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Study on the Design Method of Montessori Educational Kindergarten under the Perspective of Preschool Education

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Abstract

Kindergarten, as an important carrier for children's transition from family to society, is a place for the development and practice of preschool education, and plays a role that cannot be ignored in today's preschool education. Therefore, it is of great practical significance to implement the achievements of contemporary excellent early childhood education concepts into the architectural design of kindergartens. In recent years, Montessori's educational philosophy has attracted widespread attention in China. The Montessori teaching method is based on early childhood education, early childhood psychology, physiology, and other aspects. Its core theory coincides with the domestic concept of quality education, and has become a key topic of preschool education in the Ministry of Education. The purpose of this paper is to effectively integrate Montessori education concepts with kindergarten design and provide theoretical support for kindergarten design. Montessori's educational philosophy specifically elaborates on the natural development concept, sensitive period education, and sensory education of young children. These concepts are embodied in the "environmental education" aspect of kindergarten architectural design. By creating indoor and outdoor environments suitable for children's development, arranging rich functional spaces, and designing reasonable scales, colors, and shapes, children can develop freely in a "prepared environment".

Keywords

Montessori education, kindergarten design, young children

Introduction

In recent years, with the development of national education, the investment in early childhood education is also increasing. With the in-depth implementation and development of quality education in China, how to cultivate children's world outlook and values from an early age, and guide their all-round development of moral character and knowledge has become the focus of national education. As a result, there are new requirements for the development of early childhood education. At present, although there are many middle and high-end kindergartens in China that introduce advanced educational concepts into kindergarten and early childhood education, most kindergartens either only sell dog meat on the head of sheep, or simply use educational concepts without integrating them with the environmental creation of kindergartens, and do not bring into play the auxiliary role of space in early childhood education. Therefore, it is worth exploring how to combine education with kindergarten design to provide a good environment for early childhood development.

1. Montessori education concept and the development of Kindergarten in China

1.1 Montessori education concept in the development of early childhood education in China

In the early 20th century, the concept of Montessori education began to be introduced into China, and in the 1980s, the "Montessori" education boom was set off in kindergartens in China. In recent years, Montessori teaching method and on the basis of Montessori education concept of preschool education model gradually introduced domestic, its unique education concept, flexible teaching methods, humanized environment layout and remarkable education achievements, increasingly by China's preschool education, kindergarten and parents, children. With the reform of China's education system, the concept of Montessori education and quality education happen to coincide, and a large number of Montessori kindergartens appear like bamboo shoots after a spring rain. However the kindergarten of the good and bad are intermingled, some fully understand the essence of Montessori education concept, truly provide children with a home, paradise of life, learning environment, although some kindergarten in the use of Montessori teaching method and related teaching AIDS, but not deeply grasp its core idea, even some kindergarten just in the name of Montessori, expensive fees into the garden.

Therefore, how to truly understand and understand the core theory of Montessori teaching method, and avoid the mistake of blindness and copying in using and applying Montessori teaching method, is an important topic that we should study and discuss from the Montessori teaching experience at home and abroad. For kindergarten designers, our important responsibility is to provide children with a realistic material and human environment of continuous development and progress, a "prepared environment" advocated by Montessori. Therefore, it is necessary to establish a mature Montessori kindergarten design model, summarize and summarize the kindergarten design method based on the Montessori education concept, so as to promote the standardized, systematic and professional development of domestic kindergartens (Gong Weixin, 2022).

1.2 Existing problems in kindergartens in China

1.2.1 Uncertainty of the scale

In order to ensure that the architectural design of kindergartens meets the basic requirements of use, safety, health and other aspects, kindergartens have new requirements in scale according to the Code for Architectural Design of nurseries and Kindergartens, as described in Table 1 below. However, in many modern kindergartens, the scale situation and quality of the number of classes are uneven, and the scale of most kindergartens is not up to the standard. When the quality of the kindergarten is uneven in the class size, the number of people in the kindergarten exceeds the number stipulated by the state. Schedule 2 shows the requirements of the number of each class in the Code.

Table 1. Scale of kindergartens

scale	Classes (class)
small-sized	1~4
medium-sized	5~9
large-scale	10~12

Table 2. Requirements for the number of kindergarten classes

name	Class don't		Number (person)
nursery	Milk son class		10~15
	To class two	Small, middle class	15~20
		the top class in a kindergarten	21~25
nursery class	the bottom class in a kindergarten		20~25
	the middle class in a kindergarten		26~30
	the top class in a kindergarten		31~35

1.2.2 Base site selection

Kindergarten is a place for children to grow up and learn, providing a healthy and good environment. The site selection should ensure sufficient sunshine, convenient transportation, smooth site, smooth drainage, beautiful environment, perfect infrastructure and so on. However, looking at the current rising kindergarten construction, there have been some phenomenon of random site selection in order to save costs, which can not create a good environment for children.

