

Study on the Design of Playable Urban Public Space

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Abstract: *With the recent decline in outdoor spaces that are attractive and safe for children and young people, more and more cities, experts, scholars, and policy makers are focusing on child-friendly urban areas and are arguing, researching, and exploring them from different levels and perspectives. Over 20 years of playful urban design in Germany have provided a systematic framework for work on returning children and young people in urban public spaces. Through an in-depth analysis of playful urban public space planning and design instrument in Germany -master plan of play - the organizational structure and process of implementing a master plan of play in the old town of Regensburg, the participation of children and youth, the exploration of potential spaces and the development of playful public space design strategies are studied. It is concluded that diverse and continuous participation is the key to the practical construction of playful urban open space design. The key to the creation of active urban open spaces is the variety and continuity of participation. On this basis, the current situation of public spaces for children and youth in China is discussed, and the implications of the master plan of play and design for the development of playful urban open areas in China are explored to provide a reference for the creation of child-friendly cities.*

Keywords: *playable urban space; child-friendly cities; master plan of play; children and youth participation*

1. Introduction

As urbanization accelerates, the patterned indoor play and leisure space has gradually become the main space for children and teenagers to relax in their spare time. The social phenomenon of children's lack of outdoor open space for interactive activities has gradually become a hot topic for social and academic discussion and research.^[1] In China, the "China Children's Development Program (2011-2020)" promulgated in 2011 clearly stated that it is necessary to protect the rights of children and achieve a high coverage rate of "children's homes" in the community. In June 2019, the construction guideline for Child-Friendly Communities was issued based on national conditions, in order to make it possible for Chinese society to build child-friendly cities in a more concretely and practically way. Cities such as Changsha and Shenzhen have made some progress in policies, theories, and practices related to building child-friendly cities. Changsha has prepared guidelines for child-friendly city design, and Shenzhen has included the child-friendliness in the main points of preparing of its 2016-2035 city master plan.^[2]

Given the difference in the capacity and scope of activities, the design of child-friendly cities in China does not specifically cater to the needs of adolescent groups. Against the background that adults are the primary implementers of projects and the participation in children's projects is increasing yearly, the youth group lacks participation, and their rights and interests are not guaranteed. In contrast, playful urban design in Germany involves youth and children in the whole process of project investigation, design, and implementation, and it has undergone more than 20 years of development, providing a systematic working framework for children and youth to return to urban open space.^[3] "Playable cities" can be understood as a model for shaping a network of safe and fun urban areas where children and youth can move freely^[4]. This paper explores the organizational structure of the master plan of play's approach, the participation of children and youth, the exploration of potential spaces, and the development of measures in the context of the German playable city design case. And it also investigates its effective connection with the systematic construction of playable urban open spaces to provide examples and experiences for the child- and youth-friendly cities in China.

2. Playable space planning and design in Germany

The reduction of safe and accessible urban open spaces for children and young people limits their recreational activities such as playing, sports, meeting, and playing in the city. To improve urban open spaces for children and adolescents, the government of Rheinland-Pfalz developed a master plan of play "Spilleitplanung" in 1999. As part of the child-friendly action plan in Rheinland-Pfalz, it was implemented in seven pilot communities^[3]. In the last 20 years, the master plan of play has been implemented in various major cities in Germany, such as Berlin, Düsseldorf, and Regensburg, to build playable urban public spaces from the top down.

2.1. Planning and design tools

The master plan of play as a tool for playable urban public space design is planned for environmentally friendly and sustainable development of cities and local communities based on the needs and perspectives of children and adolescents, starting from the interconnection of spatial planning and participation.^[5] It aims to maintain and improve urban open spaces where children and adolescents live, and where the involvement of children and adolescents is a central component of the planning, decision-making, and implementation steps. Therefore, the master plan of play creates a system for guiding future communities toward the child- and youth-friendly communities and creating playable urban public spaces.

2.2. Master plan of play work framework

The master plan of play is an effective method for considering the needs and interests of children and adolescents in local municipal planning, focusing on cooperation between local governments, urban planning, youth welfare offices, and other participants^[6].

