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Research on Public Facilities Design Based on Safety Education of Left-behind Children*

Bo Mu, Leichi Yuan, Mingguang Cai
(Wuhan Institute of Technology, Wuhan, Hubei, China)

Abstract: Incidents in which left-behind children are injured have occurred from time to time, and such incidents have also aroused great concern from society and the media. When left-behind children have safety problems such as violations, their parents are not around, and the children themselves lack safety education knowledge, which makes it difficult for others to discover and help in time. Over time, the children may suffer deeper psychological trauma. This article uses cross-research method and descriptive research method to study and analyze the status quo of left-behind children and public facilities, the significance of public facilities to left-behind children, and the design points of left-behind children's public facilities. This article uses the relevant knowledge of design to propose how to design public facilities with safety education functions to reduce the risk of abuse by left-behind children, and to increase the importance that adults attach to child safety education.

Key words: left-behind children, public facilities, safety education

1. Introduction

With the rapid development of China's market economy, the original urban-rural structure has slowly disappeared, and farmers have flooded into towns in search of survival and development. However, many children of migrant workers have to stay in their hometowns and become left-behind children. There are currently at least 10 million left-behind children in rural areas. According to a sample survey, nearly 30% of their children can only see their parents once or twice a year, and 15% cannot see their parents throughout the year. The problems of their living environment and safety have gradually aroused great concern of the whole society and urgently need to be resolved.

2. Main Problems of Left-Behind Children

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Bo Mu, Associate Professor, Wuhan Institute of Technology; research areas: industrial design theory and its application, social design. E-mail: artmubo@126.com.
Leichi Yuan, Lecturer, Wuhan Institute of Technology; research areas: industrial design theory and its application. E-mail: 10091402@wit.edu.cn.
Mingguang Cai, Lecturer, Wuhan Institute of Technology; research areas: industrial design theory and its application. E-mail: 726614827@qq.com.

Left-behind children are prone to many problems due to lack of supervision and parent-child interaction for a long time. The prominent problems are as follows:

2.1 Education Problems of Left-behind Children

Insufficient or missing family education: Childhood is a critical period of personal growth and socialization. The healthy growth and development of children requires a stable environment of parental care to meet their material and psychological needs. The family environment is a direct factor that affects the health status of children. But for most left-behind children, due to intergenerational education or foster care, their education from the family is insufficient or seriously missing.

Lacking safety knowledge education in schools: In many rural areas in China, due to the poor level of teachers and the conditions for running schools, more and more left-behind children's schools are not effectively managed. In addition to teaching children basic cultural lessons, safety and legal knowledge education are relatively lacking. Children's awareness of safety and self-protection is weak. In the provinces of central and west China, left-behind children are relatively poorly educated, they have a high drop-out rate, and guardians generally have poor or no supervision at all. Left-behind children lack restraint in their behaviors and are easily contaminated with bad habits, and there is a lack of contact and communication between schools and guardians, making this group more likely to become victims or perpetrators.

2.2 Psychological problems of left-behind Children

Cognitive deviation: Most left-behind children have poor self-control ability and weak enterprising consciousness. Some left-behind children, because they are young and ignorant, cannot understand the behavior of their parents when they go out to work, and their feelings slowly change from thinking of their parents to strangeness or even resentment. They do not understand why other parents are around and their own are not, resulting in tension. In addition, in the absence of family education, it is difficult for them to establish the correct three reflections.

Extreme personality development: Most left- behind children are prone to extreme personality, inferiority, and inner blockades because their parents are not with them. The elders of the left-behind families in rural areas generally use laissez-faire or simple and crude forms of education because of their low educational level, which brings an indelible psychological shadow to children. And it is easy to make the children's personality into two extremes, either irritable and rebellious, impulsive rebellious, or timid and overcautious, and easy to inferiority and depression.

2.3 Safety Problems of Left-Behind Children

Due to the lack of effective supervision by families and schools, left-behind children have become a vulnerable group in society, and they have also been the targets of criminals. These problems are usually manifested as: threatened, robbed, beaten, blackmailed, trafficked, defrauded. In particular, left-behind girls have poor physical and psychological development, lack of self-protection awareness and adolescent sexual health knowledge, and are more prominent in problems such as being threatened and being enticed into unlawful sexual intercourse.

3. The Significance of Public Facilities for Left-Behind Children

In view of the safety education problems faced by left-behind children, in addition to the normal channels of

schools and families, it is also a feasible social measure to build appropriate public facilities to help children learn more safety knowledge and enhance their awareness of prevention.

3.1 Providing Entertainment Venues for Left-behind Children

The life world and spiritual world of left-behind children has become a corner forgotten by classroom teaching, and public facilities can fill this corner and provide a free and entertaining space for them. Children's public facilities are the media through which

games play, and they can build a necessary platform for children's mutual communication, mutual understanding and influence.

3.2 Improving Children's Social Skills

The lack of family education for left-behind children and the lack of family comfort have caused some children to be self-closed, lonely, and inferior. "Companions" play an important role in the growth and development of children. Children play with their companions in public facilities and can talk to each other and share the happy and unhappy things in life, making children more cheerful and healthier in psychology. Children of different ages have fun together, which can improve children's social skills and release their inner pressure.

