



EDUCATIONAL TOYS TO ENHANCE MOTHER-CHILD COMMUNICATION

Liu Yutong¹, Teeranop Wangsillapakun² and Paijit Ingsiriwat³

¹Graduate Student, Master of Fine Arts in Design, College of Design, Rangsit University, yutong10298@gmail.com

²Lecturer, Master of Fine Arts, Rangsit in Design, College of Design, Rangsit University, tnop@tnop.com

³Lecturer, Master of Fine Art in Design, College of Design, Rangsit University, paijit948@gmail.com

ABSTRACT

Parent-child interaction is an important way to enhance parent-child relationship. Parent-child interaction products are an important medium to close the parent-child relationship. However, many parent-child products do not achieve effective parent-child interaction and emotional satisfaction. The purpose of the study is to explore the enhancement of emotional communication between mother and child and the improvement of children's cognitive ability and logic level through the study of 6-9 years old school children and their mothers. This research studies child psychology and parent-child interaction from the fields of psychology and product design. Based on the problems existing in parent-child interaction and the interaction needs of users, from the perspective of emotional interaction, this research changes the focus of interaction from the interaction between people and products to the promotion of interaction between people through the medium of products, and then rises to the cultivation of parent-child emotion, which is of great significance to the formation of a good parent-child relationship and the healthy growth of children.

Keywords: *mother-child communication, education, toy, design, interactive*

1. Introduction

With the development of economy and the improvement of living standards, the growth and development of children are getting more and more attention from all walks of life. Whether in education or in life, parents will spare no effort to spend a lot of money and energy for their children. In the growth of children, the interaction between parents and children is an indispensable parent-child activity in the parent-child family. It is a way for parents and children to close the parent-child relationship, and also a way for parents and children to enhance the relationship. Parent-caregiver communication, particularly concerning the behavior and experiences of the child, is a means of linking the home and child-care contexts of the child's experience and enriching the caregiver's and parent's capacity to provide supportive and sensitive care of the child. (Bill,2000) However, China's labor participation rate shows that most families are dual-earner families at present, with male participation rate of 75.27% and female participation rate of 60.45%. (Yu,Yang&Fu, 2022) These parents are busy with their work and seldom have time to communicate with their children. Even on weekends or holidays, most of them do their own things at home and let their children play by themselves. (Iclick, 2019)



Parent-child interaction is also changing with the development of society. Nowadays, with the advent of experience economy, people pay more attention to the use of products and users' experience forms, and more detailed classification and research have been made on product functions and users' demands. In particular, the rapid development of Internet big data has brought more diverse choices for interaction. Many parent-child interactive products have also caught the train of Internet big data, such as intelligent robot toys, intelligent parent-child home, intelligent parent-child learning machine and so on. The reliance on smart devices is beginning to eat into parents' time with their children, and some are even starting to take their place. The interaction between parents and children has become the interaction between people and intelligent products, which satisfies the use needs of parents in function, but fails to meet the emotional needs of users. The emotional interaction between parents and children gradually disappears, which is not conducive to the growth of children and the construction of a harmonious family environment. Toys play an important role in children's life, and accompany children to spend most of their time in the process of growing up. (Zhuo, 2015) As a branch of parent-child products, parent-child toys are an important form and expression of emotional value of parent-child products. At present, there are also many problems in the development of the toy market. Although most parent-child toy designs are titled "parent-child interaction", their essence is thoroughly investigated. In the whole interaction process, the interaction between parents and children is far lower than that between humans and children, not to mention the interaction and establishment of parent-child emotion, so a balanced human-computer interaction is established. The reconstruction of parent-child interaction role relationship is an important factor to be considered in the design of parent-child interaction products. The generation and development of parent-child toys not only has a certain significance for promoting parent-child emotion, but also has a breakthrough value and significance for the development of the toy industry, which will further enhance the connotation and value of toys.

