

儿童参与式景观设计的理念与实践

Theories and Practice of Child-participation Landscape Design

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摘要: 户外活动场地具有培养儿童运动和游戏能力、社会交往和创造能力、促进儿童身心健康发展等多重功能。为维护儿童作为城市使用者和创造者的权利,应该逐步探索让儿童参与到户外活动场地的设计和营造过程中。本研究选择城市公园中的儿童活动场地改造项目,组织参与式设计工作坊,探索儿童参与式景观设计的目标、机制、方法和流程,优化景观设计模式,促进社会多元文化的构建。

关键词: 社区营造; 公众参与; 低龄儿童; 马赛克方法

Abstract: Outdoor activity field provides multiple functions for children such as sports and game ability, social contact and creation ability and promotion in physical and psychological health. In order to maintain rights of children as users and creators of cities, it is needed to explore the way for children to participate in design and building of outdoor activity fields. Children activity space in city parks is selected in this article, and participatory design workshop is organized, to explore objective, mechanism, method and process for Children-participatory landscape design, so as to optimize the landscape design mode and promote the construction of social diversified culture.

Key words: community building; public participation; young children; Mosaic Method

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1 引言

近年，以公众为中心的普惠公平、全民共商、共建、共治、共享、共融的社会治理格局逐渐形成，强调“公共性”和“开放性”成为了城市建设的主要参考指标^[1]。城市建设需要兼顾不同年龄段的使用者，对儿童而言，活动场地不仅是游戏娱乐和发展身心的场所，也是其学习交流、接近自然和培养能力的第二课堂，是儿童社会知识积累的重要途径^[2]。随着城市现代化进程的加快，儿童活动场地的各种问题逐渐突显，如空间类型单一、绿化率低以致无法感受自然、无法满足儿童之间共融性使用需求、存在安全隐患等，背离儿童的真实需求^[3]。

由于儿童（尤其是低龄儿童）难以明确表达自己的想法和观点，只能成为被动的、被安排的角色^[4]。传统的儿童观认为儿童在生理和道德上是脆弱的^[5]。20 世纪 90 年代，西方兴起新童年社会学理论，William Corsaro 提出其两个核心概念，承认并维护儿童作为城市使用者和创造者的权利：(1) 儿童是积极的、创造性的社会行动者 (Social agents)，他们积极地生产自己独有的儿童文化，同时也参与到成人社会中；(2) 童年是社会建构的、让儿童展开生活的时期，是一种结构性存在 (Structural form)^[6]。因此，让儿童以创造者和使用者的身份参与活动场地的设计营建，能够有效促进儿童身心健康发展、培养儿童的学习和交往能力。参与式设计邀请与场地相关的利益者参与其中，使用者、组织者和设计者三方相互协同，可以成为儿童活动场地设计营造的有效方式之一，有助于营造出真正满足儿童使用需求的活动场地。

2 参与式设计

参与式设计于 20 世纪 50 年代开始萌芽^[7]，Sherry Arnstein 提出了“公众参与阶梯”理论，将参与阶梯分为非参与、象征性和公民权利三档^[8]。Stanley King 等学者认为，参与式设计 (Participatory Design) 是社区设计、合作设计与协力设计三者的结合，可指任何尺度及类型的参与和设计过程^[9]。20 世纪 60 年代，国外最初提出参与式设计“行动规划”构架，做法为直接观察、访谈、实际测量、集体讨论等^[10]，Randolph Hester 在《造访有理》一书中提出许多参与式规划设计的方法与技术，如问卷的调查方法、安排会议的基本技能、组织社区的基本功夫、倾听的态度和方法、精炼问题及设定目标的重要性等^[11]。20 世纪 70 年代，Alexander 开展俄勒冈大学尤金校区参与式设计，让学生和教职员工参与设计^[12]。此后，这一类实践不断被运用到各年龄层人群、各类型场地中。

