

## *Retraction*

# **Retracted: The Integrated Development of Furniture Design and Children's Characteristics Based on Artificial Intelligence**

### **Scientific Programming**

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

- (1) Discrepancies in scope
- (2) Discrepancies in the description of the research reported
- (3) Discrepancies between the availability of data and the research described
- (4) Inappropriate citations
- (5) Incoherent, meaningless and/or irrelevant content included in the article
- (6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

### **References**

- [1] W. Zhang and S. Li, "The Integrated Development of Furniture Design and Children's Characteristics Based on Artificial Intelligence," *Scientific Programming*, vol. 2022, Article ID 6036160, 9 pages, 2022.

## Research Article

# The Integrated Development of Furniture Design and Children's Characteristics Based on Artificial Intelligence

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Furniture is one of the most enduring items that children grow up with. However, there is a big gap between children's rapidly growing physical and mental needs and existing children's furniture. It is necessary to design children's furniture that is both interesting and multifunctional from the perspective of children's physiology and psychology. In the context of artificial intelligence, this paper applies the artificial intelligence design concept to the design of children's furniture and discusses the necessity and design principles of its application in the design of children's furniture from the aspects of society, children, and development trends.

## 1. Introduction

For modern residents with ever-increasing living environment requirements, it is also necessary to provide children with a living environment that is more in line with their physical and mental growth. After investigation, it was found that the central consumers of modern families tend to be children. Therefore, the proportion of furniture sales of series furniture specially made for children continues to grow, which has also attracted the interest of many manufacturers. However, the segmentation of China's furniture market is not enough, and the children's furniture market has yet to be developed [1]. According to relevant data, children with separate bedrooms and furniture account for about 10.2% of Chinese families, and about 45.6% of families want to buy furniture for children. China's furniture industry has a profound history, and its manufacturing theory system is also becoming more and more mature. However, as a rising star, children's furniture is still in its infancy in terms of design and R&D, and production and lacks a theoretical system with guiding significance [2]. In the early 1980s, furniture for children was designed and manufactured only by individual adult furniture manufacturers. Due to the lack of designers in the professional field, the finished

product is just a miniature version of adult furniture. It was not until 1998 that the production scale of children's furniture gradually expanded. With the continuous development of the times, children became the main group of consumers, and more and more manufacturers turned their attention to the children's furniture market. In 2001, children's furniture began to form an independent category separated from furniture design, formed its own design and manufacturing system, and gradually improved. At the same time, a number of local children's furniture brands have emerged in China [3].

Through the analysis of China's furniture market, the development situation of furniture designed for adults is relatively optimistic. Compared with adult furniture, children's furniture is still in its infancy. There are only a handful of designer teams specializing in the field of children's furniture. Secondly, the size of children's furniture does not take into account the physical and psychological development characteristics of modern children, and can only meet short-term use. Once again, it reflects the necessity of applying the concept of growable design in the design of children's furniture. In the article "A Preliminary Study on the Grow ability Design of Children's Furniture," the author Min Lihong [4] pointed out that because children are in the

stage of continuous growth, the fixed size of furniture cannot meet the needs of children's continuous physical and psychological growth, and should design a set of furniture that accompanies the growth of children. However, this study only discussed the growability of children's furniture from a shallower level and did not specifically and deeply study the growth characteristics of children at various stages and the changes in needs [5].

After the birth of a child in Western countries, parents have already prepared a children's room for the child. This way of parenting is very different from China. At the same time, the research on children's environment design and home furnishing design in developed countries started earlier, and the research on manufacturing and production and theoretical system research is also relatively complete and mature. In the United States, children's furniture pays more attention to personalized design. Modular furniture design and the concept of multifunction are also very mature [6]. Designers in some parts of Europe, on the other hand, pay more attention to safety, and their furniture pays more attention to environmental protection and health. In terms of materials, natural solid wood is often used. The focus of the design is firstly to understand children's physical and mental development needs, secondly to take children's behavior as a design guide, and finally to help children grow in a safe and comfortable environment, which also reflects the care for children's growth. Therefore, versatility, practicality, and flexibility have become synonymous with foreign children's furniture design. Flexibility means that children's furniture can be flexibly adjusted according to children's growth needs and grow with children [7]. It can be seen that foreign designers have also applied the concept of growth to the design of children's furniture. Although children's furniture rose early in Western countries and had relatively complete theoretical and practical foundations, the main research object is the physiological and psychological characteristics of Western children, which is not fully applicable to Chinese children. Moreover, the design thinking of the growth concept applied to children's furniture has not been systematically summarized and summarized. However, their design research methods and design ideas are still worthy of study and reference by Chinese designers and some local enterprises [8].

