

INCLUSIVE INNOVATION: A study of creative furniture design for urban block public space

ZHANG Dingwei¹, ZHOU Hongtao²

¹College of Design and Innovation, Tongji University
E-mail: zhangdingwei@tongji.edu.cn

²College of Design and Innovation, Tongji University
E-mail: 7404732@qq.com

Abstract

In high-speed urban construction, people's demand for diversity and functionality of urban space is gradually increasing, and people's practical spatial needs are not fully respected and cared for for the city's prosperity. Many current design practices show that the inclusiveness of design practice activities is more innovative in promoting creative furniture design in urban neighbourhoods and realizing the resilience and sustainability of urban neighbourhood furniture design. From the perspective of sustainable social development, inclusive design is attempted to solve the design problems of the "functional failure" of urban community space and the "misalignment of needs" of residents. Creative furniture design in urban neighbourhoods has become an essential issue in improving the quality of life of community residents.

This paper takes inclusive innovation as the starting point and conducts an experimental study on street furniture design in Fengpu District, Shanghai. The author's team focused on the needs of community residents, especially the needs of children and the elderly, for resting seats in the community space (Li Wenjia, 2021), and organized the "Hundred Chairs for Building Dreams" activity to collect creative proposals from community residents. Designers and residents collaborated to create a four-dimensional framework of "participation in learning - participation in design - participation in construction - participation in maintenance" to explore the role of creative furniture in community renewal and the research path. The participatory creative seating design activity looks at urban space from the perspective of residents' needs, stimulates residents' active participation in innovation, and respects human needs. The creative furniture design activity empowers community deformed space, provides a rich space experience design, and makes residents feel the space expansion from visual, auditory, activity and entertainment perspectives. Solve the severe shortage of urban furniture due to the lack of "no place to sit", "can not sit down", "do not want to sit", or "sit not interesting", and other problems.

In the new era, there is a need to create a new model for the micro-renewal of sustainable community public spaces through the concept of integrated resilient cities that connect inclusive design activities with community residents. Inclusive and innovative design is one of the core issues in

responding to the goals of people's city building, community renewal, and achieving sustainable development. To explore the spatial resources of urban communities and the needs of residents, we must adhere to the concept of "people-centred" urban development and the model of inclusive, innovative development that is tailored to local conditions and needs to guide the humanistic design of urban community spaces and urban space governance from people's construction to people's sharing and to provide a more inclusive, interactive, and entertaining urban community space. It can provide new design ideas for expanding inclusive, interactive, recreational and sustainable functions of urban community space.

Author Keywords

Inclusive Innovation, Sustainable Development, Diversity, People-Oriented, Interactivity, Entertainment

Introduction

Inclusive cities are an essential direction for urban development and governance in recent years, and the "Changing Our World 2030 Agenda for Sustainable Development" signed by 139 member states of the United Nations (UN) in 2015 established 17 Sustainable Development Goals (SDGs) that the world needs to work together for a more extended period in the future.), of which Goal 11 calls for "building inclusive, safe, disaster-resilient and sustainable cities and human communities" (Hua Ting & Zhao Wenwu, 2019), which shows that the construction of new cities is an essential means to achieve sustainable development. This study is based on the modern urban development process, where urban micro-renewal has become an important way for cities to enter into a refined urban layout. The inclusiveness of urban furniture design improves the quality of life in people's cities. The concepts of "urban living room", "public exhibition hall", "pocket park", "urban oxygen bar", etc. have enriched the current exploration experiments of urban renewal.

This paper takes inclusive innovation as the starting point to study the design of neighbourhood furniture in Fengpu District, Shanghai. The research results show that urban neighbourhood furniture design can be categorized and customized according to the living needs of community residents,



from classic to flexible layouts. The practice of urban space furniture design is an urban renewal activity initiated based on the shift of China's urban development from incremental expansion to sustainable stock resource development. The activity is a microscopic view of urban space that truly focuses on the living needs of community residents. The project aims to help urban neighbourhoods gain better sustainability, comfort and accessibility to public space through creative furniture design's low-intervention strategies for urban space stock so that local governments, residents and designers can link up through a social engagement process. Innovative design furniture design is intended to encourage community residents, urban laypeople, and children and the elderly to contribute a variety of draft models of furniture with creative ideas to urban neighbourhoods to realize the vision of joint participation in community homes. While flexibility is an important consideration in the design, it must also be done in a way that avoids excessive spatial and visual complexity (An Yongfei & Li Yu. , 2019). Based on the essential thinking, designers achieve the inclusiveness and adaptability of community space by intervening in the space with creative furniture design strategies to solve the problem of "no place to sit", "can't sit down", "don't want to sit", or "don't want to sit" in the public space for rest and recreation. "unwilling to sit" or "not interesting to sit" and other fundamental problems. The quality of life of urban community residents has become an important issue in urban space design nowadays.