2. Objectives

Through the investigation and interview of some school-age children and mothers, to understand their characteristics and needs, to analyze the market toys, summarize the problems and the current situation, design suitable for 6-9 school-age children to play toys. The objectives are as follows

1. Enhance emotional communication between mother and child
2. Improve children's cognitive ability and logical level

3. Materials & methodology

1. Parent-child interactive products are also children's products. Children are protected vulnerable groups, so the primary consideration of children's products is safety.
2. According to the previous survey, parents attach great importance to the practicality of products.
3. As a material, wood is practical, safe and environmentally friendly.



3.1 Principled Knowledge

Plutarch, an educator in the ancient Roman Empire, believed that the best education for children comes from parents. Plutarch attached great importance to the moral development of children, and he believed that parents played an important role in the moral education of children. (The education of children) Comenius emphasized the importance of mothers in children's education. (School of Infancy) Huang Naiyu, a scholar at the Center for Family Studies and Development of Taiwan Normal University, believes that the subject of parent-child interaction in education is everyone in the parent-child relationship. The purpose of parent-child interaction is to grow up with children and solve problems in life together. The emphasis is "together", which emphasizes the importance of parental companionship. (Zhou, Huang,2010)

Deng Xiaoping, Ph.D. in educational psychology of Northeast Normal University, made a lot of experiments on the relationship between parent-child interaction and children's creativity during his doctoral period. The experimental results show that the parenting style of parents is significantly related to children's creativity. (Deng,2013) Harmonious families and reasonable parents can create a harmonious growth environment for children, and good parent-child relationship has laid a good foundation for the possible development of children in the later period.

D.Baumrind, a famous American psychologist, put forward that the common parent-child relationship and upbringing models are autocratic, authoritative, tolerant and neglectful. Later scholars subdivided this into friend type, doting type, teacher type, rough type and laissez faire type. Each type of parents reflects the growth environment of children in the family. Close parent-child relationship and effective parent-child interaction can stimulate children's creative potential. Children accompanied by their parents will actively participate in the interaction. Encouragement and praise from their parents will also make children braver and more confident, and stimulate more possibilities for children. (Craft.A,2012)

Psychologist P.M.Symonds analyzed the influence of different types of parent-child interaction based on two dimensional models, namely acceptance and rejection, dominance and obedience. (Baumrin,1971, Fig1) Authoritative and permissive parenting models are the two extreme models in parent-child communication, and the two extreme models are associated with creating children with extreme personalities. Tolerant parents can bring children more ability of independent choice and judgment in interaction with children, and can accept various possibilities in the growth of children. Children who grow up in this environment are emotionally stable, have wide interests and are compassionate. On the contrary, strict parents in children's interaction is easy to refuse children's requirements, will establish a strict image of parents in front of children, at this time, children are more likely to form a rebellious psychological character.