In the concept of biology, the word "growth" is summarized as the process of growth and maturation of living organisms from small to large. When "growth" is used as the guide of children's furniture design, it is understood that in the process of children's physical and psychological growth, children's furniture can make corresponding adjustments and improvements according to the changes in their growth, so as to meet the different needs of children, age period requirements [9]. In the article "Research on the Growable Design of Children's Furniture," Liu Bowen mentioned that the design of the growable includes two meanings: (1) *Intuitive Growth*. In order to meet the needs of children's growth, the scale of the furniture can be adjusted freely, such as the extension of length and width. Functionally, it can be extended and transformed according to children's different life states, such as life, learning, or time periods such as

games. The shape can be changed by adding, subtracting, or replacing parts according to the child's preference. Modular design is a good example. (2) *Indirect Growth*. This is a relatively invisible growth, not easy to detect. But this kind of growth has a subtle effect on children's physical and mental effects [10].

## 2. Research Ideas for the Subject

**2.1. Definition of Research Objects.** The term "child" in the United Nations Convention on the Rights of the Child refers to "any person under the age of 1, unless the law applicable to him stipulates that the age of majority is less than 10 years." In the development of psychology, there is a very important research feature, that is, age segmentation. Most psychologists agree that the development of people's lives in different age groups presents different rules, so the age-based research method has become popular and also has scientific rationale. American psychologist Robert Feldman divides it like this: prenatal period (fertilization to birth), infancy and toddler period (birth to 3 years old), preschool (3 years to 6 years old), middle childhood (6 years old to 12 years old), adolescence (12 years old to 20 years old), and early adulthood (20 years old to 40 years old), middle adulthood (40 years old to 60 years old), and late adulthood (60 years old to death) [11]. After reading the relevant psychological works, the author found that the views were recognized by most of the research scholars. The special research carried out from the age group can help the author to carry out the special research. According to the combination of children's growth characteristics and developmental psychology, this subject takes 3- to 12-year-old children as the research object. Because the age group of 0-3 years old is usually called infants and young children, they usually cannot take care of themselves in daily life, and the requirements for furniture are also different, and the age group of 12-18 years old is also called the juvenile chapter, which is a child at this stage. Children aged 3-12 are selected as the research objects, including between preschool and adolescence. There is a big change in the living environment of children at this age, and the center of life gradually shifts from home to school. For children, this stage marks the beginning of formal education, and in this stage, the physical and cognitive development is very obvious [12]. Changes in the status of children, changes in environmental pressure, and changes in the living environment make children's psychology take a qualitative leap. This stage is also an important period of personality development. The research on children at this stage is of great value in guiding the design of children's furniture. Therefore, selecting children at this stage as the research object and analyzing their physiological and psychological characteristics can provide an important basis for the design and research of children's furniture at this stage [13].

### 2.2. Research Methods

**2.2.1. Document Law.** We consult domestic and foreign monographs and periodicals on children's furniture design and children's physical and psychological growth such as

