Rational Layout and Planning for Children's Activity Places in Hongkou, Jingan and Xuhui Communities of Shanghai

Mingming Wang
Department of Economics and Management, Shanghai University of Political Science and Law, room A3-108, 7989 Waiqingsong St., Qingpu Distici, Shanghai, China
Email: 240420409@qq.com

Abstract. "Shanghai Urban Developing Plan (2017-2035)" puts forward to construct a children friendly city. However, there are few studies focusing on the suitability of children's activities in Shanghai, and the current situation of children's activity places in Shanghai is still unclear. In this research, three districts with the largest population density in Shanghai: Hongkou, Jingan and Xuhui, were selected to investigate the current status of children's activity places, and the problems existing in the districts which hamper the development of children's activity places is identified. Then, using advanced theoretical and practical experience for reference, the optimization scheme of children friendly districts in Shanghai was put forward.

Keywords. Children’s activity places, rational layout, rational planning, Shanghai communities.

1. Introduction
In the process of rapid urbanization, children, as such a huge social group, are often at the bottom of space rights, which are ignored by traditional urban planning. "The state of the world's children report 2012: children in an urbanized world" shows that more than hundreds of millions of children cannot enjoy the most basic public services in cities. The United Nations Children's fund and UN Habitat jointly developed the International Child Friendly Cities Program (CFCI), which points out that child-friendly cities are the result of a wise government's full implementation of children's rights in all aspects of the city.

The “13th five-year plan” of Shanghai women and children's development” puts forward the index requirements of "setting up children's activity places relying on community comprehensive service facilities" proposed in the 13th five-year plan of Shanghai's women and children's development. The plan is the supplement of "Shanghai Urban Developing Plan (2017-2035)", aiming to create a child-friendly environment and build a more charming, happy and humanized city. Bringing children into the city political decision-making system will play a guiding role in the construction of children friendly city space, and fundamentally promote the construction and improvement of Shanghai's humanistic city and healthy city.

Children's activities as the theme of this paper have draws different degrees of concern in many academic fields, such as medicine, education, sociology, urban space development and so on. From the perspective of economic goals and reliability, combined with children's spatial behavior characteristics, and aiming at specific sections and grass-roots construction, I intend to make suggestions which can be promoted to improve the child friendliness of urban public space. By the results of 93 fixed-point Open questionnaire, I found that the formation of a good space for children's activities in the city needs to be realized by further opening public places, improving commercial
cooperation, expanding the construction of online technological means and the community efforts, so as to form a community level system which is suitable for children. Based on the investigation of children activity places in Hongkou, Jingan and Xuhui communities of shanghai, I Put forward suggestions for improvement of children activities places. The three districts of the city, according to the administrative homepage of each district, are with the highest population density. This paper clarifies the current situation of children's activity places in the three representative communities, finds out the deficiencies and bottleneck problems existing in the allocation of children's activity places in the communities, and puts forward the optimization construction scheme of children friendly community group based on international experience.

2. Features of Suitable Community Places for Children

2.1. Analysis of Children’s Activity Behavior Characteristics

Locations of children’s places and layout on children’s recall of location are essential to mass children’s feeling and physical health [1]. According to the research results of psychologists and behaviorists, the research objects are limited to 3-12-year-old children, which are roughly divided into two categories: age from 3 to 6, and age from 7 to 12 [2]. Children aged 3 to 6 have orderly logical thinking abilities and strong curiosity, they like to play together in groups, and the activities are mainly carried out around the residential buildings [3]. The children of 7-12 years old have a relatively comprehensive development. Most of them will choose some sports activities and complex games [4]. The scope of activities will be expanded, and they will be able to choose the playground independently. Table 1 states the behaviour mode in two age groups [5].

| Age   | Activity characteristics                                                                 | Behaviour modes                                      | Game types                                      |
|-------|------------------------------------------------------------------------------------------|-----------------------------------------------------|------------------------------------------------|
| 3-6   | Preliminary game activities with parents' company.                                        | Preliminary outdoor activities based on unstable imitation. | Creative games, imitation games, active games, etc. |
| 7-12  | Intensity physical exercises, enhanced control ability                                   | Collective activities, obvious gender difference     | Intelligence games and professional sports skills |

Table 1. Children’s activity characteristics in two age groups.

Children are curious and like to run and play. They are seldom fixed in one place. Their activity attentions and places are always changing. Children’s activities in the indoor or outdoor vector points together to form a moving line, which is caused by the change of children's activity places and time, resulting in the continuity [6]. This moving line formed by continuity is the children's moving line, also known as children's behavior track. It is the most basic reference element in the design of children's activity space in residential area [7]. The moving mode of children driven by different motives is shown in table 2.