The master plan of play can be implemented consistently and effectively only based on the binding governmental force, so a resolution of the local senate is needed to ensure the implementation of the master play plan. For this purpose, the local council must make fundamental decisions on the performance, implementing the master plan of play. The local board appoints the main leading person in charge, and decides on the establishment of a working group for the master plan of play, including commissions spatial planners and educational experts. At the same time, binding power can be generated not only by governmental decisions, but the participation of informal working groups of associations outside the administration is also crucial for success. To guarantee the sustainability of the planning, the master plan of play relies on the cooperation of multiple parties, including educational, social, and cultural institutions (e.g., schools, daycare centers, Agenda 21 groups, parent initiatives, associations, and clubs) as committed citizens. In addition, the Youth Welfare Committee works on behalf of children and youth interests in the spatial planning process, providing appropriate resources for cross-sectoral discussions on "child- and youth-friendly planning with the participation of children and youth."^[7]

The master plan of play follows the classical principles of spatial planning and design, including three significant steps defining objectives, collecting and evaluating the current situation, preparing work plans and subsequent design and implementation measures. Setting basic quality objectives with child- and youth-friendly development, urban public space surveys are conducted, mainly by planning expert surveys, interviews with stakeholders, and detailed field evaluations of children and youth on-site to come up with status quo evaluation reports. Based on the survey report, potential playable urban public spaces are explored, work plans and design implementation strategies are developed, and construction is carried out according to start-up projects, mid-term and long-term projects. Regular return visits by children and youth users are conducted to provide a virtuous cycle foundation for the next phase of playable urban space construction.

3. Planning and design of playful public space in Regensburg's old town

The city of Regensburg has been involved in planning and construction activities with the participation of children and young people for many years. In 1999 it started to participate in the demonstration of family- and child-friendly projects in Germany^[8]. In 2013 the city council adopted the Master Plan of Play in Regensburg and the Regensburg Old Town to implement child-friendly planning and construction standards. The plan, funded by the German Children's Fund (DKHW), sets out qualitative goals and recommendations for developing playable play spaces in the city.^[8] The

development of master plan of play scheme for Regensburg is a complex and lengthy task, which makes it challenging to master plan of play for the whole city at the same time. It will have to be developed progressively for the regional master plan of play when the relevant legal and policy guidelines are well developed.

3.1. Multi-level policy planning progression guidelines

3.1.1. Legal policies and related standards

The United Nations Convention on the Rights of the Child, adopted by the United Nations in 1989 and introduced in Germany in 1992, requires that urban planning affects children and that the interests of children be given priority. The German Building Code Act requires the early participation of children and youth in urban land use and other related planning. The Child and Youth Welfare Act, which came into force in 1991, states that "children and young people shall participate in all decisions concerning their public welfare." The most essential standard for the development of the child- and youth-friendly open spaces is DIN 18034, "Requirements for the planning, construction and operation of playgrounds and open spaces," which specifies the radius of radiation and the minimum size of the site for playing public spaces for different age groups. The standard also stipulates the accessibility, safety, freedom, and topography of children's and young people's spaces to be considered in all types of planning, which creates the upper-level conditions for child-friendly cities and serves as a primary standard document for all kinds of play planning.

3.1.2. Action plan and the master plan of play

In 2009 the city council laid the foundation for a child-friendly city with the city concept "Regensburg – the child- and family-friendly city". In 2014 and 2019, two action plans for a child-friendly city set guidelines and goals for planning and design on the topics of leisure activities, exercise, a family-friendly living environment, and participation, which have now become the starting point of the master plan of play.^[8] Under the guidance of the legal policy and action plan, the city council started to work on the citywide master plan of play, and the sub-district play control plan simultaneously in 2013^[8]. Through the identification of ten child-friendly quality objectives in the citywide master plan of play, the emphasis on children and youth participation, the annual exchange of discussions, and the establishment of a special fund, the framework basis for the subsequent sub-regional master plans of play and playable urban space design was laid.

3.1.3. Zoning implementation - master plan of play in the old town

The old town of Regensburg is a very beautiful and still growing populated area with a high structural density of housing and building sites. To provide attractive and close-to-home open spaces for children and young people, the master plan of play analyses in detail the central old town of Regensburg as a first step in the development management of the implementation area and proposes a series of measures and design guidelines for the sustained participation of children.

The master plan of play for the old town was carried out by the City Office for Youth Welfare in cooperation with the City Planning Office, the Advising Office for City Development, the City Garden Office, and the Civil Engineering Office.^[8] The master plan of play emphasizes sustainability, and the professional group not only worked during the development of the program, but subsequently through regular meetings to implement the play plan. The plan was implemented in three main phases: pre-survey and analysis of the current situation, decision making in the programmatic phase of the potential renovation space, and recommendation of measures and project implementation. The pre-stage is a technical inventory of the current situation survey through working group participation training, child-led city walks exploration, and questionnaire interviews to create a mental map, overlaid with different perspectives and levels of current situation analysis, to uncover the most suitable urban public spaces to be renovated for children and youth activities, and to propose targeted measures.