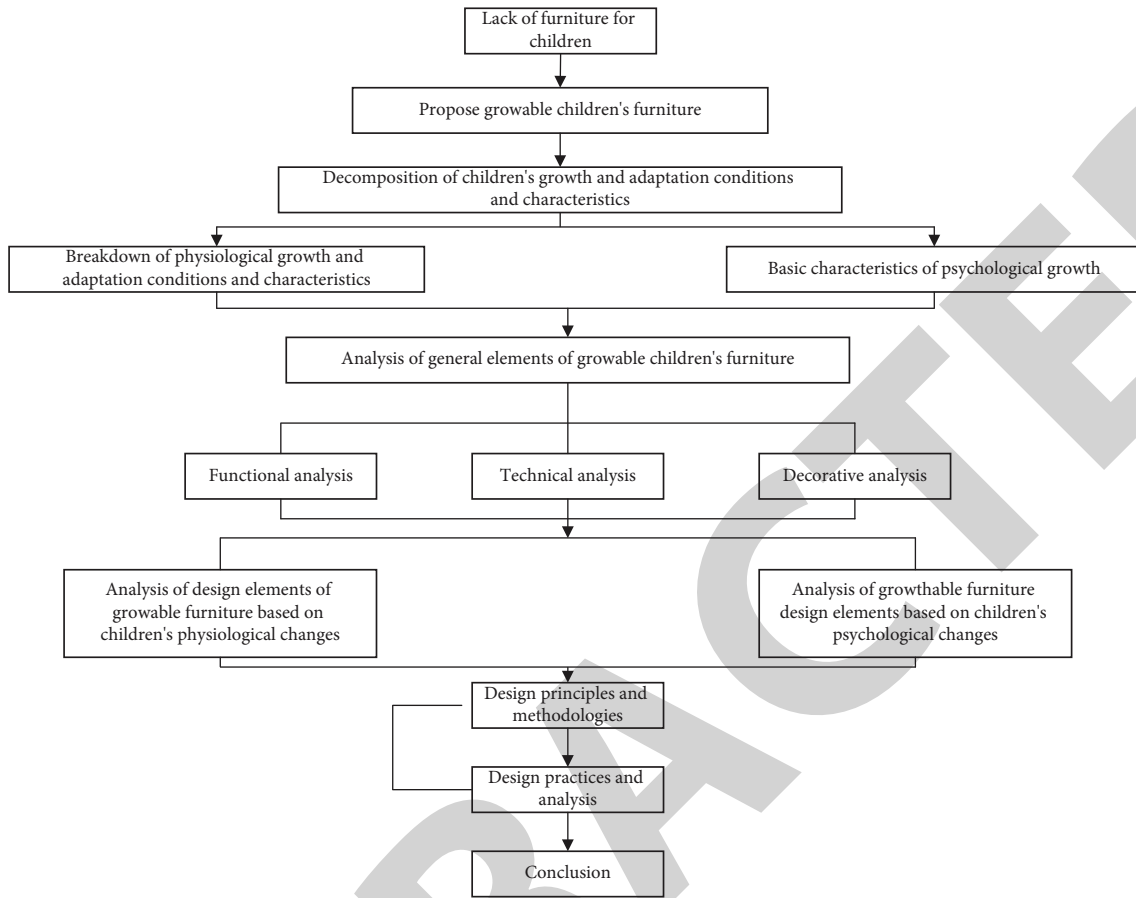


FIGURE 1: Research technology roadmap.

“Research on Contemporary Furniture Design Theory,” “Furniture Modeling Design,” “Introduction to Furniture Design,” and other monographs, as well as “Forest Products Industry,” “Decoration,” “Packaging Engineering,” “International Wood Industry,” “Wood Industry,” “Furniture” and “Interior Decoration,” “Furniture,” and other professional journals and professional websites such as Tiantian Furniture Network and Design Online.

**2.2.2. Comparative Research Method.** We compare different research objects and different themes to design research procedures and methods, and find out the basic ideas and methods of research. In the course of the research, the physiological and psychological characteristics of children in different periods were compared and analyzed to find out their different physiological and psychological characteristics at different ages.

**2.2.3. Deductive Method.** The connotation related to the design of the research object is deduced, and the content of the furniture design work is deduced according to the general principles.

**2.2.4. Induction.** Through the analysis of elements at different levels and different connotations, the basic principles

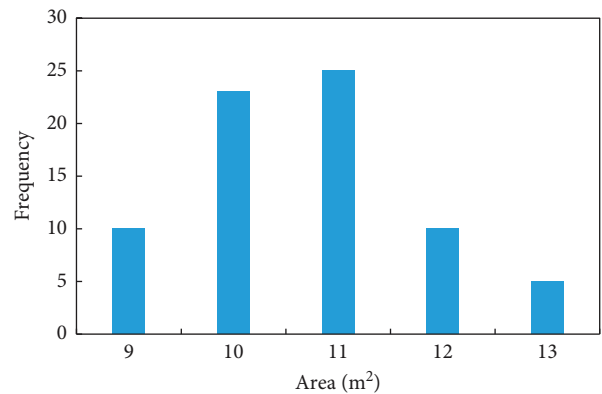


FIGURE 2: Histogram of indoor area of children's room.

and methods of the design of children's furniture that can grow are summarized.

**2.3. Technical Circuit.** The technology roadmap is shown in Figure 1.

**2.4. Research on Children's Room Space**

**2.4.1. Survey on the Area of Children's Rooms.** Here, bedroom refers to the living room. The so-called space is the area

where the specific things that the eyes can see and the hands can touch. The child's room space refers to the room where the child lives. In such an area, it can not only be used to place the furniture used by the child but also provide a certain activity space for the child [14].