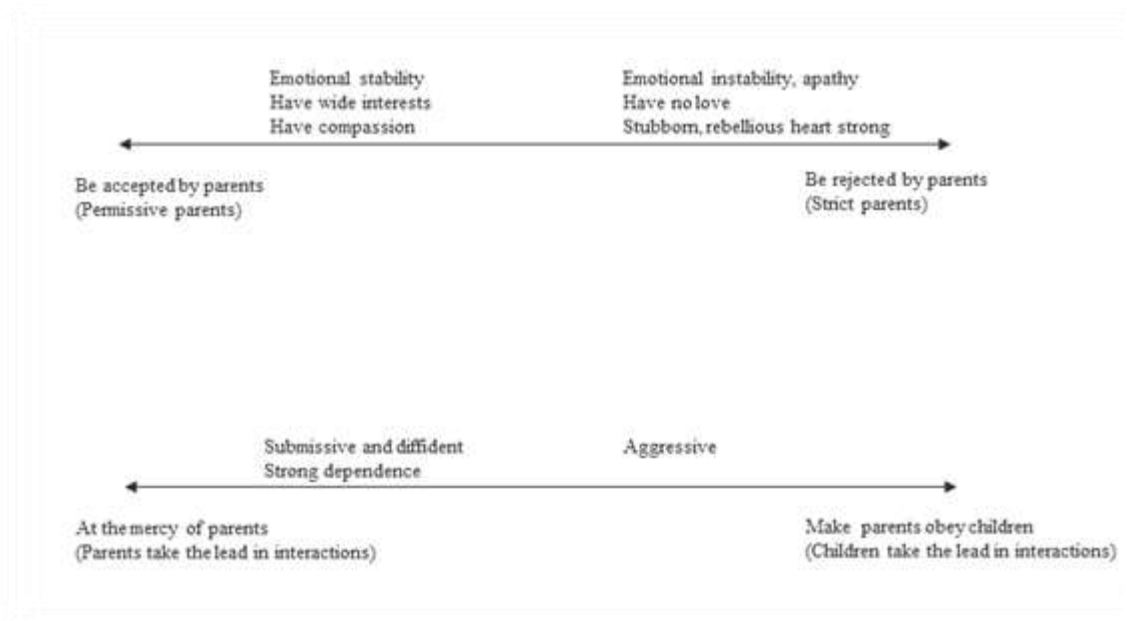


Figure 1 P.M.Symonds dimensional model (Baumrin,1971)

In the process of parent-child relationship communication and interaction, parents will automatically stand in the dominant position and participate in the interaction as a guide. Parents control the overall situation of interaction and communication, but children who are completely controlled and guided by parents are prone to develop problems such as strong dependence, habitual obedience and lack of judgment in their growth. In some cases, such children are also called good children who are obedient in the eyes of their parents. This situation is relatively common in Chinese families, partly due to the influence of the Confucian hierarchy. The influence of strict command and obedience ethics in the Confucian etiquette of Kings and ministers also creates many good children who are obedient in the eyes of parents. However, such obedient children lack their own individuality in the growth, and will become very dependent and lack the ability to deal with problems independently. On the contrary, many families now put children's needs in the first place, forming a child-dominated family structure, which is also a common way of family operation in Chinese families. Children growing up in such a spoiled greenhouse are used to making their parents obey them and forming habitual habits of taking things from them, which makes children growing up in the family prone to overconfidence. Aggression and other issues.

Most children like to communicate with others. They like to share their opinions and questions with people close to them, and they also like to participate in the exploration of strange things. In the early stage, when children are not exposed to the society and other strangers, the closest object of communication and discussion is their parents. At this time, if parents are willing to participate patiently, establish a good communication with children, and give corresponding replies to their opinions and questions, children can reveal their own ideas at will. Express your emotions. In the process of expression, children can exercise the ability of language organization and shaping, and



establish the ability of independent thinking in communication and discussion. In the process of interactive communication, children can fully express their ideas and get the reply from the most trusted person. This interactive process is more valuable to children than any toy company or material reward.

Piaget believed that the development process of children's cognition is mainly the development process of children's cognitive structure, which has continuity and stages. Each stage influences each other and is connected with each other. The development stage always develops along the necessary path, which is irreversible and insurmountable. After long-term observation and analysis, Piaget divided children's cognitive development into four stages based on cognitive structure: perceptive motor stage (around 0-2 years old), preoperational stage (2-7 years old), concrete operational stage (7-11 years old), and formal operational stage (over 11 years old). In the concrete operation stage (7-11 years old), children's reasoning is logical and they can divide subjects into different classes and subclasses, but their thinking is not up to the level of adult intelligence and they are not able to think abstractly. (Zhang,Zhu,Wu,2022)

The study targets preschool children aged 6 to 9 and their mothers. Most of these children's parents were born in the 1980s and 1990s. After the universal two-child policy was introduced in 2015, some of the post-1970s generation also became the parents of preschool children. According to Li Hongzeng et al from Shanghai Academy of Education Sciences, in the correlation between being the only child or not and parent-child education, parents born in the 1980s and 1990s, no matter whether they are the only child or not, attach a high degree of importance to parent-child education. However, in the growing environment of local population and non-agricultural population, parents born in the 1980s and 1990s pay more comprehensive attention to the growth of their children. It not only focuses on children's physiological needs such as food, clothing, housing and transportation, but also pursues children's all-round development and psychological needs in growth. This kind of parents have the advantage of raising the next generation because of the particularity of their growing environment, but there are also problems under the influence of special environment. According to the study and analysis, such parents have the following characteristics:

(1) Have a higher level of education and moral quality

(2) Child-rearing, from clothing, food, housing and transportation to spiritual pursuit, meaning change.

