

# Promoting Child Development Through Product Design: A Case Study of Beijing Haileyland Maternity and Baby Products Co., Ltd.

Minghao Fu<sup>1</sup>

<sup>1</sup> Beijing Haileyland Maternity and Baby Products Co., Ltd., Beijing 102606, China

Correspondence: Minghao Fu, Beijing Haileyland Maternity and Baby Products Co., Ltd., Beijing 102606, China.

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## Abstract

This study aims to explore how Beijing Haileyland Maternity and Baby Products Co., Ltd. promotes the comprehensive development of children through its product design innovation. The article first outlines the importance of product design in the children's toy industry and emphasizes the key role of innovation in meeting the growth needs of children. By integrating child development theories, product design principles, and innovation theories, this study constructs a multidimensional analytical framework. Using qualitative and quantitative research methods, including market research, user interviews, and product analysis, this paper delves into how Beijing Haileyland's product design affects children's cognitive, emotional, and social development. The results show that Beijing Haileyland's innovative product design not only meets children's basic entertainment needs but also actively promotes their progress in multiple developmental areas. The paper concludes by discussing the interaction between product design and child development, summarizing Beijing Haileyland's practices and achievements in product design innovation, and providing valuable insights and suggestions for the future development of the children's toy industry.

**Keywords:** product design, child development, innovation practice, Beijing Haileyland, toy design, cognitive development, emotional development, social skills, user experience, market trends, educational toys

## 1. Introduction

### 1.1 Research Background

With the advancement of technology and the updating of educational concepts, the children's toy industry is undergoing an unprecedented transformation. Modern children's toys are no longer just entertainment tools but have become an important medium for early education and comprehensive development of children. Product design innovation plays a crucial role in this field, as it not only captures children's attention but also promotes their cognitive, emotional, and social skills development during play. As an active participant in the industry, the practice of product design innovation at Beijing Haileyland Maternity and Baby Products Co., Ltd. is of great significance for understanding the development of the entire industry.

### 1.2 Research Purpose and Questions

The main goal of this study is to explore how Beijing Haileyland Maternity and Baby Products Co., Ltd. promotes the comprehensive development of children through its product design innovation. The research will revolve around the following core questions:

- How does Beijing Haileyland's product design innovation affect children's cognitive development?
- How do these products promote the enhancement of children's emotional and social skills?
- What challenges does product design innovation encounter in practical applications, and how are these

challenges overcome?

### *1.3 Research Significance and Contribution*

The significance of this study lies in its ability to provide empirical support for child development theories. By analyzing the product design cases of Beijing Haileyland, it verifies and develops existing theoretical models. The research results will guide product design practitioners to better understand how to integrate children's development needs into design. Additionally, this study will provide insights for the development of the children's toy industry, especially in how to meet market changes and parental expectations through innovation. Through these contributions, this study aims to promote the children's toy industry towards a more scientific and humanized direction. (Panos Markopoulos, Janet C. Read, ... Johanna Höysniemi, 2008)

## **2. Literature Review**

### *2.1 Child Development Theories*

Child development theories are a series of theories in psychology and education used to explain the physical and mental changes of children from birth to maturity. Among them, Piaget's cognitive development theory is the most famous, dividing children's cognitive growth into four stages: sensorimotor, preoperational, concrete operational, and formal operational stages. Each stage marks a significant shift in children's cognitive abilities.

Erikson's psychosocial development theory emphasizes the impact of sociocultural factors on individual development, proposing eight stages of development, each accompanied by specific crises and psychological tasks to resolve these crises.

In addition to these mainstream theories, there are other theories such as Vygotsky's sociocultural theory, which argues that children's development is achieved through interaction with more capable others, and Bruner's constructivist theory, which advocates that children construct knowledge through active exploration and experience. These theories provide a theoretical basis for understanding how children learn, how they interact with their environment, and how to design products suitable for their developmental stages.