3.3 Providing a Place for Children To Vent Their Emotions

In public facilities, children can follow their own inner thoughts and play unrestrainedly, which brings psychological satisfaction to left-behind children to a certain extent. Public facilities have become a safe place for children to vent their emotions, which can release their psychological pressure.

3.4 Educating for Fun and Strengthening Children's Mutual Cooperation and Self-Management

When children play in public facilities, there will inevitably be collisions and conflicts, and through the spontaneous self-coordination of everyone, a certain consensus will be reached to improve self-management capabilities. In addition, public facilities can also be entertaining and entertaining. In this kind of play, the educational connotation is endowed, and certain educational deficiencies of left-behind children are enhanced.

4. Design Points for Left-behind Children's Public Facilities

4.1 Integration of Safety Education Concepts

Left-behind children, as a disadvantaged group, are vulnerable to injury. At the same time, due to the inadequate guardianship responsibility, their safety education is lacking, and their safety awareness is weak. The integration of safety education in public facilities is an important supplement to family education and school education.

4.2 Determination of Form

Every child's public facility has a different theme form and a difference in scale. It is necessary to make sure that the layout of the facility is organized so that the children will not be disoriented. It is also necessary to classify the space in the facility, which is conducive to establishing spatial relationships based on functions and standards of use. At the same time, children can learn to identify the direction when playing, and they will not distinguish between exits and entrances. Children generally prefer to climb objects. Although climbing exercises children's athletic ability to a certain extent, from a safety perspective, facilities should avoid using peripheral structures that can be climbed. Instead, the designers can use some structure that can make children lose their

climbing interest, and keep children away from accidental injuries. The designers can also create an atmosphere through the iconic facilities to let children indulge in the experience, fantasy, cartoon situations. For example, Disneyland succeeded in creating a unique environment and atmosphere, making people feel as if they were there, and gained a lot of knowledge in science, technology, culture, art, history, and geography while entertaining and resting.

In addition to considering the layout of the facility, the children's psychology must also be considered. Facilities should be designed according to children's mental development. For children, the game content provided by public amusement facilities should conform to children's psychology and interests.

Some effective information can be obtained from the following picture (Figure 1): These translucent game facilities have created many different spatial environments, as well as different combinations of free- form and climbing, jumping, diving and other fun ways, making people overwhelmed. What's more, the vague and obscure communication between the internal space and the external space allows children to experience the fun of games, which is difficult for adults to experience.

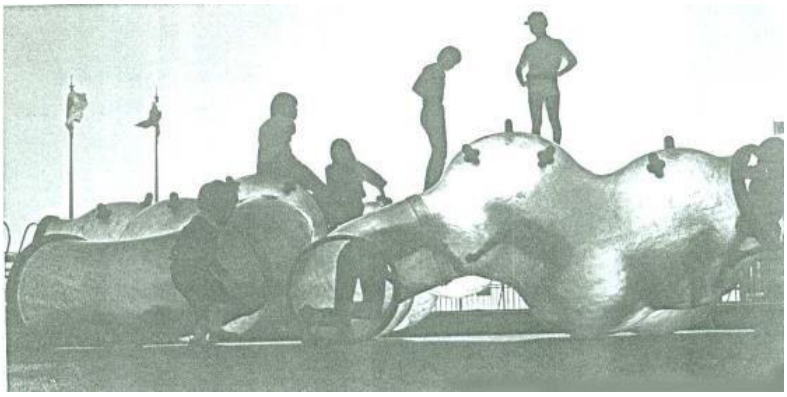

Figure 1 Amusement Facilities of Translucent Materials

4.3 Division of Types

The existing public facilities for children are divided into the following types. It can be seen from Table 1 that different types of public facilities can play different roles. For example, climbing classes can exercise children's limb coordination and improve their courage, while drilling classes can exercise capacity for action.

Table 1 Classification of Children's Public Facilities

Category	Methods	Functions
Oscillation	Most of the game function parts are fixed on the ground with ropes or iron chains	It can exercise the suppleness and flexibility of children's body and improve children's limb coordination ability
Climbing	The form is very diverse, such as block type, frame type, etc.	It can exercise children's grasping ability and coordination of limbs, and increase children's courage
Rotation	Mostly the bottom is fixed to the ground, and the upper part can be moved up and down or left and right to rotate	Children's cooperation is needed to play games and promote interaction between children
Sliding	There is a certain slope, and the surface is smooth	It can improve children's body balance
Drilling and climbing	Geometric or irregular shape, with drilling holes or tunnels, some even have glide function	Muscles are exercised to improve the mobility of limbs
Balance	Single lever device or hanging, single-point channel	It can exercise children's balance

Source of information: design of public amusement facilities to meet children's development needs.

In addition, children have different play styles and needs at different stages of development, and their preferences will change with age. This is not only reflected in the changing game styles as children grow, but also in the different interests and hobbies of children of different ages (Table 2). Therefore, the type of public facilities for left-behind children can only be determined after sufficient investigations to ensure that they can get exercise and learn relevant knowledge during the game.