Table 2. Moving mode of children driven by different motives.

| Type   | Objective | Aimless | Curious |
|--------|-----------|---------|---------|
| Graphic| ![Graphic](image) | ![Aimless](image) | ![Curious](image) |
| Illustration | ![Illustration](image) | ![Illustration](image) | ![Illustration](image) |

The oblique line density in the figure represents the length of stay in the place.
2.2. Definition of Children's Activity Place

According to Section 2.1, children's activity places have to meeting children’s growth and behavior characteristics, hence should be divided into the following categories:

1. Natural activity places. The activity place should be mainly vegetation to meet the needs of children's independent contact with nature [8].

2. Sports venues. It mainly refers to the activity place with a certain number of fixed equipment, which can meet the children’s action curve and movement requirements, and has a good protection performance space, so as to enhance the interactive and dynamic nature of children's games [9].

3. Cultural sites. It mainly refers to the public places where children do intellectual activities [10].

The objective conditions for children's activity place include: (1) Adequate space and diversity. The places that can realize the interests of children's public activities should be able to accommodate a certain scale of children's groups and ensure diversity of facilities to meet different playing purposes. Therefore, the single amusement facilities or fitness facilities downstairs of the community or residents do not meet this condition. (2) Interaction and security. Interactivity refers to one of the main purposes of the place, which should include the need to achieve children's social activities. This activity broadens the concept of place and can be extended to the interactive construction of Internet relying on community construction. Safety includes material safety and site safety.

2.3. Sampling Survey of Children's Activity Places in Hongkou, Jingan and Xuhui Communities

Natural activity places. According to “The Classification Standard of Urban Green Space” (CJJ / t85-2002), the classification of urban parks is referring to G1. Natural activity places are divided into four medium categories: Comprehensive Park, special park, belt park, roadside green space. According to literature review and field investigation, 57 community parks in Shanghai are listed. There are Under the same conditions, I choose 36 parks with convenient transportation, suitable scale (Park Area > 1 hm²) [6], complete function and children's activity area were selected. In addition, according to the interview results, within the three communities, I visits four smaller playing ground selected by more parents.

Sports venues. Because the existing literature and community websites of spacious and fixed equipment have no open and complete statistical data, sampling investigation is needed. In order to ensure the accuracy of the follow-up investigation, according to the statistical bulletin of Shanghai National Economic and social development 2016, I sorted out the population density of 233 communities in 16 municipal districts of Shanghai (according to the administrative homepage of each district), and conducted a fixed-point sampling survey accordingly. In addition, the residential areas of several blocks were visited to count the results of supporting children's activities in the community. According to the interview results, some districts recommended by more parents were visited (see figure 1 for details).

Figure 1. In this case simply justify the caption so that it is as the same width as the graphic.
Cultural sites. In order to research the public places where children's intellectual activities are satisfied, I visited Shanghai Natural Museum, Shanghai Science and Technology Museum, Shanghai Library, some community and street activity center libraries.

2.4. Sampling Research Result of Children's Activity Places in Hongkou, Jingan and Xuhui Communities

The sampling research result shows that roadside green space is not children friendly. The cement floor is hard to play on. Generally speaking, the sample community service centers do not provide outdoor sports venues for children. Cultural sites in the sample community service centers, include children's reading room, can initially meet children's reading needs. Table 3 shows the details.