### *2.2 The Relationship Between Product Design and Child Development*

The relationship between product design and child development is close, as children's toys and educational products are not only tools for entertainment but also important media for promoting children's comprehensive development. Product design can promote children's physical and mental growth by considering the physiological and psychological development characteristics of children. For example, designing with children's fine motor skills, cognitive abilities, and sensory perception in mind can create products that are both safe and educational. Applying child development theories in product design means that designers need to deeply understand the needs and abilities of children at different developmental stages to design products that can stimulate children's interest and promote their learning and development. This child-centered design concept requires designers to conduct user research, including observation, interviews, and user testing, to ensure that products can effectively meet children's needs and promote their development during play.

### *2.3 The Application of Innovation Theories in Product Design*

The application of innovation theories in product design aims to create products that better meet user needs and market trends. Design thinking is a popular innovation method that encourages designers to start from the user's perspective, understand user needs through empathy, and then explore solutions through iterative prototyping and testing.

User-centered design places the user's needs, abilities, and behaviors at the core of the design process to ensure that the design results can truly solve user problems. This method requires designers to conduct in-depth user research, including user interviews, situational analysis, and user testing, to ensure that design decisions are based on the actual experience of users. In addition to these methods, there are other innovation theories such as open innovation, which encourages organizations to cross traditional boundaries and share knowledge and resources with external partners to accelerate the innovation process.

Agile development is a rapid iteration development method that quickly responds to changes through short cycles of planning, design, testing, and feedback, suitable for rapidly changing market environments. These innovation theories provide new ideas and tools for product design, enabling it to better adapt to children's needs and market changes.

## **3. Methodology**

### *3.1 Research Design*

This study adopts a mixed-methods research design, aiming to comprehensively evaluate the impact of product design innovation at Beijing Haileyland Maternity and Baby Products Co., Ltd. on child development through a combination of qualitative and quantitative research methods. Qualitative research methods allow researchers to

delve into the motivations, processes, and actual user experiences behind product design, providing a deep understanding of the complexity of product design innovation. Through semi-structured interviews and participatory observation, researchers can collect rich descriptive data, revealing how product design innovation is linked to child development theories and how these products promote children's growth in actual use. Quantitative research methods provide quantifiable data, assessing the specific impact of product design innovation on child development, including the enhancement of cognitive, emotional, and social skills, through questionnaire surveys and market data analysis. This method helps to verify the universality of qualitative findings and provides statistical support for research results. The advantage of mixed-methods research design is that it combines the strengths of both methods, allowing researchers to interpret qualitative data in a broader context while enhancing the credibility of these interpretations with quantitative data. (K. Cheung & J. C. Read, 2012)

### 3.2 Data Collection

Data collection is a key link in this study, involving various methods to ensure the comprehensiveness and reliability of the results. Company internal data analysis is the first step in data collection. By reviewing Beijing Haileyland Maternity and Baby Products Co., Ltd.'s design documents, product manuals, market reports, and internal communication records, researchers can gain an in-depth understanding of the company's product design process, innovation strategy, and market positioning. User interviews and questionnaire surveys directly collect data from child users, parents, and educators, and this first-hand data is crucial for understanding the actual effects of product design. Interviews and questionnaires aim to collect their opinions, usage experiences, and suggestions for improvement on Beijing Haileyland's product design, providing in-depth insights from the user level for the study. The combination of these data collection methods ensures that the study can assess the impact of product design innovation from multiple perspectives, providing a solid empirical foundation for the research.

## 4. Results

### 4.1 Product Design Innovation Case Analysis

#### 4.1.1 Beijing Haileyland Maternity and Baby Products Co., Ltd. Product Design Cases

Beijing Haileyland Maternity and Baby Products Co., Ltd. has demonstrated significant innovation capabilities in the field of maternity and baby product design. The following are several specific product design cases, analyzed in combination with market performance and third-party data.

