electronic interaction, and it does not really carry out design innovation from the product itself. To truly carry out the innovation of product interaction design, the key is to start from interesting experience.

2. Materials and methods

2.1 Purpose and significance of the research
In the era of experience economy, consumers need not only simple functional products, but also experience brought by products. After the product design has its practicality, functionality and safety, it needs to make a breakthrough in the direction of interest. Therefore, the innovation of this study is to make new attempts on these interesting products that are rarely studied. And interesting product design breakthrough in addition to the product itself is a kind of innovation, and also for thinking, creativity, way of life is a kind of innovation, interesting products available except for the consumer market to inspire a new vitality, also inspire a new design concept.

2.2 Research contents and methods
The interaction design of new-type products based on users' interesting experience is essentially fun, interesting and interactive. It can even be exaggerated to say that this new-type product interaction design is a useful toy and a fun tool.

This study will start from the perspective of users' interesting interactive experience, take three design practice results as cases, combine literature research method and exploratory research method, and explore new-type interesting product design through specific design, so as to achieve the goal of forming interesting interactive product design concept.

3 Three research results of exploratory design practice

3.1 Design practice 1: a new type of swing bowl combining ceramic and metal technology
Ceramic bowls are indispensable in People's Daily life. However, currently in the market, people use the general ceramic bowl is static, people are not easy to hold the bowl that holding boiling hot soup. In addition, when pouring the soup, it can't concentrate on the direction of dumping, and it's not very interesting. Therefore, in order to overcome the disadvantages that the existing ceramic bowls are mostly static and too rigid, and combined with the user's fun experience, to provide an interesting new type of swing bowl, and at the same time, explored a new way of interesting diet. As illustrated in Figure 3.
The specific operation method of this design result is as follows: The ceramic bowl body is fixed on the metal chassis through a metal fixing rod and a fixing nut. Then pour the soup into the ceramic bowl body. When you drink it, loosen the fixing nut slightly, swing the ceramic bowl body, and drink the soup more concentrated through the ceramic bowl mouth. The ceramic bowl body can be swung 360°, and the pouring of the soup can be achieved by the different curvature of the swing. Finally, after enjoying the food, the metal fixing rod can be removed by loosening the fixing nut, and then the ceramic bowl can be removed to clean the ceramic bowl body and the ceramic bowl mouth.

In addition, this design can also be used to hold fruits, snacks, dishes, etc., the characteristics of its swaying added a lot of fun. For the swing Angle is different, the function is also different. For example, the preferred solution may be that the angle of 30 degrees is just the angle at which a person can normally drink soup. And 45 degrees can just pour the soup into other small bowls, the soup bottom can be poured out at 60 degrees. In any case, the ceramic bowl is tilted along a fixed route, effectively avoiding the phenomenon of spilling outside the soup. As illustrated in Figure 4.

These interesting designs not only solve practical problems, but also increase users' sense of experience and add interest to daily life. However, Li Jian put forward the idea of interaction design from the perspective of holism. He emphasized the interaction behavior and the interaction relationship is overall coherent [4]. Lim Y-K believes that the holistic of interaction is composed of the aesthetic of a set of “interaction gestalt”, which include the aesthetic of connection, continuity, order, etc. Therefore, they propose the concept of use of aesthetic interaction integrity and instrumentality in design practice[5].

On this basis, combined with the perspective of holism, the second interactive product design practice research was carried out.

3.2 Design practice 2: An integrated and convenient fruit tray
Fruit is an indispensable healthy food in people's lives. Usually, people use fruit knives and fruit bowls every day, and the current process of enjoying fruit is generally like this: People first cut the fruit on the cutting board, then transferred the fruit to the fruit plate. After eating the fruit, they put the waste such as the core or the peel on the table or the trash can. In the case of insufficient space, such a process has obvious drawbacks, mainly as follows: On the one hand, the cutting cannot be completed without a cutting board. In the process of transferring the fruit to the fruit plate, the fruit juice will easily pollute the table or the ground. On the other hand, the waste such as core or peel has no place to put, and is not conducive to entertain a guest or keep furniture clean.