This is a practical project of an old community group in Fengxian District, Shanghai. The local government attaches great importance to the project, introducing design faculty from Tongji University and jointly promoting the micro-renewal construction of the community group with well-known social enterprises. Due to the housing conditions of the community cluster, old infrastructure, lack of high-quality urban space for recreation and many unused marginal areas, the spatial participation of the whole community cluster is very low. Therefore, the project developed solutions by using urban furniture design as a touch point under the guidance of Professor Zhou, from point to line and line to the surface in progressive steps. Urban furniture designs (artistic sitting furniture, child-friendly activity facilities, public art installations) were placed as exhibits in urban neighbourhood spaces (Jing Lu&Zhao Chenxue,2007). The urban space becomes a "community living room", and the design strategy maximizes the remaining space in the urban space to meet the daily interaction needs of the community residents. The inclusive integration between furniture design and urban space promotes the social participation of residents for effective civic empowerment.

Content

Inclusive design of creative furniture in urban neighborhoods

The concept of inclusive design means that all ages can live conveniently in the community rather than treating certain types of people as special groups (Hu Lingling , 2022). Community design should pay attention to the differences and commonality of all people's spatial needs and emphasize the common use for multiple groups of different ages, different physical and mental functions, and different living conditions (Wu Yan& Dai Zhizhong, 2014), and make it an important part

of the construction of "livable cities". The design of urban neighbourhood furniture is not only limited to the barrier-free design to ensure residents' travel and rest but also emphasizes meeting the multi-level needs of residents' life, i.e. from the convenience of life to the emotional demands of social interaction and self-actualization.

Inclusive urban community space construction model of "collaborative governance". On this basis, the basic principles of inclusive urban community space construction are: first, to adhere to the concept of "people-oriented" urban development; second, to adhere to the two-way empowerment of top-level design and grassroots exploration; third, to improve the resilience of inclusion in steady progress; fourth, to comply with the efficiency of open and shared use; and fifth, to adhere to the development of local conditions. (Xiang Pengcheng & Wu Baoting, 2020). Only in this way can urban neighbourhood design be guided to move from people building to people sharing truly.

Design Case

The needs of different groups should be fully respected in creating inclusive and friendly urban neighbourhoods. The way of soliciting creativity for the needs of district residents. Focus on the number of community seating needs and design use style—collaborative co-creation with design seating to care for residents' touch points for community renewal. This paper takes inclusive innovation as the starting point to study street furniture design in Fengpu District, Shanghai. The author's team focused on the needs of community residents, especially the needs of children and the elderly, for resting seats in community spaces and held a "100 Chairs for Dreams" campaign from October 2021 to February 2022 to collect creative proposals from community residents. The project will explore the role and research path of creative furniture in urban neighbourhood renewal.

Practice path

1). The "Hundred Chairs for Dreams" activity is based on the theme of creative seating series, with designers ranging from professional designers to students, sanitation workers, delivery boys, construction workers and other different groups, using chairs as the entrance to show the charm of art and the temperature of the city in an exciting way. In the first phase, a chair creative design competition was held to collect creative design concept works of public furniture in urban neighbourhoods, which could be a wild design idea or a hand-made

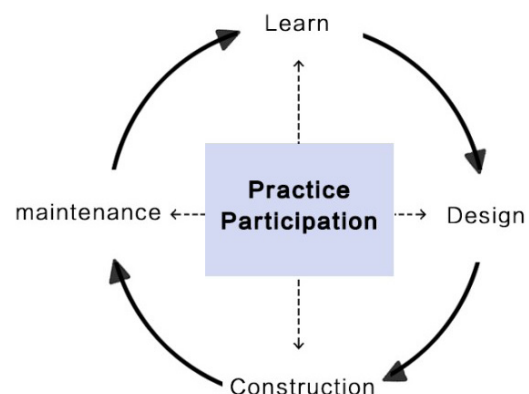


Figure 1. Four-dimensional neighborhood creative design framework model.



