

Research on the Design of Experience Spacesystem for Ecological Toilet Science Popularization

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Abstract: By consulting references and other ways, this project first investigated and analyzed the concern of the ecological toilet market and the design of the ecological toilet system, and combined with the characteristics of the user group of the ecological toilet market and the types of toilets used by users, it was concluded that the introduction of the ecological toilet in China was very late, but in recent years, the rapid development of the ecological toilet technology has become increasingly mature. All major cities are trying to use the ecological toilet.

Keywords: Ecological toilet; Science Popularization

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1. Project introduction

In recent years, thanks to the efforts of all sectors of society, especially the promotion from top to bottom, China's "toilet revolution" has developed rapidly, and the public health situation in many areas has improved greatly. However, in most rural areas, due to the lack of the most basic sanitation facilities and sewer network, feces are directly discharged into rivers or lakes and other water bodies, causing serious environmental pollution. How can people attach importance to the environmental problems caused by toilets? What is the best way to spread toilet related popular science knowledge to the public? The toilet problem is not only a simple technical problem, but also a problem in the field of culture and design. The ecological toilet has just started, and the problems, opportunities and changes go hand in hand, which deserves our serious consideration.

2. Research contents

The design method of double diamond model commonly used in service design is tried to be used in the process of product development. The creation theme is ecological toilet knowledge science popularization system, aiming at more effective product development and verification through the design method of double diamond model. The double diamond model mainly includes four steps: finding problems, defining problems, designing and developing, and outputting results. The first stage is to find out the problems. The second stage is to define the problem. The third stage is design and development. The fourth stage is the output results.

3. Research status and development trends at home and abroad

3.1 Related cases

In Germany, a company that provides free public toilets earns 30 million euros annually. Their biggest source of income is advertising. Val Company provides public toilet facilities free of charge to the municipal government, and even the maintenance and cleaning of these facilities are fully undertaken. In return, Val Company has obtained the right to operate the advertisements on the exterior walls of these toilets. He turned the exterior walls of many toilets in Berlin into advertising walls. In addition, the wall cost of Val Company is much lower than that of ordinary advertising companies. Chanel, Apple, Nokia and other tall companies have all advertised here. In the tourism activities of various countries in Berlin, there is a "toilet tour". Tourists almost need to use the toilet of

Val Company. The company defeated BMW and Mercedes Benz in 2003 and was elected the most innovative enterprise in Germany.



3.2 Investigation and Analysis of Toilet Knowledge in Popular Science Dissemination at Home and Abroad

In 2014, the Japan Science and Technology Museum held an exhibition of “human feces and the future of the earth”, the theme of which is to discuss the best toilet experience of human beings; The exhibition extends from people’s daily life to the whole earth. Visitors can not only make feces from clay, but also experience the detection of human intestinal age, and also play interactive games in the huge toilet model. Through interactive experience, the exhibition enables visitors to understand the working principle of the toilet, the whereabouts of feces and urine, and the pollution caused by feces to the environment during the game. This mode of communication is obviously more vivid and effective.



The exhibition also shows many pictures of animals, visual illustrations and real feces. Through the comparison of real objects, visitors can understand the difference between animal feces and human feces; The exhibition also shows a variety of toilets, ranging from those used in daily life to those used for ecological protection and those used by astronauts in the space station. Through interactive experience, visitors can understand the whereabouts of toilet excrement and the way to deal with excrement. At the end of the experience, users sing “toilet song”; The whole experience process is like a drama, which makes visitors feel brought in during the whole process. They can not only experience happiness in the activity process, but also learn relevant scientific knowledge.

From the above research, we can see that the following three aspects need to be improved when planning the toilet science exhibition in China. The first aspect: lack of interactive experience devices and user experience space, and basically adopt graphic description, video playback and other methods. The second aspect: The visitors were relatively single, and they could not spread toilet knowledge to the greatest extent. The third aspect: environmental pollution and waste of water resources caused by the lack of toilets. Most of the content is about the basic knowledge of toilets, how the ecological circle of toilets operates, how the ecological toilets can make resources harmless and how to recycle feces.

4. Innovation points and project characteristics :

4.1 Innovation points

The design method of double diamond model commonly used in service design is tried to be used in the process of product development. The creation theme is ecological toilet knowledge science popularization system, aiming at more effective product development and verification through the design method of double diamond model. The double diamond model mainly includes four steps: finding problems, defining problems, designing and developing, and outputting results. The second stage is to define the

problem. The third stage is design and development. In this stage, the design products are inspected through 3D model construction, grass model verification, physical model production and other links.

4.2 Project characteristics

Using the system design concept, a mobile toilet with the function of spreading popular science knowledge and good toilet experience is designed. As a systematic solution, it will involve the appearance design of the toilet, the design of the toilet interior experience space, and the visual graphic design of relevant popular science knowledge.

5. Toilet space layout

Based on the requirements of product functions and the consideration of ergonomics, the reasonable planning and distribution of the car body appearance is carried out to achieve the function of communication and experience. It is mainly divided into product external distribution and toilet interior layout. The external layout is mainly divided into information display area for science popularization and urine storage space. The other part is the internal space distribution, mainly including stool experience space, urination experience space, storage space, cleaning space and vegetation planting space.

The ventilation device is located on the roof, and the odor in the toilet can be eliminated through the exhaust fan in the experience space to keep the toilet environment fresh and clean; The black area of the roof is a solar panel. The device can convert the solar energy into electric energy for lighting in the space and rotating the motor in the feces storage space at the bottom of the car body; The rainwater collection device is also located on the roof, and the public work of ventilation device, rainwater collection device and solar device can provide a good use experience for the experience space. The object space is composed of three parts. The defecation and toilet experience area uses package semantics for conceptual design. The walls are covered with green vegetation devices and related public facilities, such as toilets, trash cans, hand sanitizers, information dissemination screens, etc. The urinal area also uses the wrapped product semantics to divide the space into two parts, and green vegetation is arranged in each area to improve the toilet experience.

6. Conclusion

Multimedia screens are used outside the mobile toilets. When arriving at the exhibition site, visitors can play relevant animation videos, working principle diagrams and circulation system diagrams of ecological toilets through the multimedia screens to analyze the advantages and disadvantages of various toilet technologies as well as the scope of application. Below the display screen is the information painting area of the display panel, on which you can paint some working schematic diagrams or system cycle diagrams of the ecological toilet. At the same time, users are required to enter the space to visit and learn. Through immersion experience, they can better learn relevant scientific knowledge.

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