So this phenomenon brings people a bad sense of using experience. In order to solve and improve this user experience, the results of this research are intended to combine the fruit knife and the fruit plate, optimize and enhance the process, and integrate product functionality, operational safety, fun and artistic appreciation into the process, and the operation process is cyclical integration. To meet user interaction experience. As illustrated in Figure 5.
Based on the drawbacks of people cutting fruits and enjoying fruits, this design solves the problem of a series of processes for cutting fruits, placing fruits, and recycling fruit waste. At the same time, the product itself is equipped with fruit knife, serving plate and storage layer, which not only makes it convenient to use but also adds interesting point to the design. And the beautiful appearance of the product is suitable for entertaining guests, with realistic promotion value.

The specific operation method of this design result is as follows: When using the product, the user pulls the basin mouth open, places the fruit on the recycling channel, presses the basin mouth, the fruit core falls to the basin bottom directly, and the fruit falls off the basin body directly. The fruit blade has eight pieces and can cut the fruit into eight pieces. Moreover, in the process of enjoying fruits, you can manually turn the decorative ring to enjoy fruits in different directions. After the end of the enjoyment, open the split port and pour out the fruit core and other rubbish of the basin bottom.

In addition to solving practical needs, this design is also based on users' interesting experience. Starting from the circularity, the whole process of cutting, eating and pouring fruit cores is completed at one go. Compared with the previous complicated steps, this design can be described as a one-stop service. Its fun experience lies in this convenient, fashionable, exquisite use style and life attitude, reflecting the overall interaction design concept.

This result is also based on the interesting design proposed on certain problem solving. Compared with the design of the swing bowl, this design solves more practical problems, and the solution is also a fun design. Therefore, the practical and interesting design can give users a better experience. WrightP proposes that conversational interaction is an important feature of aesthetic experience. The viewpoint holds that the behavior, discourse and expression in interaction are always in an open and dynamic structure, which provides users with opportunities to obtain surprise, interest and new ideas [6]. Wallace J also believed that the value and meaning of products should be considered from the user’s view, thoughts and focus of attention, and the meaning should be fed back to users [7]. Ross P also thinks from the perspective of social culture, regarding information products as the "meaningful" intermediary in the interaction between users and the world, infusing different cultural values into products, and conveying these meanings again in products[8]. These design concepts are focused on discussing the extended meaning brought by interactive products and experiencing new connotation in the interesting interaction.
Therefore, combined with this point of view, we carried out a third practical design study.

3.3 Design practice 3: A new interesting exhibition cabinet

Every family more or less will have some collections. For ordinary families, exhibition cabinets are usually placed against walls to save space. However, the other side of the collection can't be seen, and for some fine objects, a 360-degree view is a wonderful experience. And this design can not only adjust the angle, but also artificially adjust, achieve the purpose of self-adjusting the angle to watch the collection, so that the user gets a very interesting experience. At the same time, this design can adjust the height for people of different heights. Therefore, in the application to solve the actual needs, according to the requirements of the user's interest experience, it is also possible to explore and create a kind of interactive exhibition cabinet that can have the adjustment function. Especially for children and teenagers, the application of this result in the museum will be a good educational experience, so that fun teaching can be promoted. As illustrated in Figure 6.

This product is an exhibition cabinet that can manually adjust the view angle. The motor in the booth provide power for the rotation of the booth; The internal threaded rod and threaded tube pair are used for rotating the booth; The push and pull of the threaded tube causes the rotary shaft to move up and down: The fixed shaft is pushed by the connecting rod between the fixed shaft and the rotating shaft, so that the booth rotates around the rotary shaft, changing the perspective of the visitor and showing a better viewing angle for the visitors. For some of the more expensive or easily oxidized collections, the exhibition cabinet is also designed to provide nitrogen to make it easier to preserve the collection. The control button is used to control the rotation of the motor so that the booth is at an appropriate angle for visitors to see. Therefore, this new type of interesting exhibition cabinet can adjust the Angle according to the preferences of visitors, and can provide the best viewing effect for visitors of different heights in the display process, which is worthy of promotion and use.

