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Practice and Thinking on the Architectural Design of Kindergartens in Jingkai District of Nanchang

Xi Chen^{1, *}

¹ Department of Civil and Architecture Engineering, Jiangxi Science and Technology Normal University, NanChang, Jiang Xi, 330000, China

*Corresponding author's e-mail: 12770787@qq.com

Abstract. Based on the concept of "focusing on children's development", this paper discusses the architectural design of kindergarten in Jingkai district of Nanchang, and from the aspects of architectural form, shape combination, architectural color, space extension and landscape greening, four design methods are proposed: "FOLD"—variations in heights; "COURTYARD"—multi-tiered enclosure structure; "COLOR"—color interspersions; "GREEN"—green surrounding.

1. Introduction

Kindergarten, as the first place for children to receive education, is of great significance to the formation of children's character, the establishment of cognition and the formation of learning methods. With the shift of the preschool concept to "child-centered development" and the increasing demand of urban residents for the quality of kindergarten space, to design a kindergarten with abundant, open and lively space in accordance with children's preference is the direction of exploration and practice for designers in their respective design fields.

At present, domestic kindergartens adopt the mode of grouping education, which limits the current vitality of kindergarten education space, and the relatively closed class units result in the lack of communication among children of different ages.

In contrast to the small space for activities, which is not suitable for children's running and jumping games, and the insufficient space for outdoor activities, where children cannot get close to nature, in the design of kindergartens in foreign countries, designers often create various interesting spaces to attract children's participation or leave them at the disposal of children; Extend the space with glass or low wall; pay attention to the change of children's sight and attention. At the same time, the architectural design of the complex details of the design also spare no effort, and the concept of green building is fully reflected in the kindergarten.

2. Project profile

The construction site is located in Jingkai district, Jingkai district, Nanchang, Jiangxi Province. The base is bounded by Beishan road in the south, urban planning road in the East, internal road of Baishuihu School district in the West, undeveloped land in the north, and Baishuihu school in the West, peripheral residential area more convenient transportation, the total planning area of 7161.04 square meters. The construction scale is 12 classes for young children. As shown in figure 1.





Figure 1. Aerial view of the project

3. Design Concept

3.1. design philosophy

One side of the green grass, bearing the childhood of parents; now, the reinforced concrete forest, deprives children of their right to get close to nature. The author hopes to put aside the complicated forms in traditional kindergartens and apply them in a friendly and natural state. The use of "FOLD"—variations in heights; "COURTYARD"—multi-tiered enclosure structure; "COLOR"—color interspersions; "GREEN"—green surroundings--can bring children the opportunities to get close to nature and genial feelings of space. I hope that every child can fully experience nature and society, and eventually become himself.

3.2. planning and design

The program takes full account of the features of the terrain, combines the design of the terrain, and makes full use of the south-facing width of the terrain. Teachers' offices and other functional rooms are located on the east side and are arranged in sequence along the planning road. At the same time, taking into account the southern side of the plot for the city's main road North Mountain road, relatively noisy, relatively large noise. Therefore, the outdoor activity site is relatively concentrated in the south of the layout, to reduce the disturbance of the outdoor environment. This not only enriches the city landscape of Beishan road, but also makes the kindergarten have a quiet and beautiful inner courtyard. As shown in figure 2.

