Research On The Design Of Outdoor Play Space for Children’s Activities In Urban Area

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Abstract. It is worth considering how to plan an outdoor play space, let the children spend a good time on it. This paper focuses on planning such a place that provides children with outdoor space in urban area. First is an analysis of the characteristics with children’s psychological activities and their way to outdoor actions, the desire in different ages. Then combining with existent problems, this paper will illustrate aspects include selection for field, separated area and elements worked out for each scene.

1. Preface
The environment composed of indoor environment and outdoor environment has an important impact on children's healthy growth. For teaching indoors boost the children’s growth, playing outdoors has the simultaneous effect. What’s more, it is game that advances them during the process of they’re playing with themselves, companions and environment constantly [1]. This paper will not only concentrate on how to provide various ages children with different types of playgrounds where they could conduct novel outdoor activities in contrast to monotonous recreational facilities, with traditional styles, which is sadly out of date, but also focus on combining security and humanization of games with the design of scene, and adding their willingness to explore the nature instead of staying indoors.

2. An analysis to characteristics of children’s psychical and outdoor activities
2.1. The discrepancy of children’s mental developments in different states
The process of growth varies so fast that children in each stages have specific characteristics. Many factors would alter their mental developments in silence. For instance, one is their own imitation reacts to the surroundings, one is their parents’ effort and company, another is their teachers play a crucial role in school education. And there are 4 stages basically classified in accordance to ages: Infant usually refers to a baby from birth to about 3 years old that babbling babies still in absence of the capabilities of thinking independently. Young child can be used to refer any child aged 4-6 years old and during this time his ability to independent cognition and imitation develop, so environment around him contribute to the mental growth at this stage. Child aged 7-12 years old gradually have self-awareness and become more independent over time. Adolescence, this term is often used to mean child between 13 and 16. Their original idea will be established and turn mature,
the level of knowledge and the ability to adapt to society has also increased, so the requirements for the play area are extremely high.

2.2. An analysis of children’s outdoor activities
During outdoor activities, children’s capabilities like mentality, physical strength and coordination, teamwork skills will be exercised. Accordingly type and quantity of outdoor activities, on a certain degree, plays a crucial role in the growth and development of children. Though one child would experience different surroundings and ways of growth from another, growth itself overall is universal. And the characteristics of children’s outdoor activities are basically the following aspects.

2.2.1. Time. The discrepancy exists in outdoor activities for children of different ages. Infants or preschoolers are not required for school so their outdoor activities are mostly concentrated in the morning or afternoon when the sun is abundant, led by parents, in the community most of the time. Account for specific school time, kindergartens and children study in school would mostly play in the evening after school at 4pm on weekdays, weekend, or vacation in summer and winter.

2.2.2. Seasonality. Summer is the most flourish season for children’s outdoor activities due to the longer leisure time in summer holiday, relatively free to play outdoors which is caused by people wear thin clothes in hot weather and longer insolation duration. Also, summer and autumn are suitable for kids to go out close to nature, for instance, having an outing and flying kites. Whereas, the air temperature in winter is too low to play outdoors, especially north went into severe cold at the end of November.

2.2.3. Conglomeration of the same ages. Ages of children are also one of the vital characteristics of outdoor activities, because children in different stages will pay more attention to diverse types of entertainment and naturally it will lead to the conglomeration of the same ages. Children of the same age will produce corresponding recreational activities due to their mental and physical fitness.

2.2.4. Naturalness. Why are children’s outdoor activities significant for their development? Children will be eager to leave the indoor space and embrace the nature after staying in the enclosed space for a long time. From the point of their view, nature is worth exploring cause all of nature world are unknown to them. What’s more, the natural environment is conducive to the physical and mental growth of children.

2.2.5. Informative. Family and school are two major accesses to the knowledge for children. Compared with learning through books which is just a component in teaching, extracurricular learning is more crucial to a great extent, especially preschool children, surroundings educate them more than book knowledge. So it will benefit to form the study method of combining theory with practice.

2.2.6. Communicative. Many families have only one child despite the two—child policy has been conducted roundly, which is not conducive to reveal some problems existed in children, for the isolated children only make contact with their guardians, so partners are necessary for their growth. When children play in outdoor activities, he could interact with other kids that are in the same circumstances, thus many hidden problems in communication will be exposed.

2.3. Classification Of Children’s Outdoor Activities
During the process of designing the sites, children of each stage should be fully considered for children of different ages don’t have exactly same demand for outdoor activities, which could be classified in the following aspects.

2.3.1. Special Activity Areas. Specialized areas are used to refer some specific places for activities, such as beaches, pools, lawn, slides. This kind of area appeals to some children especially the younger.
And they show the unique affection toward specialized areas and could play in the areas for a long time. Meanwhile, the object which has no fixed form, such as sand, exercises the creation and imagination of children, to develop the role of intelligence.