Take an ordinary family of three with two bedrooms as an example, such a family will basically arrange a children's room. The area of children's rooms is generally not very large, and most of them are small bedrooms. When consumers buy furniture for their children, they generally configure corresponding furniture items according to the indoor area. Therefore, the small size of children's room should be considered as a constraint factor when designing children's furniture [15]. Through the investigation of the area of some children's rooms in a certain area, the following results are obtained as a histogram, as shown in Figure 2.

In Figure 2, we can see the area of children's room is mainly between 9 and 13 square meters, of which the small area of about 11 square meters occupies most of the room. That is, the space of only ten square meters is often a comprehensive activity place for children to rest, play, and learn.

The design of the children's room affects the child's character and the healthy growth of body and mind to a certain extent. For a small space, how to arrange the children's furniture reasonably and leave a spacious play space for them is a question worth considering.

#### 2.4.2. Division and Layout of Children's Living Room Space.

The quality of the environment affects a person's growth, especially for children in early childhood. In their environment, only the children's room can be arranged and arranged by parents. So for the majority of small-area living rooms, how can a reasonable division and layout create a healthy and safe growth environment for children?

#### 2.4.3. Functional Area Division of Children's Room.

Every young child will perform some essential activities in daily life, such as sleeping, dressing, learning, playing, and so on. According to the needs of these daily activities, we can divide the children's living space into five functional areas, namely, sleeping area—area for sleeping and resting; storage area—area for placing clothes and toys; learning area—area for reading and drawing; game area—area for building blocks and playing games; and communication area—area for communicating with friends. The following mainly starts from the necessity of each functional area, the environment required for the development of children's characteristics, and the cultivation of good habits, and conducts specific analysis and discussion on the above functional areas [16]:

**Sleeping functional area:** the sleeping area is the most important functional area in the children's room. Sleep plays a very important role in human life, especially for young children [17]. Good and adequate sleep quality is conducive to promoting the growth and development of young children and enhancing disease resistance.

The main piece of furniture in the sleeping area is the bed, the place where the toddler can rest and recover. Secondly, other auxiliary furniture can be added according to actual needs, such as bedside tables, which can be used to store books, dolls, etc. Excessive energy during the day makes it difficult for children to fall asleep at night. At this time, a quiet and comfortable environment is especially needed so that children can fall asleep early [18]. The layout of the bed should avoid affecting the sleep of children, such as doors, windows, and objects that stimulate children's vision, or place the bed in an area with weak light to create a good resting environment for children. In addition, parents should guide their children to form good sleep habits from an early age to ensure that children have adequate sleep [19].

**Storage function area:** children will inevitably have many clothes, hats and toys, so the children's room is inseparable from the necessary storage space. Since the children's room itself is not large in size and there are many types of toys, it is very necessary to allocate storage space reasonably. It can be classified and partitioned according to the needs of children's activities, which not only improves the activity efficiency but also makes the room beautiful [20].

Children like to throw and litter, which makes the originally small space more messy and disorderly. If you put a few activity storage boxes in the game area, you can not only summarize many scattered toys but also take them easily when playing. In addition, puppet toys can be placed on the clapboard at the head of the bed, which can be displayed on the one hand, and can be hugged to sleep when the child sleeps; and clothing items can be stored in a low closed wardrobe, preferably both at the same time. The multifunctional locker not only uses one thing for multiple purposes but also frees up more space for the freedom and comfort [21].

**Learning functional area:** when children are three years old, they will enter kindergarten to learn knowledge, and learning will become an indispensable part of their life. Therefore, there should be desks, chairs, and other reading and drawing areas in the children's room.

Early childhood is an important period for the development of speech and thinking, and the development of these mental abilities is closely related to the development of intelligence. Through various learning activities, a large amount of specific and rich knowledge and experience and a higher language level can be accumulated for children, which can promote the development of children's thinking ability and improve their cognition [22]. Attention in early childhood is dominated by highly developed unintentional attention, and it is easy to be attracted by bright and novel things. Therefore, the desk can be placed near the window to avoid objects such as beds and dolls that cause unintentional attention of young children; secondly, the height of the seat should be suitable for