1.2.3 The architectural shape lacks children's characteristics

The architectural shape of many kindergartens in China is simple and boring, and lack of detailed design. Some kindergartens even directly use large glass curtain walls or cement concrete and other materials to impose the adult aesthetic on children's buildings, so that children can not intuitively feel the affinity of kindergarten buildings.

1.2.4 Lack of indoor environment

Many kindergartens in China do not achieve humanized and interesting design in the design of the indoor environment of kindergartens. Even in many kindergartens, even the most basic facilities are not up to the standard, and the basic children's living units in kindergartens are not fully equipped. In the indoor heating, ventilation, drainage, the use of light, color collocation, the use of materials and other aspects are also lacking.

2. Enlightenment of Montessori educational concept to kindergarten design

Kindergarten architectural design bears the function of "space education", which is the concrete embodiment of the educational concept in the space environment, and is an important auxiliary way to implement and implement the educational concept.

Montessori said: "Children's physiological embryos have gradually formed in the mother, while the mental embryos begin to develop from birth."At this time, children's brain consciousness is still in a blank stage, but it can actively and actively draw from the environment the sensory impression of various things in the surrounding. Montessori emphasized the importance of early environmental experience for early childhood development, especially a great influence on intellectual development, she thinks: "children's psychological development is not pure internal mature, is not a direct result of environmental education, but the interaction with the environment," is "through the experience of the environment", she advocates for children to provide a "prepared environment", which conforms to the children's physical and mental development of the real environment. According to Montessori, the primary task of education is to "let young children develop naturally in an appropriate environment". The purpose of preschool education is not only to instill preliminary knowledge to children, but also to provide children with muscle training, sensory training and simulation training of actual life scenes. Therefore, how to be is an important topic of kindergarten design. Therefore, according to Montessori's education concept, how to set the living and learning environment for children of different ages to meet their internal needs and different interests, and induce children to study actively and spontaneously, and work independently, is a systematic project.

3. Impact of Montessori educational concept on kindergarten design

3.1 Application in indoor activity units

The activity unit of the kindergarten is equivalent to the living room of children. In addition to meeting the physiological needs of children, it should also provide children with enough spacious space for activity. Montessori believes that the development of children's psychological embryos must absorb nutrition from the surrounding environment. At this time, although children's brains are in a blank, they naturally have a positive and active ability to draw sensory impressions of various surrounding things from the environment. At the same time, she also put forward: "The sensitive period is the key period for children's learning, and it is the special vitality that nature gives human life only again." How to use this effective driving force to help children grow up perfectly is our responsibility. However, the time and way of each child's sensitive period are not exactly the same. When teachers observe the emergence of the sensitive period of children, they should try to provide an environment that can meet the needs of growth. Therefore, Montessori education concept of the kindergarten activity unit put forward higher requirements, in the design of the kindergarten activity unit, we should decorate colorful learning space, through the division of different functional partition, create suitable for children's inner needs and interest and can induce children's

spontaneous learning active work environment, using Montessori teaching AIDS, according to the properties of the object design of various series of hierarchical procedural AIDS and auxiliary materials, so that children free choice, independent operation and self education, make children get the development of knowledge, skills and various abilities (Ren Zhiqi, 2018).

3.2 The application of characteristic education rooms

Montessori believes that education should not only be carried out in separate class activity units, but should be carried out in a comprehensive living and learning environment. Kindergarten is not only a community centered on teaching children knowledge, but also should provide special living and learning environment for children, so that children can obtain daily life education, sensory ability cultivation and natural and humanistic cognition in learning. Therefore, in addition to the kindergarten activity unit, there are also special functional activity areas to be set up, such as art handicraft room, book reference room, social cognition room, sensory integration training room, scientific discovery room, building block construction room, etc. The setting of these areas can not only provide the needs of children's activities, but also increase the communication between children.

3.3 The use of communication space

Montessori's educational concept emphasizes the importance of children's social development. She believes that a full environment should be prepared for children, which includes not only the material environment for children to grow up, but also the humanistic environment for children to communicate with adults and peers. Among them, Montessori believes that children's group communication is a very important phenomenon. Children of different ages communicate with each other and help each other, and there is a natural spiritual "penetration" between them.