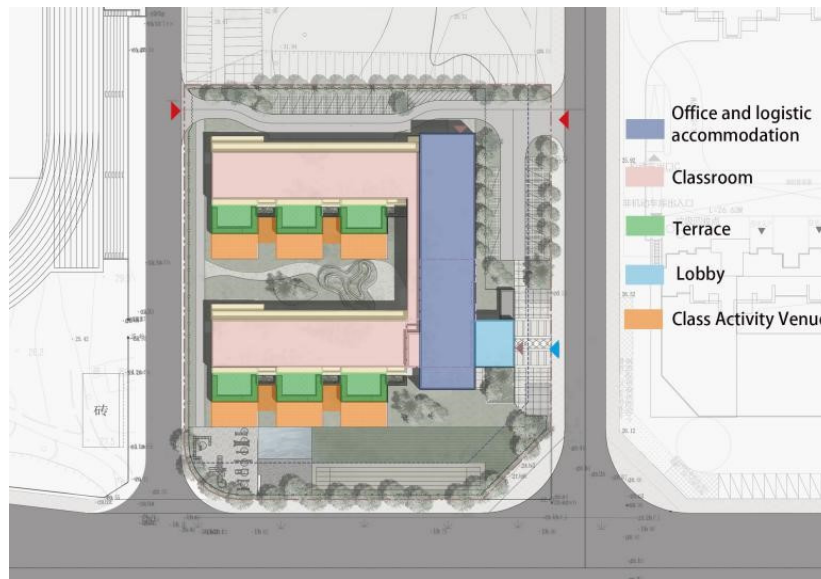


Figure 2. Functional division

3.3. design strategy

Taking the weather in Nanchang into account, the author adopted a courtyard-style layout, the building form is surrounded into a courtyard to avoid the dominant wind direction, so the entrance is set in the east, and then natural zoning are produced. In the form design, the author avoided the traditional kindergarten complex form, instead, adopted simple and friendly natural state. The use of "Building Blocks" --"FOLD"--variations in heights; "COURTYARD"--multi-tiered enclosure structure; "COLOR"--color interspersions; "GREEN"--green surroundings-- in order to bring children the chances to get close to nature and interesting space feelings.

3.3.1. *"fold"*. In the architectural design, the author has fully considered the children's physiological and psychological characteristics, which highlighted the building block matrix; using the "stack" of "building blocks" (figure 3) to make the building shape high and low, concave and convex, the space of the building is varied orderly.

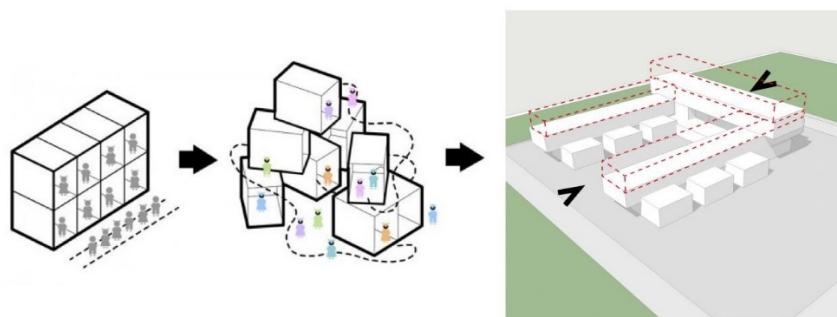


Figure 3. Building block generation diagram

3.3.2 *"courtyard"*. In the plane design, the author takes "practical and virtual-avoided" as the characteristic, reasonably arranges the virtual-real relation of the building, encircles the complete and open courtyard. The courtyard highlights the north-south sequence of the kindergarten and is transformed into another large open square courtyard. The sequence of courtyards not only provides children with a variety of activities, but also enriches the landscape of the whole kindergarten. On the premise of meeting the requirement of daylighting, the virtual surface of the building is reduced, the thermal insulation performance of the building is guaranteed, and the effect of energy saving and

emission reduction is achieved. In addition, through the interspersed corridor and courtyard, the architectural space changes abundantly and orderly, forming an orderly visual corridor.