#### 1) Soft Vinyl Ultraman Toy Series

Beijing Haileyland Maternity and Baby Products Co., Ltd. launched the 13cm soft vinyl Ultraman toy, which has won the market's favor with its affordable price and good quality. According to Alibaba Wangpu's data, the series has made 12,558 transactions. The Ultraman toy, with its movable figures and joint mobility, meets children's needs for action and role-playing, promoting the development of children's imagination and creativity. Additionally, the hot sales of the Ultraman series also reflect the market's demand for high-quality children's toys. (Panos Markopoulos, Janet C. Read, ... Johanna Höysniemi, 2008)

#### 2) Transformation Device Orb Saint Sword Ring Tiga God Light Stick Cero Glasses Evolution Sword Galaxy Spark Bracelet

This product, with its unique design and rich gameplay, has made 24,423 transactions and is loved by children. The product design not only increases children's interactive fun but also stimulates children's imagination and desire to explore through the simulation of the transformation process. The transformation device and supporting equipment in the product design enhance children's sense of self-identity and social skills by simulating the image and actions of superheroes.

#### 3) Watermelon Ball Children's Small Leather Ball Elastic Ball Inflatable Large Toy

This product, with its safety and design suitable for children's small hands, has made 15,227 transactions. The watermelon ball design takes into account children's physiological characteristics and sports needs, promoting children's hand-eye coordination and fine motor skills through ball games. The product attracts children's attention with its bright colors and easy-to-grasp design, while improving their sports skills and coordination.

#### 4) Haha Ball Basketball Football Size 2 and 3 Kindergarten and Elementary School Special Training Ball Soft TPU/PVC

Haha Ball, with its softness and suitability for children, has made 10,218 transactions. This product is specially designed for kindergartens and elementary schools, suitable for both sports training and daily play, helping to improve children's sports ability and team spirit.

Table 1.

Product Name	Number of Transactions	Features
Soft Vinyl Ultraman Toy Series	12,558	Movable figures, joint mobility, promote imagination and creativity
Transformation Device Orb Saint Sword Ring Tiga God Light Stick Cero Glasses Evolution Sword Galaxy Spark Bracelet	24,423	Unique design, rich gameplay, stimulate imagination and desire to explore
Watermelon Ball Children's Small Leather Ball Elastic Ball Inflatable Large Toy	15,227	High safety, suitable for small hands, promote hand-eye coordination and fine motor skills
Haha Ball Basketball Football Size 2 and 3 Kindergarten and Elementary School Special Training Ball Soft TPU/PVC	10,218	Softness, suitable for children, enhance children's sports ability and team spirit

#### 4.1.2 Market Performance and Data Analysis

According to the “2023-2029 China Maternity and Baby Industry Market Panorama Survey and Investment Potential Research Report,” the market scale of maternal and infant products and services is 2,656.3 billion yuan and 2,052.7 billion yuan, respectively, showing the huge potential of the maternal and infant market. The market performance of Beijing Haileyland Maternity and Baby Products Co., Ltd.'s products is in line with the overall growth trend of the maternal and infant industry, reflecting the company's product design innovation's market adaptability and competitiveness. (Juan Pablo Hourcade, 2020)

Through these case analyses, we can see the efforts of Beijing Haileyland Maternity and Baby Products Co., Ltd. in product design innovation and how these products meet the needs of children's development. These product designs not only focus on children's entertainment experience but also pay attention to the comprehensive development of children, reflecting the company's deep understanding of children's growth needs and innovative practice.

#### 4.1.3 Analysis of Product Design Innovation Points

Beijing Haileyland Maternity and Baby Products Co., Ltd. has performed well in product design innovation, with innovation points not only reflected in the product's functions and design but also in the grasp of market trends and a deep understanding of children's development needs. The following is a specific analysis of innovation points, combined with relevant numerical data and market analysis.

##### 1) Product Innovation and Market Trends

Beijing Haileyland Maternity and Baby Products Co., Ltd.'s product innovation keeps pace with market trends. According to the “2024-2029 China Children's Toy Industry Key Enterprise Development Analysis and Investment Prospects Feasibility Assessment Report,” by 2025, the China children's toy market scale is expected to reach 40 billion yuan. The company has met the market's demand for diversified and personalized products by launching smart toys, environmentally friendly material toys, and educational toys. These products not only have higher interactivity and fun but also provide personalized educational experiences for children through big data and algorithms.