When raising children, the focus on children is no longer just the basic physiological needs of food, clothing, housing and transportation, but more attention to the development of children's spiritual needs and plasticity, breaking through exam-oriented parenting, making education more scientific and rational.

(3) Dual-income families, with superior economic conditions, coexist with pressure and responsibility.

Today, the parents of the post-80s and post-90s are also the generation with superior economic conditions. Good education has brought the parents of the post-80s and post-90s a lucrative career. Mothers, in particular, have broken away from the traditional mode of caring for their husband and children as housewives and started to work, and some even become strong women in the workplace. As a result, the tradeoff between family and work and the question of responsibility have increased in the two-earner family.

(4) Rely on the grandparent’s trusteeship. Due to the pressure of busy work and life, many parents choose to entrust their children to their parents' custody, so in many cases, parents are unable to raise their children.

(5) The increase of two-child families, new challenges Due to the gradual aging of the Chinese population, in 2011, the "two-child" plan was implemented, and in 2015, it was fully allowed to have two children. (Wang, Li,2008)

3.2 Case study

At present, there are a lot of educational toys on the market. I searched Taobao for the best educational toys sold at present. According to a lot of buyers' feedback, these toys can indeed improve children's logic ability, and many designs are also very clever. However, the parent-child sense is weak, which does not reflect the particularity of parent-child role. For child’s users, the adult version of the miniaturized object can satisfy the experience sense of adults, but at this time, the role of parents is to play, and the sense of role of parents is weak. Many toys are nominally intended for parent-child interaction, but are actually used just like ordinary children's toys. The product only serves as a medium for parent-child interaction to assist the cultivation of family relationship between parents. Interaction is very important.

There are also some good products that are not only intelligent but also interactive. There is a game called "Millennium Silk Road", which is not only highly entertaining and interactive, but also combines the history and terrain of the Silk Road. While playing the game, children not only interact with their families, but also learn some traditional culture and geographical knowledge. (Fig2) "Police Game" is a parent-child toy focusing on crime detection, which can not only stimulate children's observation ability, but also exercise children's logic ability. (Fig3)



Figure 2 Millennium Silk Road (Yao Fish, 2014)



Figure 3 Police Game (Zhang Ziguang, 2019)



3.3 Problems and research

In order to understand the needs of these mothers and children, I interviewed 58 mothers, mainly focusing on parent-child products. The theme of this survey is the daily issues related to parent-child toys. The questionnaire is divided into the following five aspects:

1. Do you usually buy toys through physical stores or online shopping? (Fig4)
2. What do you focus on when buying toys? (Fig5)
3. What is the purpose or need of choosing toys for children? (Fig6)
4. How many toys does the child have? (Fig7)
5. When do you usually give toys to children? (Fig8)

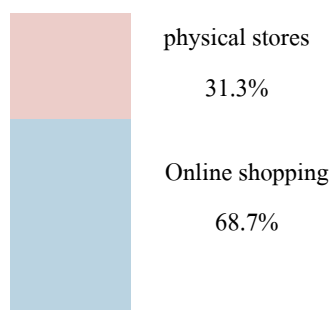


Figure 4 Toy purchase channel

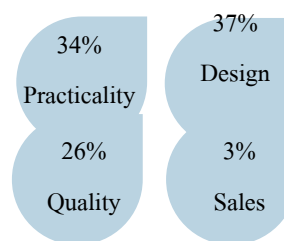


Figure 5 Product selection tendency

In a survey of the channels through which they usually buy toys, 68.7% of parents choose online shopping and 31.3% buy toys from physical stores. Most of these parents are young and their shopping habits tend to be online. Usually busy work, online shopping saves time, is more convenient, and there are other people's evaluation to provide reference. When choosing a toy, 37 percent of parents were willing to pay for design, 34 percent preferred practicality and 26 percent preferred quality. Most of these parents are well-educated, rational and willing to pay for design.