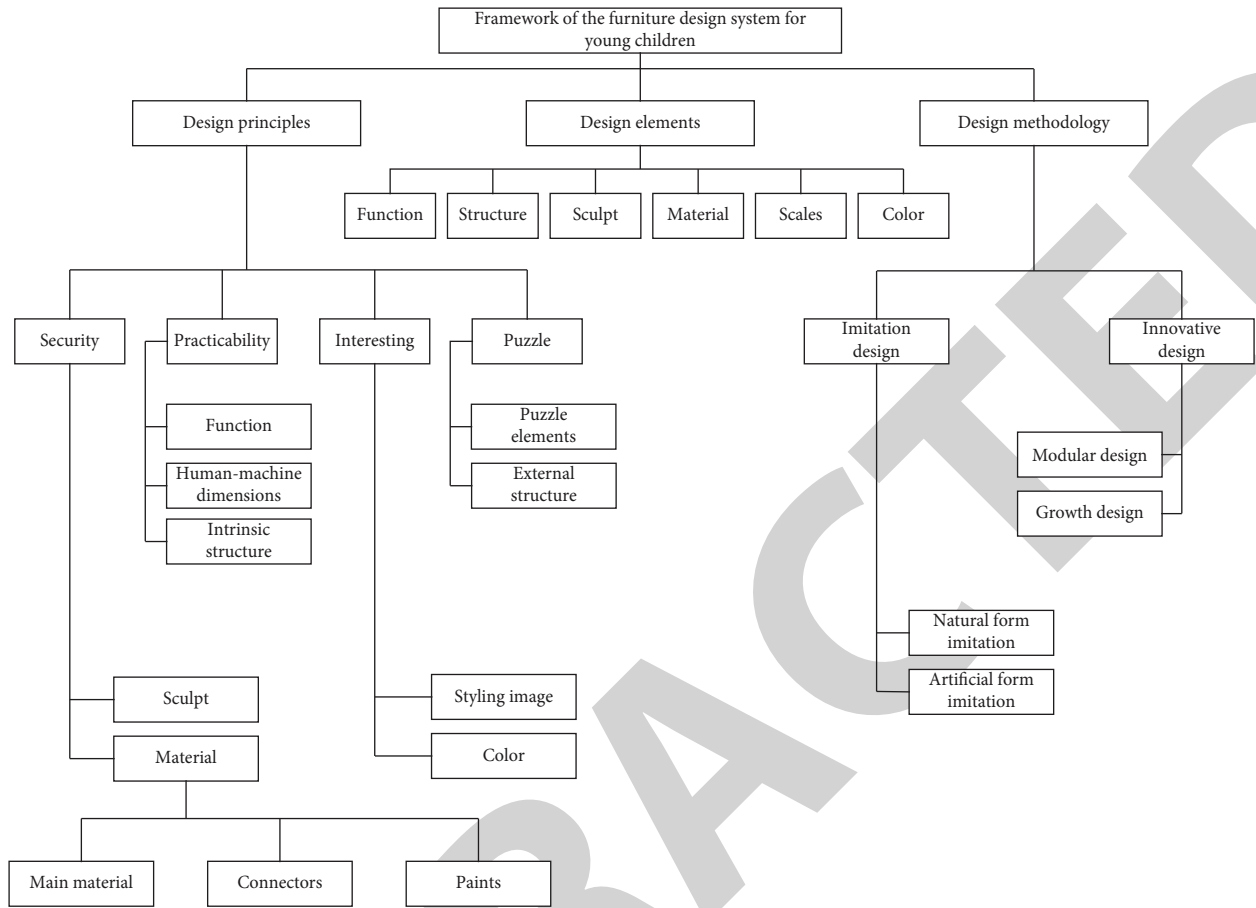


FIGURE 3: Framework diagram of children’s furniture design system.

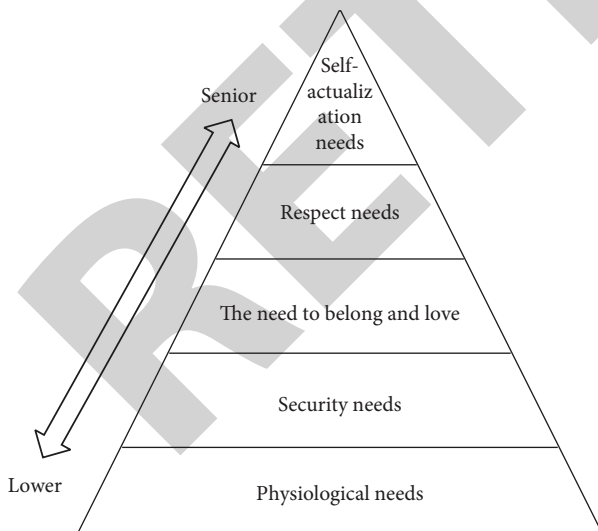


FIGURE 4: Maslow’s hierarchy of needs diagram.

children’s physical conditions, which is conducive to the formation of good writing posture and study habits. A table and chair with growth is a good choice. It can not only adjust the height to meet the growing needs of children but also prolong the use of furniture life [22].