| Research objects | Research results |
|------------------|------------------|
| Natural activity places: roadside green space | Hengshan Park, Kunshan Park, Boiyang Park, Nanyuan Park, Caoxi most parks, paid mechanical amusement facilities are Park, Caoyang Park, Wentong Park, generally distributed. The floor is mostly made of hard Huimin Park, Kangjian Park, Tianshan cement, and the non mechanical amusement facilities are Park, Dong'an Park, Tianyuan Park, mostly composed of slide, sand pit and a few climbing shuxia Park, Haitang Park, Meichuan facilities. Facilities and activities are very single. The floor is Park, Gaquan Park, Jiangwan Park, mostly soft plastic, and the rest facilities are basically Sanquan Park, Yanchun Park, wooden benches. Other forms such as round tree pool bench, Minxia Park, Shangnan Park, Jiayang arc bench. Only the children's activity area in Yanchun park Park, Linxi Park, Shuiqing Park, Huacao Park, etc. |
| Natural activity places: parks | Xujiahui Park, Minhang Sports Park, Minhang Cultural Park, Among the parks investigated, the scale of such parks is slightly smaller. But in the arrangement of children's amusement facilities, they are more attentive. First, free use; second, there is a larger children's play area planning, including theme amusement equipment, sand, pool. Among them, Xujiahui Park has not only a separate Tongle District, but also an aerial plank road and three swans, which are very popular. |
| Sports venues | Caojiadu street, Jiangning Road, Visited the above community service centers. Generally speaking, the above community service centers do not provide outdoor sports venues. Indoor places are mainly for Xietu Road Street, Xujiahui the elderly, such as chess and cards, table tennis, dance, Road Street, Qibao town, painting, opera and so on. |
| Sports venues | In these residential quarters: Sanhe The fitness facilities of the husband's house and some garden, Sihe garden, Dan'an garden, separate children's use facilities (slide or swing) included in Haiphong village, Liduhaicheng the community are basically not in line with the definition of garden, Donghai garden, Xingcheng children's amusement place. The community contains Huicheng, Xianju world, Jingan Jing partially closed or semi enclosed areas as shown in the table. huayuan, Jifu houses, Less than 30 percent of the total number of recreational facilities are included, while less than 10 percent of the districts that meet the definition of children's playground. |
| Cultural sites | Hongkou, Jingan and Xujiahui The above community service centers, basically including children's reading room, can initially meet children's reading needs. |
| Cultural sites | Caojiadu street, Jiangning Road Children's reading room or mother and child activity room Street, Jing'an Temple Street, Nanjing was seldom set up in the street service center West Road Street, Tianping road street |
3. The Inadequacies of Children's Activity Places in Hongkou, Jingan and Xuhui Communities

(1) The coverage rate of children's playground is insufficient. At the municipal district level and its subordinate community level, it is still not fully covered, let alone the street children's playground. The density of children's playground is insufficient.

(2) Public places do not play the role of public space sharing. Take Shanghai Science and Technology Museum and Shanghai Natural Museum as examples. Both of them have larger outdoor space, and the main audiences are children. However, both of them are subject to green space control and sculpture touch restriction (see the figure below for details). Therefore, the field is mainly for viewing, resulting in a waste of space. In addition, there are also special security personnel to protect some statues, causing waste of personnel and forming an unfriendly environment for children. In terms of design and system, children's demands are not taken into account.

(3) Children's cultural venues are seriously insufficient and the proportion is unbalanced.

(4) The construction of online children's activities is almost zero. For example, online maternal and child services, community interaction, children's book exchange, activity venue booking and other services have not been effectively carried out.

(5) During the investigation, some facilities of children's playground were damaged, but the repair was not timely.

(6) Relatively speaking, the construction of supporting children's activity places in the new suburbs is superior.

(7) Shanghai commercial development public welfare children's activity place is insufficient (see 2.5 for details)

(8) There are few or very simple environment suitable for children's activities in the lack and low-quality residential area, which shows the lack of open space, facilities and green space. In addition to the large urban parks in the urban area, the places where children can freely move are the children's playground in shopping malls and fast food restaurants. In the past, children have less and more places to play, but they have more and more places to play.

(9) Consumption behavior leads to the lack of the concept of public and sharing. First of all, the development of commercial real estate has squeezed children's activity space. Secondly, the consumption of children's playground increased, and the public welfare children's playground was seriously insufficient.

4. Optimal Planning for Children's Activity Places in Hongkou, Jingan and Xuhui Communities of Shanghai

In order to make the optimal plan for children's activity places in Hongkou, Jingan and Xuhui Communities of Shanghai, I made a summarization to identify the problems in these areas.

1) Open interview results. During the interview, children's families were randomly asked and 93 complete answers were obtained. The key points of future work are pointed out.
   A. There were less spacious outdoor activity centers for children near the community.
   B. Looking forward to get close to nature and interacting with others.
   C. Some parents indicated that there is not enough parent-child activities provided.
   D. Most parents say that only on weekends can they take their children to outdoor activities.
   E. Community online children activities module construction is welcomed by parents and children. But they hope the places can only be opened to the residents in the same area, so they can set up social groups, reserve venues, exchange books and so on.

To solve the problems and make optimal Planning for Children's Activity Places in Hongkou, Jingan and Xuhui Communities of Shanghai, here are the solutions for the problems identified in the open interview results from A to E.

A. Increase the density of children's outdoor activity center, or improve transportation convenience.
B. Children's activity places with different types are added in different blocks to realize the functional diversification of the neighborhood, covering natural contact, sports and reading.
C. To explore the sharing of elderly activity centers with children or parent-child centers.
D. The surrounding facilities of children's activity place should be constructed simultaneously, including dining chair, transportation and education.