Figure 2 and 3. Xu Qiang team of sanitation workers from Shanghai Jiumei Cleaning Co., Ltd. with the design of "Caterpillar Seat", which is rarely seen in the metropolis nowadays. It embodies a kind of nature and ecology, hoping that children can get in touch with nature more and cultivate the concept of environmental protection.

Figure 4. "Pony Chair Seat" designed by Hu Youti, a student of Fengjiuyuan Primary School, hoping that it can bring happiness to the people who ride it like a merry-go-round, and also means a horse to success.

Figure 5. "Smile City" designed by Xi Wangqi, a student of Shanghai Publishing and Printing Higher Specialized College, hoping that the workers on their way home can be accompanied by a happy and relaxing city atmosphere.

DIY model by children. The team collected many street furniture concepts through the design competition and creative workshops held by the community and schools. In the future, some of the chairs will be integrated into the streets and alleys of Fengpu, community shopping malls and schools to convey the "temperature" of the chairs truly. Among them, 100 pieces of design works, such as "Little Wooden Horse" painted by Hu Youti, a first-grader of Fengjiu Academy, "Caterpillar Seat" by Xu Qiang, a sanitation worker at Shanghai Jiumei Cleaning Co.

2). Based on the community application scene, with the cooperation of schools, government, families and social welfare institutions involved in multiple parties, professional designers collect and classify, evaluate, customize and exhibit the award-winning outstanding creative works, transforming the artistic dreams of children, sanitation workers, construction workers, delivery boys and other types of people from two-dimensional drawings into three community public artworks. From the creative source of the chairs, there are chairs cre-



Figure 6. The physical object of "Pony Chair Seat" designed by Hu Youti, a student of Feng Education Institute attached primary school.

Figure 7. Xi Wangqi's design of "Smiling City Seat" in kind.

ated by children as little community planners participating in community gardens; there are works drawn by students through their understanding and thinking about the city and life; there are ideas developed by citizens of different ages in the process of participating in public art; there are warm seats outlined by city service workers combining with actual needs. Student Hu Youti said, "Because I am a horse, I drew a small wooden horse, and 'horse' also means success." After the wooden horse became a real thing on display in the park, she sat on it for the first time to experience it. Delivery boy Fu Jia Nan said he came to Shanghai as a courier and delivery man for ten years before more traffic safety training and activities, the first time to participate in art design activities, and he was very inspired.

The first phase of "Happy School Road" partly realized some of the ideas, Fengxian children's pride and sense of belonging like never before. The project urgently needs to let more children's creativity land to create their own creative neighbourhood.

3). After the end of the 100 chairs exhibition, and then the excellent creative seat furniture works for the follow-up funding activities, outstanding innovative seat community drifting activities. At the same time, through the network of crowd-funding, continue to select other suitable children's creative furniture design works successively implanted in different urban neighbourhood public spaces, to explore the path of urban space furniture design.

This collaborative creative seating design activity, which is participatory, takes the perspective of residents' needs to see the renewal of community space, stimulates residents to participate in innovation, and human needs actively are respected. The creative furniture design activity empowers the community freak zero space, provides a rich space experience design, and allows residents to feel the space expansion from the perspective of visual, auditory, activity and entertainment. Solve the serious shortage of urban furniture due to the lack of "no place to sit", "can not sit down", "do not want to sit", or "sit not interesting", and other real problems.

Inclusive and innovative community design focuses on and addresses the needs of disadvantaged groups in the community as the main content rather than using intelligent technological means to integrate resources to build the community. The inclusive design emphasizes multi-dimensional innovation through concept, system, technology and market to guarantee the innovation-driven development of urban neighbourhood furniture design and the participatory nature of the practice process, aiming to achieve a new urban form with sustainable development and sharing of design achievements. Inclusiveness, resilience, interactivity, entertainment, and sustainability are the core indicators of inclusive urban design (Han Bo, Dai Mingli, 2022).