Game function area: Mr. Chen Heqin, a famous educator in our country, said: “Children are born active, and play is their life.” Indeed, play is their most basic and favorite activity, especially for preschool children, the place to play is an integral part of life, so the extra floor space in the children’s room becomes the children’s play main venue.

The lively and energetic nature of young children makes the play area as regular and wide as possible to ensure the safety and comfort of the children’s play environment and avoid unnecessary bumps and squeezes [23]. The play area must be fun and beneficial so that children can enjoy themselves and promote cognitive development. Therefore, some interesting and educational toys can be prepared for young children, so that they can recognize the world around them while playing. In addition, the play area needs a certain storage space to store children’s various toys, such as toy storage boxes can play an excellent role, can be stacked and stored to keep the room in order, and toys can also be classified according to the color of the storage box, which is convenient for children to find. You can also arrange one or two storage boxes with pulleys for children, which can be packed as they play, which can better cultivate children’s good habit of timely storage and do-it-yourself [24].

Communication function area: if the indoor space of the children's room is sufficient, a relaxed communication world can be arranged for the children. This space does not need to be deliberately arranged. It can be a few soft cushions placed on the free ground, high and low steps, or a rippling swing. In this happy and comfortable little world, you can communicate happily with your partners, and you can also tell your parents about your heart and bring closer the parent-child relationship.

### 3. Establishment of Children's Furniture Design System Based on ABAQUS

Because of the guidance of mature theoretical knowledge, furniture designers have designed a large number of furniture products with unique shapes and different styles. The design of children's furniture started late, and the design system of children's furniture still needs to be improved and developed. The practice has proved that only with systematic and perfect theoretical guidance, it is possible to design good furniture products, and the same is true for children's furniture design. Figure 3 shows the frame diagram of the children's furniture design system.

#### 3.1. Design Principles of Children's Furniture

**3.1.1. Security.** Safety is one of the indispensable design principles in product design, and it is also the first principle of furniture design for children. Products are designed for people, and ultimately serve people, to ensure that people are safe and pleasant in the process of use. If a commodity does not even have the most basic safety guarantee, no matter how good-looking it is, it has no real use value, and there is no market. In recent years, the safety of children's furniture has been frequently exposed on the Internet, TV, newspapers, and other media. The health and safety of children cannot be guaranteed, which makes parents feel confused and worried when purchasing furniture. In view of the safety problems existing in the use of children's furniture, some parents choose to buy it in advance, while others use thick and soft accessories to hide the places with potential safety hazards. The style turned to the safety and environmental factors of furniture to ensure that children grow up in a healthy environment. According to the current market research data, there are certain safety hazards in children's furniture mainly in terms of materials and shapes.

Figure 4 shows the schematic framework of Maslow's hierarchy of needs theory. Maslow puts people's physiological needs at the bottom, indicating that this is the foundation and guarantee of all human activities, and puts safety needs at the penultimate level, that is, on the premise of ensuring that people are fed, clothed, warm, and sheltered well, and people's safety will be the number one need. Scholars such as Xu Deshu have different views on this and especially believe that in today's world, Maslow's hierarchy of needs theory needs to be revised.

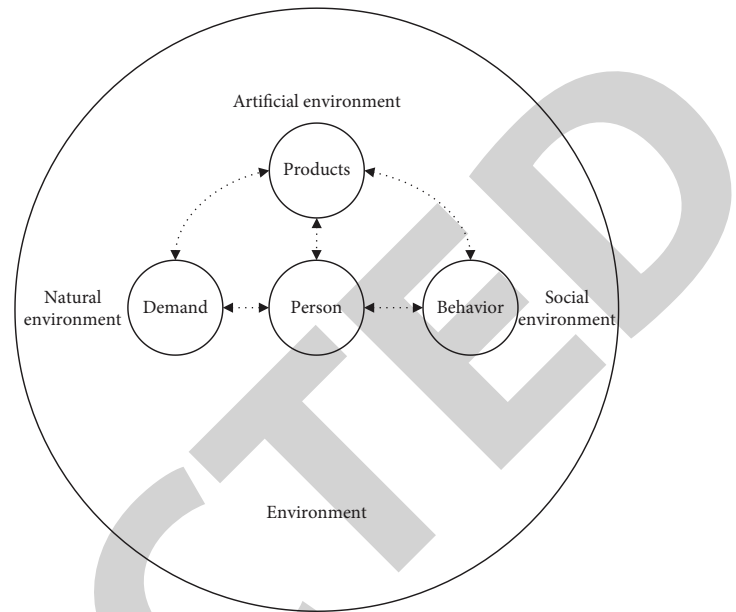


FIGURE 5: Complete human-machine system.