3.2. Multi-party participate in pre-survey sustainably

3.2.1. Training participation

Children and youth are the "experts" who know their needs best^[7], and their ideas can broadly inspire the spatial design and generate creative solutions. Children and youth participation should be an intrinsic part of the planning process, contributing to urban development and urban planning. They are experts in urban walking exploration, exploring playgrounds and public spaces within the old city, and giving

authentic feedback without any procedural influence. The professional staffs participating in the Urban Walk Exploration are trained accordingly to understand children's way of thinking and to evaluate urban public spaces from their point of view. Team from various municipal departments, experts, and volunteers from the planning working group worked with the children and youth on the city center walk exploration.

3.2.2. Walking Exploration

The city walk exploration was a major step in the planning process involving children and youth, capturing and mapping their spatial use patterns and spatial definitions through this qualitative approach to urban spatial research. Children and adolescents led professional staff on a walking exploration of the Old Town area of Regensburg to give them insight into their living environment. Sixty-eight children and adolescents from local schools and twenty staff members were divided into nine groups to conduct a walking exploration of the entire old town^[8]. During the investigation, children and adolescents showed all their places to play, experience, and stay, giving feedback on the safety and comfort of transportation routes and sites. The accompanying staff pre-recorded by the camera and entered the streets and locations displayed by the children and adolescents on a map to obtain a map area of the children's play space. This will contribute to the playable urban space design if children and adolescents can jointly identify, participate in, or help create projects that affect them^[7]. Since children and adolescents have different interests and needs, the problems of the old urban space were summarized and categorized through field walks exploring, and exchanging discussions with age groups.

3.2.3. Mental maps

To involve as many children and young people as possible in the master plan of play, a survey was conducted using the "mental map" method in addition to a walking tour. Utilizing a questionnaire, 202 pupils aged 8 to 18 in the old town of Regensburg were interviewed, and their problems and anxieties about meeting and staying places as well as detailed information about routes to school and leisure were reflected in the questionnaire and the relevant maps.

3.3. Multi-level analysis to explore potential space

The old town of Regensburg is characterized by the contrast between the "stone city" in the center and the "green city" in the surroundings (boulevard ring, parks, playgrounds, and soccer fields, green areas along the river, etc.). In contrast to the "Green City", the old town of Regensburg has almost no playgrounds and little opportunity to create them. This contrast makes the play and sports areas in the "Stone City" seriously oversupplied and puts a lot of pressure on the surrounding "Green City" for use. The master plan of play was developed in advance by analyzing the "current important play spots, movements and whereabouts" of children and youth, "important play, activity and residential spaces by age group" (0-3 years old, 3-11 years old, 11-14 years old, 15 years old and above (0-3, 3-11, 11-14, 15+), "Analysis of public recreation and commercial spaces" and "Analysis of recreation and leisure routes and traffic",^[8] to document, evaluate and consider public open spaces where children and youth live and are active. And the potential spaces for renovation and enhancement were identified through several planning and design workshops. The analysis led to the conclusion that the spaces would be better or more frequently used by children and adolescents in the future, which constitutes the premise for the proposed measures in the master plan of play.

3.4. Multi-dimensional development of measures and implementation projects

The programming phase of the master plan of play is divided into two modules: "Areas and Elements" and "Roads and Traffic", to develop strategies for upgrading or creating new spaces at different scales in the old city, and to develop responsible units and implementation plans. The proposed measures are playability as a design criterion, integrating water elements into street and parking spaces to create play and sports possibilities; creating safe intersections and traffic organization flow lines to create coherent free spaces; creating representative public spaces; providing temporary play and sports areas in popular gathering areas; providing water play areas and facilities under the premise of safety; creating new attractive children's play and sports areas; creating different play areas for toddlers, children, and teenagers, etc. For example, in the Obermünsterviertel community renovation project, the water landscape and fountains were used as the thematic elements of two start-up projects: the street renovation and the partial renovation of the square, which became a child- and youth-friendly playful urban public space.

4. Inspiration for China's cities

Child-friendly cities in China are being explored in planning and construction. In order to create more playable urban spaces that are free and safe for children and youth, the following suggestions are made in the context of China.

4.1. Overall planning and classification design

The whole city or community should be considered as a potential play, experience, and leisure area of a joint grid, and the overall planning should be integrated. All places and areas where children and youth stay and are active, such as open spaces, green spaces, residential entrances, or wickets, should be recorded, evaluated, and considered upfront, and the results of surveys, assessments, and development prospects of these places and areas should be recorded and recommendations for further development should be made. Under the overall playable urban spatial framework, two modules, "Areas and Elements" and "Transportation and Roads", are designed by category. A medium- to long-term implementation plan is established to initiate the project.