In the space expansion, the author is also very concerned about the use of roof space, the first floor roof platform is designed as the second floor classroom class activity site, thus forming a vertical courtyard. The use of outdoor space is the main child, so in the design of the first to be "child-oriented". The children like to move freely in the ample space, but in the limited space of the kindergarten, expanding the roof activity space has become a very effective way. For example, the kindergarten of century China city community in Huaiyin District of Jinan uses the roof as an open activity place for children. The roof platform is formed in the middle part of the building through the movement of two forms, and the second floor roof is also used as a activity platform, the second floor platform connects the class units on both sides and the first floor platform, the first floor platform connects the first floor activity area and the second floor public game space, the staggered space is connected by stairs, and the roof can be reached from the garden and the Interior, to form a complex rich level of space for children to create a space full of interesting changes. [1] The site of this project is located in the Baishuihu School in Jingkai district, Nanchang. Considering the later development of the school, the construction site of the kindergarten will be relatively reduced and the site will be relatively tight. Therefore, in this project, the author considers to use the back desk design, the class activity area is designed in front of the activity unit. The first floor roof platform is used as the terrace, as shown in figure 4. The Flower Pond and nursery are designed on the terrace to cultivate the children's hands-on ability and enhance their knowledge of plants. In addition, the design of off-table roof also reduces the occupation of public green space, reflecting the concept of respect for nature, improving the quality of the kindergarten.

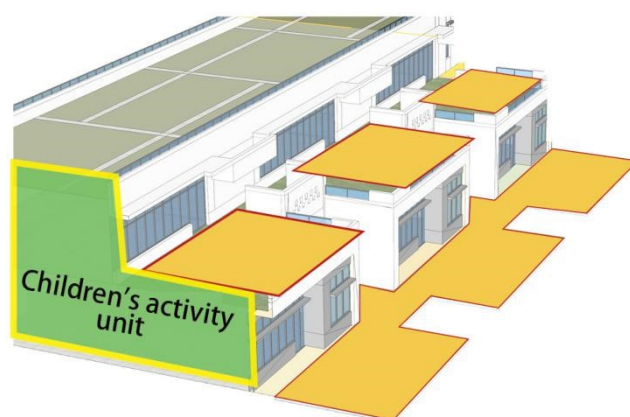


Figure 4. Schematic diagram of second floor backout

3.3.3. "color". Young children tend to like bright, high purity of color, and have a certain preference for warm colors, but when the space is filled with more than 4 kinds of high-quality colors, it will cause emotional tension and anxiety, and fell into the mistake area of overdesign of color .[2] In the design process of traditional kindergarten buildings, we usually do not pay attention to the children's psychological needs for color, and use high-brightness, high-saturation color and large-area flat painted bright color expression; generally the three primary colors are red, yellow and blue, the general lack of creative design, and the use of color has no law, the pursuit of color blind form. In view of this, the author restrained the use of color, only selected orange, blue and lemon yellow three colors, on the basis of white on the construction of the local use of these high-contrast, complementary color as an auxiliary color, enhance the overall color sense of the building environment, showing a dynamic, bright, healthy visual impression. For example, the Teaching Unit volume highlights the impression of the building blocks through these three colors, improving the children's recognition of the classroom. In addition, in order to design fresh and unique, colorful visual feeling, the author of

the south facade part of the glass made of stained glass, enrich the whole facade shape, enhance the kindergarten lively feeling. At the same time, through the change of the different windows, the scattered blocks and the setting of the components can enrich the children's vision, making the building full of children's fun. As shown in figure 5.



Figure 5. Exterior view

3.3.4. "Green". In the environmental landscape design of the park, the author divides it into three parts: Open space, transition space and relative private space landscape. (figure 6) The open space is located at the main entrance on the east side of the site, facing the urban road, which acts as an isolation and interaction in the design, with the open public green space separating the urban noise from the building, to provide a safe and comfortable transport space for students and their parents. The transition space is a semi enclosed courtyard space formed by the connection of two class units and service rooms, located in the central part of the site, away from the city road, providing a quiet and safe activity space for young children, to expose the children to the outdoors. Private space for each class is outside the class activity site, each classroom activity site of the flower pool and nursery settings for young children to provide a more private independent, personalized green space. Through this layer of green around the layout of the space so that children in free play while feeling the nature of the texture, color, space and the shape of objects.