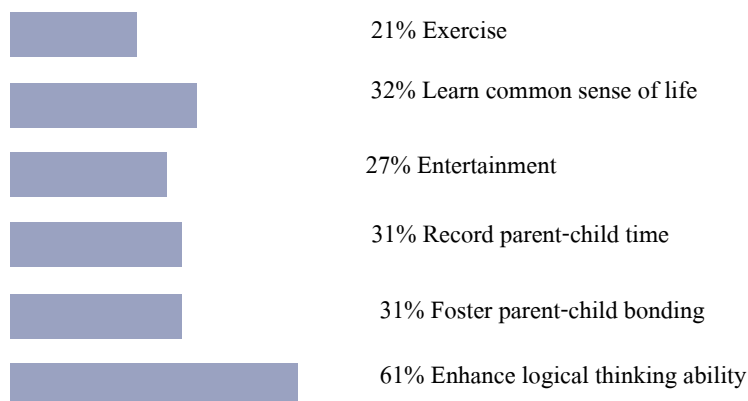


Figure 6 Mothers' choice of toys for their children

When choosing toys for their children, 61 percent of parents focus on improving their children's logical ability, 31 percent just record parent-child time, 31 percent want to cultivate parent-child relationship, 27 percent want to let their children enjoy entertainment, 32 percent hope their children can learn common life knowledge, and 21 percent hope to exercise their children's physical quality. Parents are more concerned about parent-child relationship and improving their children's logical ability.

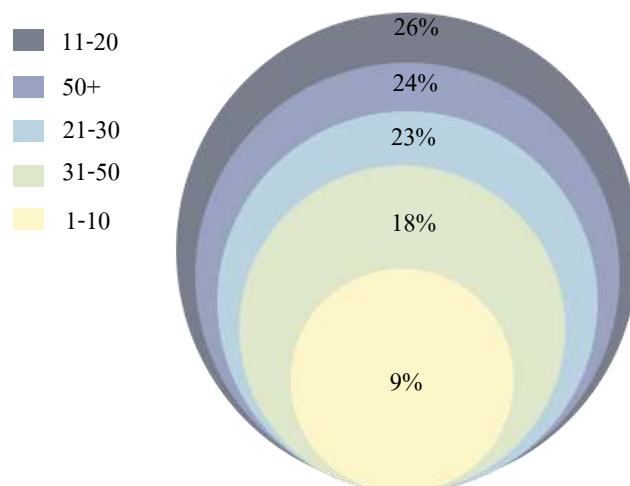


Figure 7 The number of toys owned by children

Many children have a large number of toys, 26% have 11-20 toys, 24% have more than 50 toys, 23% have 21-30 toys, 18% have 31-50 toys, and 9% have 1-10 toys.

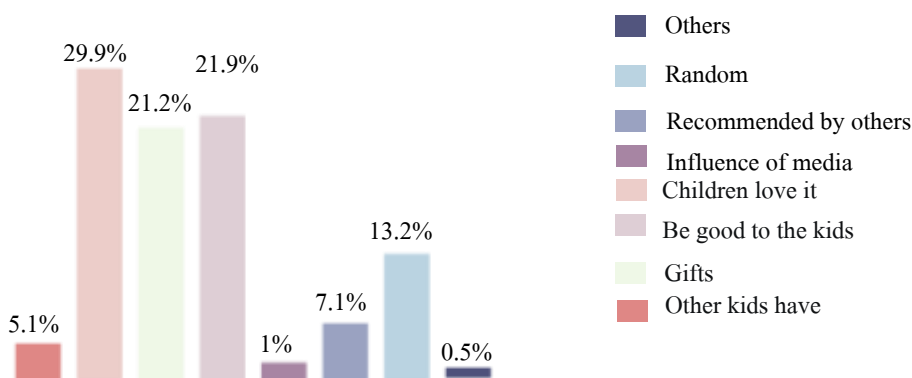


Figure 8 Time for mothers to buy toys for their children

Among these parents, 29% chose to give toys to their children as toys, 21.2% thought the toys were good for their children's development, 21.9% because the children liked them, 13.2% because they were given randomly, 7.1% because others recommended them, 5.1% because other children had them, 1% because of the influence of the