4.2. Full participation of children and youth

For example, Shenzhen City has explored the mechanism of children's participation in the construction of child-friendly cities and established a system of children's councils at the city-district-community levels to provide feedback to relevant government departments at all levels and participate in a specific community and city-related affairs, but they still face difficulties in implementation.^[9] The planning and design process of our cities should ensure the participation of children and youth of different age groups, ensure the balanced participation of boys and girls, and aim for balanced multicultural participation. The forms of the involvement of children and adolescents need to be selected with full consideration of the understanding and developmental levels of different age groups, considering gender differences and expressive communication preferences. Observation methods, neighborhood walks, mental maps, and questionnaires are used in the preliminary survey. Different questionnaires are used according to different age groups. Participation is recorded through diverse methods such as written and drawing. The project landing design implementation process is suggested to be completed through involvement such as planning workshops, co-building projects, and model making. In addition to the direct participation of children and youth, adults must promote indirect participation by actively representing their interests and ensuring that the participation process provides feedback to the relevant authorities. Ensure support and continuity of work with children and youth throughout the planning to the ground-up implementation process, and introduce participatory models as fully as possible.

4.3. Implementation-oriented professional cooperation

The project is oriented to the implementation of playful urban space created as a long-term task in municipal management, and the development of measures and future plans for sustainable urban space development suitable for children and young adults. The framework organization and persons responsible for the participatory process are defined in advance in order to guarantee the successful implementation of the project. All projects require professional support, including municipal departments such as planning, landscaping, transportation, etc., and children's work committees, with the establishment of professional working groups and the identification of general and sub-heads. The government and professional working groups make initial arrangements for the residents, children, and youth who will be involved and create a public participation process. This is not only a political, spatial planning, and child and youth welfare task, but also collaborative and wireless support for a more livable urban space. Bringing residents, schools, children and youth organizations, and various public interest and association groups together creates playful urban public spaces through social media, online networks, workshops, etc.

5. Conclusions

In summary, the participation of children and young people is a central component of the master plan of play, in which the participation process and the spatial planning process are systematically interlinked, and the results of the participation process are translated transparently into the planning and design implementation level. Regensburg, as a model of a child-friendly city, is guided from the urban

development concept and action plan to the master plan of play, with multi-level guidance and multi-dimensional implementation of the participation of many aspects, using the entire living environment of children and young people as a space for play and experience. Relying on the participation of children and teenagers and professional power to create a playable urban space, it realizes a complete path from development concept, planning, and design to implementation, which is worthy of applying in Chinese cities.

References

- [1] Zhu, W., Zhai, B. (2019) *Influence of Urban Built Environment Cognition on Children's Outdoor Activities*. *Urban Planning*, 43(12): 45–54.
- [2] Shen, Y., Liu, X., Liu, S. (2018) *Study on Urban Public Space Planning Strategy Based on Child-friendly City Theory: Taking Public Opinion Surveys and Case Studies in Yueyang and Changsha as Examples*. *Urban Planning*, 42(11): 79–86.
- [3] Abt J. (2011) *Children and Urban Renewal- The Instrument of Master Plan of Play*. *Urban Renewal Yearbook*, 233–244.
- [4] Oblasser M. (2006) *The Playable City: Child-friendly Urban Planning as a Contribution to Sustainable Development-Examined Using the Example of the Rhine-Ruhr Area*. *University of Dortmund*, 30-35.
- [5] Abt J., Hillmann C. (2011) *Children and Youth's Interests in Spatial Planning: the New Planning Instrument "Master Plan of Play" Using the Example of Berlin*. *University Publishing House of the TU Berlin*, 31:25-40.
- [6] Apel P., Lehmann D. (2007) *Master Plan of Play - A New Planning Tool for Anchoring Child-Friendliness in Urban Planning*. Reicher, C. *Children's Perspective: Urban Planning and Architecture for and with Children and Young People*. Troisdorf: *Bildungsverl*, 126-139.
- [7] Apel P. (2004) *Master Plan of Play - A Path to a Child-friendly Community and City*. Mainz: *Ministry for Education, Women and Youth in Rhineland-Palatinate*, 120-130.
- [8] *Master Plan of Play in Regensburg*. (2013) [https:// apps2.regensburg.de/ leben/ familien/ familienfreundliche-stadt/kinder-und- jugendbeteiligung/spielleitplanung](https://apps2.regensburg.de/leben/familien/familienfreundliche-stadt/kinder-und-jugendbeteiligung/spielleitplanung)
- [9] Liu, L., Lei, Y., Wu, X., Wei, L. (2020) *Children and Child-friendly Spaces in Modernist Cities*. *Shanghai Urban Planning Review*, 03: 1-7.