2.3.2. Joint Activity Areas. Older children tend to challenge facilities for activities at a higher level of difficulty. Joint activity is a combination of a variety of comprehensive sports equipment which includes crawling, jumping, climbing, sliding and other ways, generally in large size, exercise children’s intelligence, body and courage from many aspects (As shown in figure 1, 2, the picture originates from the internet).

![figure 1 climbing combination children's equipment](image1)
![figure 2 climbing combination children's equipment](image2)

2.3.3. Group Activity Areas. In cases where there are not enough facilities around or the place is large enough, group activity could be a kind of outdoor activities. Children would spontaneously organize to play games together and complete the games only through certain rules, without too much equipment and requirements for space, to develop children’s ability to work as a team (As shown in figure 3, the picture originates from the internet).

![figure 3 cooperative game](image3)

2.3.4. Skill Activities Areas. As parents become aware of their children’s education from an early age, many children are exposed to technical activities, such as skateboarding or roller skating which in need of special sports facilities and sites. A suitable site for skill activities should be developed for reducing safe hidden troubles by means of separating children of different activity groups. (As shown in figure 4). For older children, we can construct individual experiential games which could exercise them in courage and overall body coordination. Children could gain more knowledge that lacks in books and add their life experience form individual experiential games (As shown in figure 5, the picture originates from the internet).
2.4. Characteristics Of Children’s Activity Places In Different Age States

Actually children of different ages have different requirements for activity places, but in the city, children’s activity places more like a construction of standardization at present: the unified recreational facilities and similar project of entertainment. Merchants prefer to choose electric entertainment facilities in order to make more money but take no account of cultivating children’s body and mind. Infant starts to learn various skills and gradually form their own thinking. They play in a place for children’s activities in the residential area for most of the time. While the kindergarten students probably play in surrounding parks. Between the ages of 6 and 14, the golden time of physical and mental development, children start to enter school for systematic education and have their own discrimination. Their thoughts become more mature at that time. And they mostly play in the school playgrounds, the children’s activity area in the large park or the amusement park as they are fond of large facilities for amusement like puzzle games and climbing games. Adolescent could complete various activities independently for the accomplishment of the basic development of bodily functions, the basic independence of thinking. Besides, their choices have been multiplied because they can go out on their own searching for fond amusements that are competitive and challenging.

3. Research on the Design of outdoor activity place for children in urban space

3.1. Design of Outdoor Activity Place for children

3.1.1. Site selection. Many factors need to be considered comprehensively in the selection of location for outdoor children’s activities in the city. One is the noise, the sound made by children so loud that the location shall be away or separated from the residential areas. An enclosed place may be the best. Secondly distance, location shall be in the community with more children or near the school according to the statistics that parents are more likely to take children to play in residential areas or nearby parks.

3.1.2. Block subdivision. Unlike the landscape design of other activity places, children’s outdoor activity place should be designed from the object of service itself and be constructed the function of relative area according to the various characteristics of children.

Play area occupies an important position because games are the visitors’ main purpose, and obviously the facilities are crucial. Making sure that children of different ages could enjoy the suitable activities. There may be a small area of architecture in the play area, such as museums in small size and bookstores, so that education blends in the games and the cultivation of morality interact with amusement, letting children grow up in games.

Then, leisure area, next to the play area, is aimed at parents with children and other citizens. In this area, parents conveniently take care of their children at any time so the risk of safe hidden troubles reduces. Other places include public toilets, office block, selling point and so on. Appropriate architectures could enrich the effect of landscape in activity places.
3.2. Landscape design of outdoor activity place for children.

3.2.1. Circulation Design. A reasonable design of circulation should be according to specific conditions. The garden path occurs in all kinds of forms: in crowded areas of courtyards, it translates into space, also it could turn into architecture when meets gallery, in the face of mountains, it becomes winding road or the cave. While it comes across the water, it appears in the shape of bridge, dyke and so on. The design of circulation in different functional places should have certain changes and mainly divide into three aspects, the size, the slope and the form [2]. Apparently, children and their parents are the main audiences for children’s outdoor activities. So the design of slope should consider children’s age and bodily form, it can be more gentle and circuitous to increase buffer and avoid risks.

3.2.2. Pavement Design. Garden path and pavement are complementary to each other, pavement design is closely linked to the style of the park, which also suitable for children’s activity places. The design of pavement should be according to the characteristics of the child’s mentality and growth because children are more likely to contact with the ground than adults on account of their height. In outdoor activity place for children, the design of pavement should adjust to the artistic style of children. So the color of the pavement, modeling and the choice of material are particularly important. The colors of rainbow are the symbol of children, but too bright a color will stimulate the children’s senses. The design of pavement could use cheerful colors as a guide and applied different colors in different functional areas, but it doesn’t mean use too much color at the same time, which would cause the space messy and unordered. Children like to feel around with their hands for their curiosity about everything around them. So we could use sensory characteristics of feeling and pay attention to the difference between material on the pavement. Usually the pavement of children’s activity place is plastic, grass and so on.