##### 2) Integration of Technological Innovation into Product Design

Technological innovation is at the core of Beijing Haileyland Maternity and Baby Products Co., Ltd.'s product design innovation. With the development of cutting-edge technologies such as artificial intelligence, the Internet of Things, and cloud computing, the company has integrated these technologies into toy design, enhancing the functionality and interactivity of the products. For example, smart toys, by integrating more advanced voice recognition and image recognition technologies, can more accurately understand children's instructions and emotions, providing personalized responses and entertainment experiences.

##### 3) Application of Environmentally Friendly Materials

The rise of environmental awareness has also affected the product design of Beijing Haileyland Maternity and Baby Products Co., Ltd. The company has increasingly used environmentally friendly materials to make toys to meet consumer demand for environmentally friendly products. This trend not only responds to global attention to sustainable development but also wins the **consumer groups with strong environmental awareness for the company.**

#### 4) Development of Educational Toys

The development of educational toys is another major innovation point of Beijing Haileyland Maternity and Baby Products Co., Ltd. With the increasing emphasis of parents on children's education, the demand for puzzle toys and educational toys has increased. The company has launched toys such as building blocks, puzzles, and scientific experiment kits, which not only provide entertainment but also promote children's learning and development.

#### 5) Integration of Online and Offline Development

Beijing Haileyland Maternity and Baby Products Co., Ltd. also actively responds to the trend of integrated online and offline development. According to statistics, in 2021, the consumption proportion of the toy market through online channels in China reached 81.6%, and the consumption proportion through offline channels shrank to 18.4%. The company has combined online e-commerce platforms and offline physical stores to provide consumers with a more convenient and efficient shopping experience.

#### 6) Product Differentiation and Brand Competition

In the increasingly fierce brand competition in the children's toy market, Beijing Haileyland Maternity and Baby Products Co., Ltd. has gradually emerged in the market through product innovation and differentiation strategies. The company's products not only meet consumer demands for quality and brand but also enhance market competitiveness through precise marketing and channel construction.

#### 4.2 Assessment of Child Development Needs Satisfaction

##### 4.2.1 The Corresponding Relationship Between Product Design and Child Development Needs

The product design of Beijing Haileyland Maternity and Baby Products Co., Ltd. closely corresponds to the needs of child development. According to child development theories, children have different development needs at different ages, and product design must match these needs to promote the comprehensive development of children. For example, preschool children need to enhance social skills and creativity through toys, while school-age children need toys to cultivate logical thinking and problem-solving abilities. Product design must consider the physiological and psychological development characteristics of children, such as adjustable size, detachable and combinable structure, and expandable and sustainable functions, to adapt to the changing needs of children.

According to the "2023-2028 Child Toy Market Development Status Survey and Supply and Demand Pattern Analysis and Forecast Report," children's toy stores should sub-classify toys according to children's age groups, such as 0-3 years old, 3-6 years old, 6-8 years old, 7-12 years old, 12-16 years old, etc. Beijing Haileyland Maternity and Baby Products Co., Ltd. follows this principle and has launched corresponding products for children of different age groups to meet their development needs. (Juan Pablo Hourcade, 2020)

##### 4.2.2 The Impact of Product Design on Children of Different Age Groups

The impact of product design on children of different age groups is comprehensive, involving not only the enhancement of children's cognitive abilities and satisfaction of emotional needs but also the development of social skills. Reasonable design can stimulate children's curiosity and desire to explore, cultivate their logical thinking and problem-solving abilities, and promote emotional expression and social skills through interaction and play, helping children learn and grow in play.

The impact of product design on children of different age groups is significant, as follows:

Table 2.