Table 2 Child Development Characteristics

Age group	Features
0–3 years old	Perceptual and curiosity, difficult to imitate behavior, distracted
3–6 years old	Intellectual development is relatively perfect, thinking has plasticity, like abstract toys and symbolic games
6–8 years old	Being in the period of rapid overall development, they like to climb
8–10 years old (above)	High level of understanding, preference for rules and group games

4.4 The Choice of Environment

1) Natural environment: When choosing the site for the placement of facilities, the natural environment around the site should be considered, so that public facilities can be combined with the natural environment to make children get closer to nature. In the design process, natural terrain and vegetation around the site can be used to make it a part of the layout design of public facilities. If it poses a threat to the safety of children, it should be properly handled.
2) Social geographic factors: In addition to the natural environment, attention should also be paid to the geographical factors of public facilities for left-behind children. Children's public facilities are generally placed in communities, schools, parks, etc., and security factors such as the density of personnel traffic, the distance between the facility and nearby buildings, and the distance between nearby traffic roads need to be considered.

5. Design Case Exploration

5.1 Case Introduction

The public facility adopts the shape of dolphins in the overall form, which makes the product more affinity and streamlined, adding some details to beautify the product and highlight the function of the product. Inside the facility, there is a device that can play video. The device is embedded at a suitable height for children to watch. This is not only a game space for drilling and climbing, but also a communication and learning space (Figure 2).

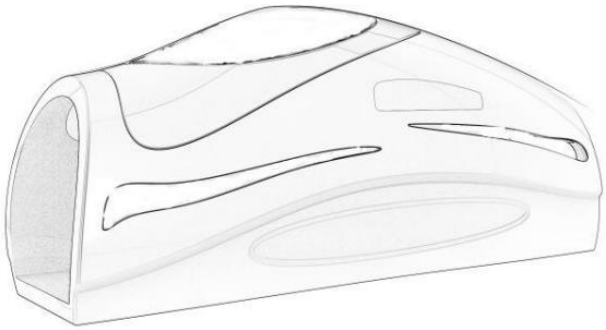

Figure 2 Sketch

The length, width and height of the facility are 400 cm*126 cm*164 cm, and the entrance height is 108 cm. The size is convenient for children but not conducive to adults. The length of 400 cm can also provide enough activity space for 3–5 children in the facility (Figure 3).

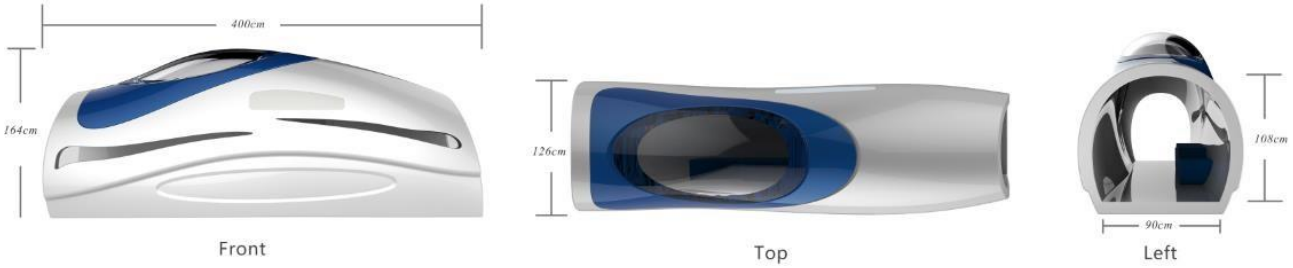

Figure 3 Three Views

5.2 Design Innovation Description

The design adopts a bionic form, combining good permeability and concealment, to create a small space for children to open their hearts. By regularly changing the safety education videos and the interconnected and interactive assistance system, children's awareness of anti-aggression can be improved, and self-help and help-seeking methods can be learned to reduce the impact of children's abuse to a certain extent.

The existing related product designs are limited to a certain range, and are basically the missionary products used in life. For the left-behind children, the availability and effect are poor, which leads to the fatigue of the existing product market. At present, the public facilities for children are basically entertainment. Although some facilities also try to entertain when learn and promote children's moral, intellectual and physical development, there is no such product combined with safety knowledge education, especially designed for left-behind children. There are no facilities specially designed for left-behind children.

The design effectively takes the needs of left-behind children as the starting point, uses the design of public facilities in environmental design, fully integrates the characteristics of children's psychological development and living environment, and starts from the problem-oriented approach and settles on the entertainment carrier to provide a new direction for such design (Figure 4).

Figure 4 Rendering

6. Conclusion

The problem of left-behind children has always been an intractable social problem. To solve it from the root cause, it requires the efforts of the government, family, society, and schools. This design study attempts to cut in from the role of the designer, and proposes new ideas for the safety education of left-behind children. The main purpose is to reduce the possibility of left-behind children being abused, and at the same time increase the importance of adults on child safety education. For the design itself, the functional research is not comprehensive enough, and further exploration is needed. To solve these problems, it is necessary to carry out adequate field research, have a clear understanding of the psychological behavior needs of left-behind children, and master a large amount of first- hand information in order to design products that can better meet their demands.

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