Results



Figure 8, 9 and 10. The second phase of the exhibition of 100 chairs - creative seat community rafting.

The collaborative and co-creative participatory design activity looks at community space renewal through the lens of residents' needs, stimulating their active participation in the new, human-centred conditions that are respected. In the process of community renewal in urban neighbourhoods, inclusive and innovative community design activities with seating are a unique perspective and an effective methodological strategy for reshaping the community environment. Empowering urban neighbourhood space through creative furniture design activities provides a rich spatial experience design that allows residents to feel the sense of spatial expansion from the perspectives of vision, hearing, activity and entertainment. Solve the severe shortage of urban furniture due to the lack of "no place to sit", "can not sit down", "do not want to sit", or "sit not interesting", and other real dilemma problems. In the process of urban old community renewal, children's creative design injected into community micro-renewal, empowering and reshaping the urban neighbourhood space is a new perspective and effective methodological strategy.

Conclusion

Through the study of inclusive innovative design of urban neighborhoods and the case study of inclusive innovative design practice of furniture in the street 100 chair exhibition in Fengpu District, Shanghai. The author's team focuses on the needs of community residents, especially the problem of the practical needs of children and the elderly special groups for furniture seating in urban neighbourhood spaces, solicits creative design solutions from community residents, determines the number of seats and the function of seat design used by the scale of the regional community space, designers and residents collaborate to create, design research to create a new model of inclusive urban neighbourhood furniture creative design, and considers the community. The design research creates a new model of inclusive urban neighbour-

hood furniture design and considers the future direction of community resilience and sustainability. A four-dimensional framework model of creative design for neighbourhoods is constructed: "participation in learning - participation in design - participation in construction - participation in maintenance", and the role and research path of creative furniture in the process of urban neighbourhood renewal is explored.

The practical case shows that it is necessary to create a new model of sustainable community public space micro-renewal by linking inclusive design activities with community residents through the concept of integrated resilient cities. Without increasing the total amount of actual public physical space, the urban neighbourhood space is empowered by inclusive creative furniture to provide a rich spatial experience. In order to explore the resources of urban community and the needs of residents, we must adhere to the concept of "people-oriented" urban development and the inclusive and innovative development model of designing according to local conditions and needs so as to guide the humanized design of urban community space and urban space governance from people's construction to people's sharing, and to provide a more inclusive, interactive and entertaining urban community space. This will provide new design ideas for the expansion of inclusive, interactive, fun and sustainable functions of urban community space.

Acknowledgments

We would like to thank Shanghai Fengpu Street and Tongji University Design and Creative Experimental Teaching Center, the public welfare organization Clover Hall and other participating organizations for their support, as well as the sanitation workers, construction workers, delivery boys and other kinds of people working in Fengpu Street for their active participation and cooperation. We also thank Professor Zhou Hongtao and the students for their guidance and help writing the thesis.

References

- Hu Lingling. (2022) Multidimensional and inclusive: research on barrier free facility allocation and aging design of outdoor environment in old urban communities under the background of aging Urban Building Space (07), 154-156
- Li Wenjia. (2021). Research on inclusive design of age appropriate furniture in the context of active aging Forest Products Industry (01), 38-42. doi: 10.19531/j.issn1001-5299.20210008
- An Yongfei&Li Yu. (2019). Application and research of humanized design in furniture Textile Industry and Technology (10), 31-32
- Jing Lu&Zhao Chenxue. (2007). Research on outdoor environment design of kindergartens to promote children's social development. Journal of Nanjing Academy of Arts (Art and Design Edition) (03), 166-169
- Han Bo&Dai Mingli. (2022). Optimization of urban community game space based on children's perspective Journal of Shaanxi Preschool Normal University (02), 44-51
- Hua Ting&Zhao WenWu. (2019). Accelerating the Sustainable Development Goals, unlocking actions and achievements for the next decade - A review of the UN Sustainable Development Goals Summit. Journal of Ecology (20), 7788-7791.
- Xiang PengCheng&Wu BaiTing. (2020). Inclusive urban renewal theoretical framework construction. Construction Economics(03),109-113.
- Wu Yan & Dai ZhiZhong. (2014). A Study on the Ageing Adaptation of Public Service Spaces in Settlements Based on Group Diversity. Journal of Architecture (05), 60-64.