**3.1.2. Practicality.** Buying furniture for young children is not only about the aesthetics of the bedroom, but the practicality of the furniture is also very important. Here, practical means that the furniture must have a variety of perfect functions and ensure that the use of the furniture is maximized. For children in early childhood, furniture should first meet its own direct use, meet the physical and psychological needs of children, and be sturdy and durable, children's different use requirements, so as to create a comfortable and convenient environment for learning and life [9]. The practicality of children's furniture is mainly considered from three aspects: function, size, and structure.

**3.1.3. Interesting.** In addition to meeting people's basic functional needs, furniture should also reflect modern people's needs for visual and psychological aesthetics such as novelty, strangeness, and fun. Children are often curious about interesting things and yearn for beautiful and novel things. We can design interesting furniture according to this characteristic of children. The interesting design of children's furniture, generally through the use of imitation, abstraction, deformation, and other methods, reflects the things in nature and real life into the furniture, so as to satisfy children's curious childlike psychology, thereby bringing more happiness and surprises to children, to create a relaxed and happy living atmosphere. The fun of children's furniture can be reflected in the shape and color.

**3.1.4. Intellectual Property.** For young children, everything in the world is novel and interesting, and there is a lot of knowledge that they need to learn and master. According to child psychology researchers, 95% of young children can acquire more knowledge and skills in the atmosphere of the play. In early childhood, the main daily activity is games, and the furniture that accompanies them to grow



up will also become part of their entertainment games. It can be seen that furniture also plays a positive role in children's puzzle and inspiration. Early childhood is an important period in the development of various abilities in a person's life. At this time, children have a wide range of interests and hobbies, and their curiosity and thirst for knowledge are strong. It is the best and fastest period to absorb knowledge and learn various skills. Therefore, in the functional design of furniture, while the furniture meets the needs of children and the appearance is beautiful, we can fully consider how to allow children to acquire cognition, develop intelligence, and accelerate various intelligences in the colorful environment stimulation and simple and pleasant furniture operation, and the development of nonintellectual factors, such as attention, observation, spatial imagination, logical thinking, hands-on ability, hand-eye coordination, social skills, and so on. Young children are lively and active, their self-control is still in the developing stage, and they cannot keep a long focus on something or something. Therefore, in the process of furniture design for children, according to this characteristic of children, various knowledge, such as different shapes, colors, and numbers, can be subtly integrated into furniture products, and at the same time, the furniture should be full of interest, so as to stimulate children's interest and arouse their attention, and to cultivate their good habit of love to learn.

*3.2. The Application of Ergonomics in Product Design.* In product design, the most important point is to make the product match the physiological characteristics of human beings; otherwise, it will cause the product to be unsmooth and even cause harm to people. The significance of ergonomics for product design is as follows: first, it provides human-scale parameters for the consideration of "human factors" in industrial design. The study of ergonomics provides data such as human body structure scale, human physiological scale, and human psychological scale for product design to comprehensively consider "human factors," which can be effectively used in product design. The second is to provide a basis for the functional rationality of "products" in product design: how to optimize the various functions of "products" related to people and create "products" that are in harmony with people's physiological and psychological functions, and it is a new topic in the functional problem of today's product design. The third is to provide design guidelines for considering "environmental factors" in product design: by studying the human body's response and adaptability to various physical factors in the environment and analyzing the impact of environmental factors on the human body's physiology, psychology, and work efficiency. Figure 5 is a schematic diagram of the complete human-machine system.

The definition of safety ergonomics is an emerging discipline that uses the principles and methods of ergonomics to solve the safety problems of the human-machine interface from the perspective of safety. As a branch of the applied discipline of ergonomics, it takes safety as the goal

and ergonomics as the condition, an important branch. Human refers to the person who is active, that is, the security subject; machine is a broad sense, which includes labor tools, machines (equipment), labor means and environmental conditions, raw materials, technological processes, and other substances related to people.