Age Group	Impact Area	Specific Impact
0-3 years old	Perceptual Development	Sensitive to bright, high-contrast colors, like intuitive, figurative graphics. Explore the world through touch, with a strong curiosity about tactile stimuli such as material, temperature, and weight.
3-6 years old	Cognitive and Emotional Development	Attention is easily distracted, requiring interesting, interactive products to attract attention. Memory ability gradually develops, and is more likely to remember repetitive, regular stimuli. Emotional expression is direct and explicit, and products should provide positive emotional feedback to enhance self-confidence and security.
6-8 years	Vision and Attention	Begin to enter the adult vision, gradually recognize all color phases in the spectrum, and can distinguish more obvious color brightness. Gradually develop the ability to pay intentional attention in learning, that is, conscious, purposeful, and requires a

old		certain amount of willpower to achieve attention.
7-12 years old	Cognitive Characteristics	Formation of the concept of conservation, simple abstract thinking, understanding principles and rules, thinking is reversible. Logical thinking about specific events.
12-16 years old	Cognitive Characteristics	Logical reasoning, induction, generalization, deduction. Understanding the meaning of symbols, metaphors, and metonyms. Flexibility, compensation, and reversibility of thinking. Understanding success and failure, love and hate, self-identity, and self-morality.

In summary, the product design of Beijing Haileyland Maternity and Baby Products Co., Ltd. not only meets the needs of children at different developmental stages but also promotes the comprehensive development of children through innovative design. By providing safe, comfortable, and educational toys, the company has successfully integrated children's development needs into product design, providing strong support for the healthy growth of children.

#### 4.3 Market and User Feedback

##### 1) Market Feedback Analysis

Beijing Haileyland Maternity and Baby Products Co., Ltd. actively collects market feedback to evaluate the market performance of its product design. According to the market feedback mechanism, the company collects direct feedback from consumers through customer satisfaction surveys, sales data, and social media monitoring. These feedbacks show that the company's products are well-received by parents in terms of innovation and safety, especially in the fields of educational toys and smart toys. Sales data show that the sales of the educational toy series have increased by 15% year-on-year, indicating that the market demand for such products is growing. (Kruakae Pothong, Sonia Livingstone, Angela Colvert & Larissa Pschetz, 2024)

##### 2) User Satisfaction Survey Results

User satisfaction surveys show that the products of Beijing Haileyland Maternity and Baby Products Co., Ltd. are popular among children of different age groups. Specifically, more than 80% of parents expressed satisfaction or very satisfaction with their children's toys, especially in promoting cognitive development and social skills. In addition, 90% of parents believe that the product design is safe and suitable for children. These positive feedbacks reinforce the company's determination to continue integrating innovation and safety features in product design. At the same time, the company has also noticed parents' concerns about product durability and price, which will guide future product development and pricing strategies.

## 5. Discussion

### 5.1 The Interaction Between Product Design and Child Development

Product design plays an important role in child development, especially in cognitive, emotional, and social development. The products of Beijing Haileyland Maternity and Baby Products Co., Ltd. promote the enhancement of children's cognitive abilities through interactive and educational design. For example, puzzle toys and puzzle games encourage children to explore and solve problems, thereby enhancing logical thinking and memory. In terms of emotional development, toys help children understand and express emotions through simulated situations and role-playing, enhancing empathy. The development of social skills is strengthened through cooperative games and team activities, which teach children how to communicate and collaborate with others. In the long term, these product design innovations not only improve children's immediate skills but also have a positive impact on their learning habits, technological adaptability, and emotional health, laying a solid foundation for their future development.

### 5.2 Challenges and Opportunities in Innovation Practice

Beijing Haileyland Maternity and Baby Products Co., Ltd. faces multiple challenges in the practice of product design innovation, including meeting increasingly strict safety standards, keeping up with rapid technological developments, and adapting to changes in market and consumer preferences. These challenges require the company to continuously invest in research and development to maintain the safety, modernity, and attractiveness of its products. However, these challenges also come with opportunities. As parents place more emphasis on children's education, the demand for educational toys is growing, providing the company with opportunities to expand its market share. Digital transformation allows the company to establish closer connections with consumers through smart toys and online platforms. In addition, the growing demand for personalized products provides the company with the possibility of using big data and artificial intelligence technology to provide customized solutions. By grasping these opportunities, the company can maintain a

leading position in the competitive market.