media, and 0.5% because of other reasons. Because school-age children do not have independent choices, these parents decide what toys their children have.

4. Results & discussions

4.1 Design requirement analysis

Summarize and analyze user needs in the specific scene of parent-child interaction process, analyze the interaction process of existing parent-child interaction products, find out the shortcomings and advantages, design a kind of parent-child interaction educational toys in line with the current social parent-child relationship on the basis of child psychology and product design analysis, and establish parent-child interaction needs from human-computer interaction to emotional interaction. The goal of parent-child product design is summarized to enhance emotional interaction and mother-child communication. As follows:

1. Functional: Education or Promote physical function development
2. Form: Interactive communication
3. Aesthetically: Simple and Bright colors
4. Interaction: A changeable way of use
5. Theory: Child development cognition
6. Categories: Familiar scenes of life for children and mothers

4.2 Housework class requirement

The school's housework class also requires children to master cooking and nutrition from grades 1 through 9. 68.7% of parents expressed a positive attitude toward the measure, while 31.3% expressed disapproval. 53.75% of the children are very active in housework, 35.2% think it is appropriate to participate in housework, 10.2% of the children are indifferent to it, and 0.9% of the children abstained. It can be seen that most parents and children have a positive attitude towards housework. (Iclick, 2019)

4.3 The design concept

Based on the design requirements and the needs of housework class, the design takes cooking as the theme. Now the kitchen toys are a smaller version of kitchen supplies, analog kitchen supplies. Kids can play by themselves at home, it's not interactive, it's still like before, the parents do their own thing and the kids play by themselves. There are also some products, such as children's picture books based on recipes, which may achieve the effect of mother-child interaction through the process of the mother teaching experience or reading the picture book with the child. However, the process is similar to class, which is not interesting.

The design helps mother and child communicate, and allows the child to learn in the process. Refer to traditional children's picture books, but add some fun to them. So, the researcher came up with the answer sheet, it can be like we fill in the blanks on the answer sheet, (Fig9) let the child directly want to eat food on this, the mother also wants to eat food on this, and then the mother and the child to choose together, finally the mother cook, the child



next to help cut ingredients or help. In this process, children learn to cook, distinguish the types of ingredients and know different foods, which can also increase the communication between mother and child.

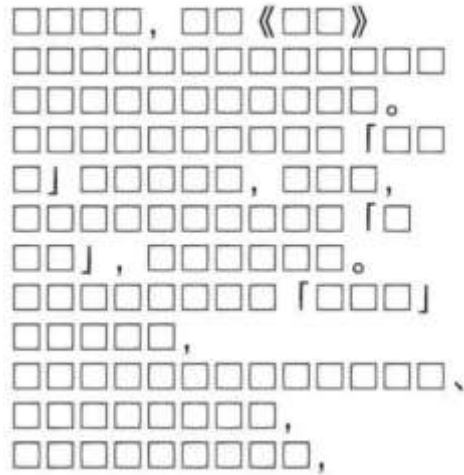


Figure 9 Text box

4.4 Design process

At the beginning, the researcher wanted to make a food identification card. (Fig10) The round card has a variety of food and dice to make the game more interesting. Mothers and children can identify food and communicate emotions during play. But this product still can't get rid of the traditional picture book's didactic form, and is not practical.



Figure 10 Food identification card

On this basis, the researcher designed a series of fill-in-the-blank recipes, (Fig11) asking the children to put what they want to eat in accordance with the shape and size on the drawing, while referring to the cooking process, and then let the mother and children cook together. There are seven cards for one week, (Fig12) so if mom and kid don't know what to eat, they can refer to these recipes for discussion.