Montessori advocates social relations in young children. Full freedom should be given, only if it with the rights of others. At the same time, the development of China's urbanization makes the city increasingly expanded and crowded, people's residences are more and more far away from nature, and the fields, forests, flowers, birds and fish, the only child living in high-rise buildings is more difficult to contact and communicate with other children. Therefore, the needs of children's social development should be taken into account in the design of kindergartens, and the communication space between children should be set up to truly provide a "prepared environment" for children (Malan An, 2021).

3.4 Application in outdoor activity venues

Outdoor space design in the kindergarten ensures that children can get three baths (sunshine, air, water) exercise; in the supporting environment design, provide more game facilities for children to carry out public games, running, splashing, swimming and other activities. Montessori education concept emphasizes the importance of sensory education. In the outdoor activity area, body control and coordination movement training items should be provided, such as balance beam, climbing frame, seesaw, swing and other outdoor activity equipment to control body and coordinate movements. At the same time, Montessori pays special attention to the cultivation of children's common sense of daily life and ability. It uses the plots in outdoor sites and combines with greening, setting up breeding corners, plantations and other places to provide children with life experience (Fang Kun, 2019).

3.5 The application of color design in the kindergarten

In Montessori's educational philosophy, the importance of sensory education for young children is emphasized. She believes that young children's cognition of the world around them begins with sensory perception. Only with sensory perception can we acquire the experience about the objective world, and then develop into advanced and complex psychological activities. Sensory perception mainly includes vision, hearing, smell, taste, touch, and spatial and temporal perception, in which visual activity predominates. Color is everywhere in the children's world, and it is an important component of the architectural environment of the kindergarten. Color design directly affects the children's psychological development. Such as red, orange and other bright colors can stimulate children's psychology, effectively improve their creativity. However, if the face of the stimulus for a long time color will cause nervous tension, resulting in children's lack of security and even violent tendency. At the same time, blue, green and other cool colors can let children keep a quiet mood, but long-term monotonous contact may cause depression and introversion. Thus it can be seen that color design will have both positive and negative effects on children's

growth. Only through scientific and reasonable color design, seeking advantages and avoiding disadvantages, can it effectively play its positive significance in children's growth.

3.6 The application of architectural modeling design

Montessori says the kindergarten "has to be like a home." Home represents safety, warmth and love in children's psychology, so the building in line with children's psychological scale should be small, warm and aesthetic. At the same time, in Montessori's concept of shape perception is children's understanding of geometric figures or object forms. Shape perception is mainly reflected in the modeling design in the kindergarten architectural design, and it is an aesthetic form directly perceived by children.

3.7 Case analysis of "Colorful whirlpool" kindergarten

"Colorful whirlpool", designed by UDG, is located in the residential area of Wuxi Huishan Champs Elysees Garden, with three floors. The elliptical spiral circular rise is the design feature of the kindergarten. The staggered retreat platform, lifting and circular ramp together create a 3D three-dimensional outdoor activity space. The design of flow forms a dynamic relationship with the surrounding road environment, integrates the landscaping design elements into the architectural shape, separates the urban space from the kindergarten, and creates a natural and green children's activity space. Spacious outdoor activity space, adequate indoor sunshine and lively and bright color collocation are not only an ideal learning and growth environment, but also a mysterious place for exploration. As shown in Figure 1.

(a) (b)

(c) (d)

Figure 1. "Colorful Virlpool" Kindergarten.

4. Conclusion

This article aims to provide a comprehensive and livestock-rich activity space as the starting point, and analyzes the rationality of kindergarten design through the design of the architectural appearance, the use of color in the design, the description of kindergarten architectural specifications, and the use of light environment. Showing the dawn of kindergarten design in China through case studies, designers have created a healthy and joyful growth environment for children from aspects such as architectural modeling, indoor and outdoor space greening and enclo-

sure, and color matching, while ensuring practicality, safety, and standardized design. Through the analysis and in-depth understanding of Montessori's educational philosophy, I have also gained a deeper understanding of the importance of current excellent early childhood education concepts for children's growth. Therefore, in the design of kindergartens, I also affirmed the important guiding role of excellent early childhood education concepts in kindergarten design. Kindergarten, as one of the necessary environments for children's growth, is not only a building, but also needs to reflect the care and warmth for children through "spatial environmental education", providing children with an important carrier from family to society to meet their comprehensive physical and mental development.

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