3.2.3. Topographical Design. The varied and undulating terrain can make the space sense within an image rather than dull things which can be easily seen through. The characteristics of topographical design are rooted in local conditions. As the basic space of the environmental landscape, terrain is one of the most important factors in landscape design, which directly affects the aesthetic traits, sense of space, and functionality of the outdoor environment [3]. The terrain of the activity site is basically divided into three shape: flat, convex and concave. Flat terrain, mostly in the plains, undulates relatively gentle so the space is open which is suitable for the design of open space such as the lawn. And it suits the youngest group of children whose capacities for activities couldn’t independ completely and abilities in self-protection is poor. Compared with flat terrain, the convex terrain has distinct topographic relief and height difference, which would increase the area of green plants. We could construct small mountains and grow high and low plants to form a landscape. Because of its own shape, concave terrain is suitable for the landscape of ponds for cost savings. There is a certain height difference in the bumpy terrain so it is suitable for design of amusement facilities such as slides. For instance, Kastrup activity place, which was designed by Copenhagen, making use of the height difference to form corresponding recreational activities (As shown in the figure 6，7, the picture originates from the internet). This design not only enriches the types of activities, but also saves the cost of construction according to the local conditions.
3.2.4. Facilities construction. In an activity place, the range of facilities is large that includes green space design, landscape sketch, recreational facility, architecture and so on. Because of the particularity of children, the design of facilities for outdoor activities should fully consider their needs, taking humanization and education into account.

3.2.4.1. Humanization. Design shall be people-oriented. People’s behavior habits, physiological structure, psychological situation, thinking mode and other aspects should be considered in the overall design. And based on that, original technical performance could be further optimized [4]. Children are a special group that should be given more attention. In children’s outdoor activity place, recreational demands of children of all ages should take different types of facilities into account. Besides, areas for parental care must be set up to reduce safety risks because of children’s poor capacities of self-protection. In the design of facilities, the needs of children shall be considered in many aspects, so they could find activities actually interested according to their personalities and hobbies. In addition, all principles in the design are based on children. Express and construction of all kinds of signs shall meet the using need of children to achieve real equality and respect.

3.2.4.2. Education. Children’s education is sometimes more acceptable through the transmission of recreational activities. Facilities integrate into education for strengthening children’s cultivation, which will lead the children themselves interested in learning by means of increasing the function of education invisibly. A multi-functional urban public space facilities for entertainment, teaching and exhibition, designed by the British Educational council, the British architects and Caracas, the capital of Venezuela. The design and structure of facilities have varied flexibility, style of teaching is multiplied and innovated through the means of moving classes outdoors (As is shown in figure 8, 9, the picture originates from the internet).

3.2.5. Plant Design. The cultivation and design of plants can give children a deeper understanding of nature and the world around them from the five sense, so plant planting generally plays a role in ornamental and space division. The charm of nature is that its content system can continue to succeed and grow, showing the charm of life in the process, and can provide comfort to the personal growth.
process [5]. Nothing embodies the beauty of nature better than plants, each season different flowers open to form a beautiful scene. And one of the important function of park planting is ornamental value. As different plants have relevant habit, we could cultivate them in the required functional areas according to their color and flowering time, which adds the finishing touch to the space. Setting up cartoon signs on plants, so that children can understand plants and learning while playing. Dory Park of Guangzhou combines children’s activity place with vegetation and wetland where people seem to be in a forest and children could experience the beauty and charm of nature in the urban area (As is shown in figure 10, 11, the picture originates from the internet).

4. Conclusion
The problem of children persists and they are still a relatively weak group in society, we shall design an outdoor activity space that is suitable for their growth and beneficial to the development of physical and psychological health. Obviously the existing research results are far from enough and need to be understood and mastered in more aspects. Under the background that children’s education is paid more and more attention, designers shall fully comprehend universality and particularity of children’s growth. The design shall more suitable for their characteristics of physical, psychological and other aspects, producing positive effect to the growth.

References
[1] Yanchen Huo. (2014) Research on landscape design of children's activity space in urban parks [D]. Hebei: hebei agricultural university. (in Chinese)
[2] Ying Zhao. (2017) Planning and application of garden road in park design [J]. Art education research, (12): 84. (in Chinese)
[3] Su Jinjia, Duan Yuangu. (2010) Application of artistic terrain design in modern landscape [J]. Northern horticulture, (11): 121-124. (in Chinese)
[4] Huaqing Wang. (2015) Preliminary study on humanized design of modern urban park landscape facilities [D]. Sichuan agricultural university. (in Chinese)
[5] Xinlei Zhou, Yang Xiao. (2019) Application of contextualized natural experience in landscape design of children's outdoor activity space -- a case study of Jinshanling Songta theme park [J]. Landscape architecture, 26 (10): 72-77. (in Chinese)