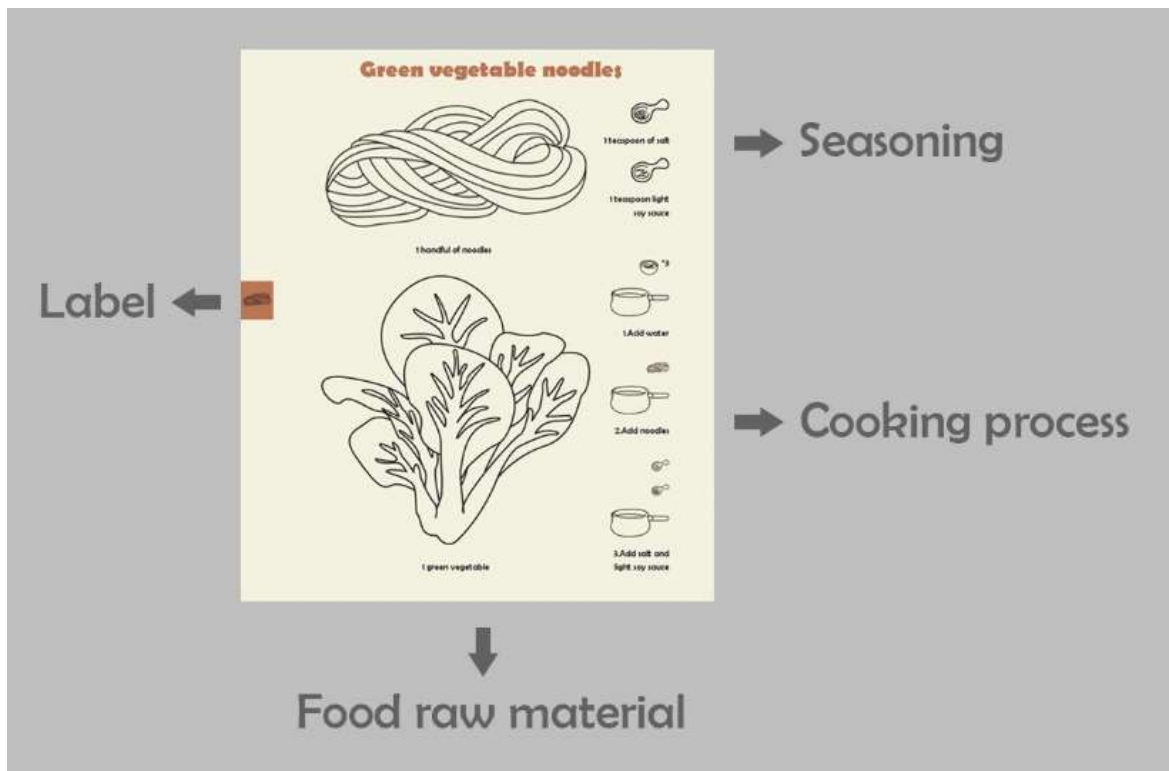


Figure 11 Recipe

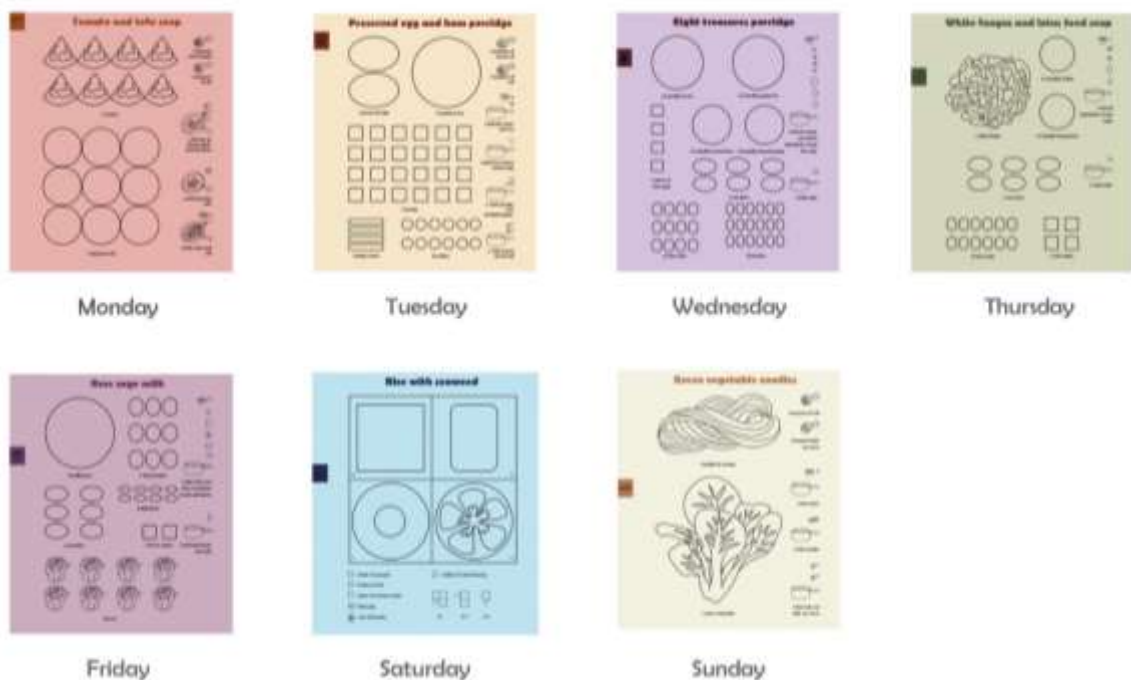


Figure 12 Recipes

But it lacks the interaction, and the lack of practicality, so the researcher thought of can on this basis, add text box on the cutting board as a carrier, (Fig13) children fill in the blanks on the grid, put their own food, mother



also put their own food, children and mother to discuss what to eat. The child can then help cut the vegetables and the mother cooks, so mother and child can make a meal together.



Figure 13 Cutting board

These cutting boards are solid wood logs with a total of four food text boxes. In addition to the squares, some of which are selected according to the recipe, (Fig14) have different shapes and sizes, and the child and mother can place the ingredients into the space according to their shape and size. (Fig15) After the child and mother choose their own food, the mother can go to cook, the child beside to help cut food. (Fig16) If the child and mother are struggling with what to eat, refer to the previous card. This increases communication between mother and child, and the child can learn to cook and distinguish between food types.



Figure 14 Cutting boards



Figure 15 Food filling



Figure 16 Cut food

5. Conclusion

The healthy growth of children is a common concern of society and family. The research on children and parents is also the focus of many researchers in child psychology, pedagogy, design and other disciplines. This design is aimed at 6-9 years old children and mothers. This study firstly analyzes the psychology of children and the existing parent-child interaction mode from the perspective of literature analysis. On this basis, through the research of users and products, we put forward cooking as the theme of "food text box". Using chopping board as a carrier, design practice is carried out to increase mother-child communication and teach children to identify food types and learn to cook.



This design of mother-child communication as the research object, so more attention to mother-child communication and children learning skills. The product is only used as an auxiliary tool in the process of parent-child interaction, so the design of the product is relatively weak, especially the modeling and production of the product are not sufficiently considered. In the subsequent improvement of product modeling, material and technology issues should be fully considered, because of the limitations of material and technology, resulting in less ideal products.

6. Acknowledgments

First of all, I would like to thank my advisor professor, Mr. Tnop, who gave me very professional advice and guidance. Thank you very much for his carefulness and patience, which is my honor.

Secondly, I would like to thank all the teachers of MFA who have taken the time to give us detailed advice and patient guidance. I also want to thank all my classmates and friends for helping me find information and advice time and time again.

Finally, I would like to thank my family for their support, and some students and parents for their feedback and suggestions.

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