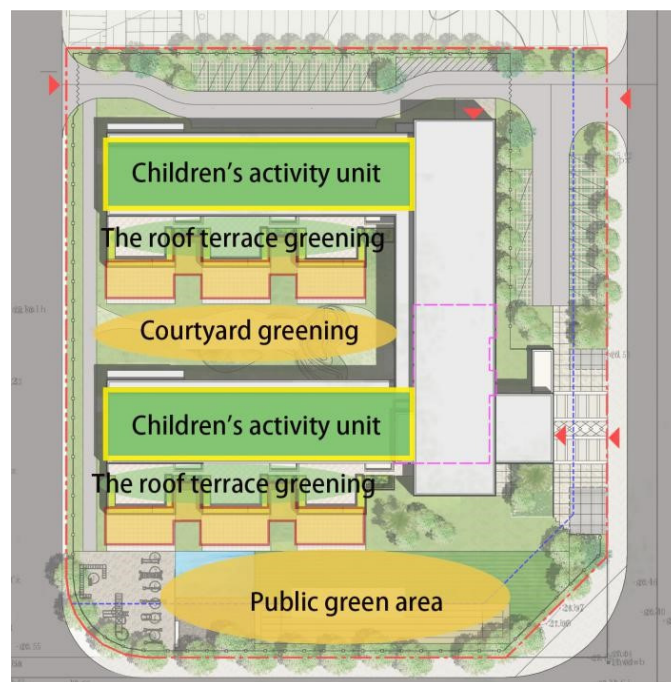


Figure 6. Landscape analysis diagram

4. Conclusion

With the development of the concept of preschool, the design of kindergarten is closely related to the development of children. As a place for children to study and live in the society, its importance is self-evident. However, the majority of kindergartens in China are designed only according to the norms of activity area, evacuation distance, fire prevention and sunshine, and focus on functional layout while ignoring the diversity and openness of buildings, mainly relying on interior decoration and classroom layout, which leads to the similarity of the images and functions of the kindergartens, and restricts the stimulation of the children's cognitive ability. Under the restriction of land use in urban high-density areas and the restriction of kindergarten norms, the quality of kindergarten design will be reproduced, and more colorful and imaginative spaces and places will be created for children, which not only puts forward a higher request to the designers, but also means a heavy social responsibility on the architect's shoulders.

References

- [1] Ji, W.D., Qiao, Y.P., Yuan, Z.H., et al. (2019) Research on the Design of Kindergarten Activity Space Based on Children's Behavior Characteristics——A Case Study of Century Zhonghua Town Kindergarten in Huaiyin District, Jinan. *Chinese & Overseas Architecture*, 11:118-120.
- [2] Qin, L.F., Yang, J.Y. (2018) The Study of Primary School's Public Space Design Based on the Need of Children's Psychological Development. *Architecture & Culture*, 4:190-192.
- [3] Liu, X.H., Li, J.Y., Huang, J.W., et al., (2017) Architectural Creation of Modern Kindergarten for Environmental Promotion Education, *Journal of Shenzhen University (Science and Engineering)*, 4: 415-420.
- [4] Zhang, B., Zhu, X.F., Chen, Y.F, et al. (2016) Restrictions and Breakout: Four-person Talk on School Kindergarten Design, *Architectural Journal*, 4:96-103.
- [5] Zhao, H., Li, Z.M., (2017) Analysis of the development process of contemporary Chinese kindergarten architecture design, *Urbanism and Architecture*, 16:115-117.
- [6] Zhao, H.B., Wang, Y., Xu, J.S., (2012) Research on the Typical Architectural Creation Process Model, *Journal of Xi'an University of Architecture & Technology (Natural Science Edition)*, 1:77-81.
- [7] Wang, F.J., Wang, Z.T., (2018) Drawing Guided Experience-Design of Shanghai Baoshan Beibeioulei Kindergarten, *Architectural Journal*, 11:90-94.
- [8] Huang, W., Hua, F., (2019) A Preliminary Study of Light and Shadow Design in Modern Kindergarten Architecture, *Urbanism and Architecture*, 21:83-84+87.
- [9] Luo, L.J., (2016) Application of Architectural Semiotics in Kindergarten Architectural Design, *Chongqing Architecture*, 9:8-10.