E. Relying on the community network, build online activity center. Promote online and offline integration.

(2) The problems found in the field investigation and the solutions are as follow.

F. Recreational facilities in the park are rare. The grounds are mostly made of cement. In children friendly city—UK, children or children's families are invited to participate in the construction.

G. The community service centers have insufficient facilities for children's activities, with reasonable planning of community and street, joint development of community and business district.

H. Partially enclosed or semi enclosed cells are shown in the table. Less than 30% of them contain amusement facilities, while less than 10% of the districts meet the definition of children's playground. Encourage qualified communities to set up children's activity places.

I. No children's reading room or infant room was set up in the street service center. To explore the possibility of adding children's reading room or mother infant activity room.

J. Public places do not play the role of public space sharing, Reasonable use of Museum and library surrounding resources, eliminate barriers, realize internal and external sharing of public resources, zero barrier contact of children.

To make optimal Planning for the children's playground in those areas, here are some further suggestions. The experience of some advanced countries in rational layout and planning for children's playground are as follow.

At the same time, the development plan encourages the public art activities in the region to be combined with schools and community activity centers, which is beneficial to cultivate children's enthusiasm for art [10]. Pearl district of Portland provide a variety of housing policies: residential projects with children's families in particular should be located near the public infrastructure services such as schools, parks and community centers, and be compatible with the nature of the surrounding land [11].

Improve the construction of children's service-oriented infrastructure: develop primary and secondary schools, nurseries, community activity centers, libraries, parks and other commercial child service facilities to meet the most basic needs of children's growth. Rich vegetation design breaks the alienation between urban children and nature, and children play freely in the natural environment.

Many malls in Singapore have free children's playground on the top floor. Thus it's rational to strengthen cooperation with commercial companies, promote the development of children's public playground in shopping malls.

5. Conclusions

To make the optimal plan for children’s activity places in Hongkou, Jingan and Xuhui Communities of Shanghai, several steps could be made, such as: increase the density of children's outdoor activity center, improve transportation convenience, add different types, construct the surrounding facilities, enhance community network, and etc. Besides, children’s playground should be planned by children. children's reading room or infant room have to be set up in the street service center. Public places should share the function and provide surrounding resources, eliminate barriers, realize internal and external sharing of public resources. Improve the construction of children's service-oriented infrastructure. It’s rational to strengthen cooperation with commercial companies, promote the development of children's public playground in shopping malls. Children's participation in the design of activity space is essential. Thus, from the perspective of children, build reasonable spaces for activities.

References

[1] Negen J, Roome H E, Keenaghan S and Nardini M 2018 Effects of two-dimensional versus three-dimensional landmark geometry and layout on young children's recall of locations from new viewpoints Journal of Experimental Child Psychology 9(10) 3-4.
[2] Veitch J, Bagley S and Ball K 2006 Where do children usually play? A qualitative study of parents perception of influences on children’s active free-play Health & Place 12(4) 383-393.
[3] Nance L, DeSimone J D, Lorch A, Passarella M and Cronin Keri 2020 Locations of mass shootings relative to schools and places frequented by children JAMA Pediatrics 3371(9) 2-4.
[4] Zhang Q and Su M J 2016 Study on developing status of children's reading promotion activities in public libraries in Germany Library Development 269 39-40.
[5] Ulrike S 2014 Performing embodied identity in virtual worlds European Journal of Information Systems 23(1) 6-8.
[6] Baoxin Z and Zhuwei J 2018 Research on the evaluation of the built environment to promote children's outdoor activities in Shanghai City Research 5 90-93.
[7] Xiao K and Xiao T J 2016 Characteristics research of children’s activity area of community parks in Shanghai Journal of Shanghai Jiaotong University 34 45-46.
[8] Bao Z and Zhu J 2018 Analysis on spatial temporal characteristics of children’s outdoor activities in big cities -A case study of Shanghai Child-Friendly City Studies 10 86-88.
[9] Jia Z, Yan T, Pei C, Yang L, Zhen C, Yue H, Zheng Z and Jie Z J 2017 The report card of Chinese city children and youth physical activity- take Shanghai as example China Sport Report International 37 14-17.
[10] Han X Y and Chen K J 2016 Child-friendly city research: a case study of portland pearl district Urban Development Studies 23 26-27.
[11] Zhang Y J 2011 Review of foreign studies about children’s demands of outdoor public space in cities International City Shematizationa 26 50-52.