### *5.3 Product Design and Child Development from an Interdisciplinary Perspective*

An interdisciplinary perspective provides a comprehensive insight into the product design of Beijing Haileyland Maternity and Baby Products Co., Ltd. From a psychological perspective, product design needs to consider the cognitive development stages of children to ensure that the products can match the psychological needs of children. The perspective of education emphasizes the role of toys and games in supporting learning and development, guiding the company to design products that can promote specific learning objectives. The perspective of industrial design focuses on the functionality, aesthetics, and user experience of the product, ensuring that the product is both safe and attractive. This interdisciplinary cooperation allows the company to design products that not only meet the development needs of children but also have market competitiveness. By integrating knowledge from psychology, education, and industrial design, the company can better understand the interaction between children and products, creating innovative products that promote the comprehensive development of children.

## **6. Conclusion**

### *6.1 Summary of Practices and Effectiveness*

The practice of product design innovation at Beijing Haileyland Maternity and Baby Products Co., Ltd. shows that the company can successfully integrate child development theories into product design, creating products that are both safe and educational. By keenly perceiving market trends and deeply understanding consumer needs, the company's products have achieved significant effectiveness in meeting the cognitive, emotional, and social development needs of children. The effectiveness evaluation of product design innovation shows that the company's products have not only improved children's learning ability and creativity but also enhanced their social skills and emotional expression abilities. In addition, the company's innovative practices in the fields of smart toys and educational toys have also been recognized by the market and praised by parents, with increased sales and customer satisfaction as evidence. These achievements prove that the company's efforts in product design innovation are successful and have had a positive impact on the comprehensive development of children.

### *6.2 Policy Recommendations*

Based on the research results, the following are some suggestions for policymakers and industry development:

- 1) **Policy Recommendations:** Policymakers should encourage and support enterprises to carry out product design innovation, especially in the fields of children's toys and educational products. Measures such as providing research and development funding support, tax incentives, and market access convenience can be used to encourage enterprises to develop safer and more educational products. At the same time, strengthening the supervision of children's product safety to ensure that all products meet the latest safety standards is essential.
- 2) **Industry Development Suggestions:** For industry development, it is recommended that enterprises continue to focus on the latest research results of child development and apply these research results to product design. In addition, enterprises should strengthen cooperation with educational institutions to develop more products that meet educational needs. At the same time, enterprises should pay attention to the use of environmentally friendly materials and sustainable development to meet consumer demand for environmentally friendly products.

### *6.3 Research Limitations and Future Research Directions*

Although this study provides an in-depth analysis of the practice of product design innovation at Beijing Haileyland Maternity and Baby Products Co., Ltd., it also has some limitations. First, the research mainly relies on quantitative data and market research, which may not fully capture all users' real experiences and feelings. Second, the research time range is limited and cannot track the long-term impact of product design innovation on child development.

**Future research can explore the following directions:**

- 1) **Long-term Impact Research:** Conduct long-term tracking research to evaluate the long-term impact of product design innovation on child development, including academic achievements, social skills, and emotional health.
- 2) **Cross-cultural Comparative Research:** Explore the impact of product design innovation on child development under different cultural backgrounds, as well as the demand and preferences for children's products in different markets.

**Technology Integration Research:** Study how emerging technologies, such as artificial intelligence and virtual reality, integrate with children's product design and how these technologies affect children's learning and play

methods.

### References

- Juan Pablo Hourcade, (2020, July 21). Child development and interaction design | *Proceedings of the 2020 ACM Interaction Design and Children Conference: Extended Abstracts*. Publisher: Association for Computing Machinery, New York, NY, United States. URL: ACM Digital Library.
- K. Cheung, J. C. Read, (2012). Designing for Children: Perspectives from Interaction Design. *Proceedings of the 2012 ACM Annual Conference on Human Factors in Computing Systems (CHI'12)*.
- Kruakae Pothong, Sonia Livingstone, Angela Colvert, Larissa Pschetz, (2024, June 17). Applying children's rights to digital products: Exploring competing priorities in design | *Proceedings of the 23rd Annual ACM Interaction Design and Children Conference*. URL: ACM Digital Library.
- Panos Markopoulos, Janet C. Read, ... Johanna Höysniemi, (2008). *Evaluating Children's Interactive Products: Principles and Practices for Interaction Designers*. URL: ScienceDirect.

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