Specifically, the task of safety ergonomics is to provide engineering technical designers with reasonable theoretical parameters and requirements for the human body, such as (1) the comfortable range of human work (optimal state); (2) the allowable range of the human body (guarantee work efficiency); (3) the safety range of the human body (minimum and environmental requirements that will not cause harm); and (4) how all safety protection facilities adapt to various human use requirements:

- (1) The research scope and content of safety ergonomics mainly include the following aspects:
  - (1) Study on the various characteristics of people in the human-machine system. The characteristics of people in the human-machine system refer to the physiological characteristics and psychological characteristics of people. Physiological characteristics include human morphological skills, static and dynamic human scales, human biomechanical parameters, human information input, processing, and output mechanisms and capabilities, and physiological factors for human operational reliability. Psychological characteristics include people's psychological process and personality psychological characteristics, people's psychological state during labor, psychological factors of safe production, and analysis of psychological factors of accidents. These characteristics are the basic theoretical part of safety ergonomics and the main basis for solving safety engineering technical problems.
  - (2) Research on the rational distribution of human-machine functions. The main contents of this research are as follows: the respective functional parameters of human and machine, the adaptability and the conditions for exerting their functions, and the methods of human-machine function allocation in various human-machine systems.
  - (3) Research on various human-machine interfaces. Human-machine interface is the field in which human-machine contacts or interacts with each other in information exchange or function. The main contents of the control human-machine interface research are as follows: the matching of machine displays device and human information channel characteristics, the matching of machine manipulator and human motion characteristics, and the matching of display and manipulator performance, so as to research different systems. For the tool-like human-machine interface with the largest number in the field of life and production, its applicability and comfort are mainly



studied, that is, how to make it match the shape function, size range, feel, and somatosensory of the human body. For the environment, it mainly studies the impact degree, threshold range and control methods of the physical environment, chemical environment, biological environment, and aesthetic environment of the operation on people. For special environments, it is also necessary to study the human life support system.

- (4) Research on operation methods and workload. The research on working methods includes the research on working posture, body position, force, working order, reasonable working tools and work card measuring tools, etc. The purpose is to eliminate unnecessary labor consumption. Workload research mainly focuses on the measurement, modeling (using simulation technology to establish biomechanical models of various operations), and analysis to determine the appropriate workload, work rate, schedule, and study work fatigue and its safety, production relations, etc.
  - (5) Analysis and research of work space. The main research is on the space range required to ensure safe and efficient operation, including the best viewing area for people, the best working area, the least assembly time, and the minimum safety protection range.
  - (6) Research on accidents and their prevention. According to a large number of foreign statistics, nearly 80% of accidents are caused by human error. Therefore, the research on accidents and their prevention is not only the foothold of safety ergonomics but also its fundamental purposes such as human factors, human error analysis, and preventive measures.
- (2) The application of ergonomics in the design of children's furniture:

In the design of children's room environment, it is necessary to consider its functionality from the perspective of ergonomic "human factors," furniture scale, and visual quality. In terms of furniture scale, children are small and grow quickly, so there are special scale requirements for the choice of children's furniture design. In the design of children's furniture, it should pay attention to the following issues:

- (1) The height of the furniture should be suitable for children, so that their hands can reach the things on it. For example, the height of the clothes rail in the wardrobe should be suitable for children to take it.
- (2) The doors and drawers of the cabinet should be easy to push and pull, and not too tight; otherwise, the child will lose interest; the size of the drawers in the wardrobe should also be in line with the child's usage habits.

- (3) Tables and chairs should conform to ergonomic principles, so that children can develop good sitting and lying habits. The discomfort caused by poor sitting posture and furniture will affect the healthy development of children. Flexibility is also a practical aspect. Children are always growing. When buying children's furniture, we pay attention to whether the furniture can be used continuously. The sustainable use mentioned here does not refer to the service life of a set of furniture, but to meet the needs of children in various growth periods, and will not lose practicality due to age. For example, you can choose desks and chairs that can be adjusted in height to suit the needs of children's growth.

#### 4. Summary

At present, the children's furniture industry is still in an immature stage. The concept of artificial intelligence also needs to be continuously researched and summarized. The application of mature artificial intelligence concepts in children's furniture design is not only conducive to the development of children's physical and mental health but also to the cultivation of their creative ability, hands-on ability, and parent-child interaction, and communication has a certain promotion effect. The application of its concept in the design needs to start from the two aspects of children's body and mind. The design principles proposed in the article must also be based on the standardization of furniture and hardware components. Through the research on children's furniture design, the design theory of artificial intelligence concept provides a theoretical reference for the design of children's furniture. At the same time, in the future design of children's furniture, designers should consider how to improve the quality of children's furniture, reduce the cost of children's furniture that can be grown, and, from the perspective of children, to truly serve children and create for good living environment for them.

#### Data Availability

The dataset can be accessed upon request to the corresponding author.

#### Conflicts of Interest

The authors declare that there are no conflicts of interest.

#### Acknowledgments

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