In actual use, the user stands at the front of the booth, controls the rotation direction of the motor through the control button according to the height and angle of view, and then controls the up and down movement of the fixed shaft to make the booth Rotate around the Rotary shaft, so as to adjust the booth to the best Angle. Preferably, nitrogen concentration in the cabinet is gradually reduced due to leakage during use. In order to protect the exhibits, the cabinet can automatically replenish nitrogen through the nitrogen inlet at the bottom to protect the exhibits.

This design pay more attention to interest points of social and experiential, the user can freely adjust angle to bring the viewer into well feeling, the use of nitrogen also makes the collection are more likely to save, don't have to worry about collection of damaged, and its interactive also get a feedback, to extend interesting performance of the product itself as a more meaningful interesting development.

4. Discussion

From the perspective of users' interesting experience, the three product designs constantly improve the fun design, and then explore the meaning construction of interesting interaction. Therefore, it can be said that interesting experience is useful, and to a certain extent, it can also promote the update and iteration of products, overcome the shortcomings of functions, and increase the need for interaction. For meaning in terms of value, good fun product interaction design can feedback good results, good effects are two-way communication, people interact with products, products with interact with people, and the interaction between people and things is not just limited to digital media, but can all interact With the product itself, as small as a bowl, a cup, can be designed for product interaction, therefore, fun interactive design is nothing more than a cyclical fun experience mode. As illustrated in Figure 7.

![Figure 7. The mode of fun experience](image)

![Figure 8. The mode of fun interactive design](image)
When the user interacts with the product, the interesting points designed by the product will drive the user to further get a better interactive experience. First of all, users can get emotional satisfaction from fun experience, so that they can have the "want to use" expectation of the product, and then have the desires to interact with the product again. Second, feedback from fun experience is also very direct, Users will evaluate the product. At this level, a good fun design is bound to have the characteristics of novelty, creativity, sustainability, durability, etc., so as to get the "enjoy using" experience level for users' interesting experience, so that users can continue to use the product.

Therefore, according to the mode of fun experience, we can apply interesting little things in daily life, interesting little ideas, or even interesting ideas in boring moments to the transformation of product interaction design in product design. When completing a series of product interaction design processes, the most important thing is to mine interesting points based on users' experience, that is, to brainstorm first and try to think of more interesting design points. Then the next step, whether it is the improvement of existing products or the development of new products, can be user fun experience as a reference, study the daily behavior of users, thinking mode, emotional vent, etc, and then the development of Interesting points of products, so that the designed products can be more "people-oriented". As illustrated in Figure 8.

After the development of fun points of the product is completed, it can not only plan for the product, but also make follow-up work based on the user experience, so that professionals can provide opinions and public users can provide suggestions and feedback, and then continue to promote the development of the product.

5. Conclusions
All the three products in this paper are designed from the perspective of users' interesting experience, and explored the fun design practice. After the discussion of the three practical designs, the fun product design gradually transitioned from the interesting small design to the integrated, systematic and completed fun product design. Aesthetic interaction design is the intrinsic spirit of interaction design ideas, in the future, interesting interaction experience will become the new trend for product design, theory of fun design aesthetics will also gradually improve, from small necessities to large industrial products, will explore the fun interaction with the user experience, make product from "availability" to "useability" evolved into "want to use" and "enjoy using", giving users an interesting emotion, when using the products meet the emotional needs of users.

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The three practical designs mentioned in this paper have been successfully applied for national patents. In the process of design practice, we are committed to combining practice with theory, constantly referring to the theoretical guidance of many predecessors and the advantages of existing product design. Due to my limited level, it is unavoidable to make mistakes, welcome to correct.

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