3 儿童参与式设计

儿童时期是生理、心理和行为快速发展的阶段。与成年人相比，儿童的表达和认知理解能力均具有一定局限性。低龄儿童行为心理和活动特征的规律性参见表 1，因不同地区的地域文化及其他因素的影响，结果会存在差异。对于儿童而言，生活即游戏，游戏给儿童提供了机体运动、认知、社会交往等多样化的活动方式，并构成完整的生活^[13]。

表1 儿童各年龄段的行为心理特征及活动特点^[14]
 Table 1 Behavior Psychological Characters and Activity Characters of Children of Different Age Groups^[14]

年龄段	行为心理特征	活动特点
0-3岁 婴儿期	独立活动能力及语言能力弱 对家人有强烈依赖感, 易被声音、色彩吸引	由成年人陪伴在沙坑、平地、爬台处散步、玩耍; 依靠视觉、听觉、触觉感知世界
3-6岁 学前幼儿期	有独立行走能力和游戏器具玩耍能力 有明确的亲人和伙伴意识	在游戏器具区玩耍, 如滑滑梯、荡秋千等; 在平地玩耍, 如赛跑、滑旱冰等
6-12岁 学龄少年期	心智逐渐成熟, 有明确自我喜好和性格特征 有了集体和学习意识, 对体育活动和探险刺激活动的兴趣增加	游戏时间及活动强度增大, 游戏器械难度增加, 在开放场地开展打球、攀爬、嬉戏和学习教育等活动

1992年, 英国学者 Roger Hart 在公众参与阶梯理论基础上发展出“儿童参与阶梯”理论, 集中于儿童参与的必要性、儿童参与的类型及其参与过程中的沟通技巧和工具等^[15]。挪威学者 Alison Clark 博士和英国学者 Peter Moss 在《聆听儿童: 马赛克方法》一书中提出了研究儿童的马赛克方法(the Mosaic Approach), “马赛克方法赋予儿童一种可能, 使他们唤起自己的一百种语言, 通过各种不同的方式来表现与表达自己^[16]。”21世纪, 澳大利亚儿童参与式设计专家 Fiona Robb 提出“从侧面入手(Coming in from the Side)”的方式: 当政府并没有要求儿童参与规划设计时, 这种行动往往是由学校、社区、开发商或是最常见的设计师发起的, 通过专业动机产生, 即“从侧面入手”(CIFTS)^[17]。针对参与的形式, 日本学者浅海义治认为, 工作坊(Workshop)是参与式设计较好的工具, 工作坊通常是人们随着不同的环境、目标, 在操作内容上有所变化, 但其基本的构成模式不变^[18]。

4 户外儿童活动场地的参与式设计实践

参与式设计理念与实践联合工作坊(2018年)以天津市南翠屏公园儿童广场为基地, 使用者及儿童直接参与方案改造, 表达对场地的真实需求, 与设计师共同描绘未来愿景。工作坊有效地促进居民、设计者和管理部门的密切合作, 收集多方意见, 将资讯整理并纳入改造提案, 以期居民规划出更适宜的生活环境, 打造更紧密的邻里关系。

4.1 基地概述

南翠屏公园是天津市综合型公园, 儿童广场位于园区西北角, 面积14 500 m², 临近城市快速路, 交通便利, 人群聚集度高, 设有常规的基础服务设施(图1~图3)。儿童广场功能复合, 兼有儿童活动与成年看护、户外活动、交通集散和公园综合服务等功能。但是场地内儿童游戏设施类型单一, 缺少亲子互动空间, 缺乏接触自然的机会, 不利于激发儿童创造性游戏。

4.2 工作坊参与者设定与流程设计

为保证工作坊参与者的广泛性, 设计团队对场地使用者、周边社区、公园管理部门等开展调研, 确定工作坊参与者的范围, 选取公园周边的龙滨园、时代奥城、金谷园等社区作为社区工作站。工作坊的参与者包括场地的使用者、周边社区居民和社群组织、专业团队和管理部门(图4), 尤其鼓励和引导儿童参与到活动场地的改造设计中, 工作坊流程参见图5。

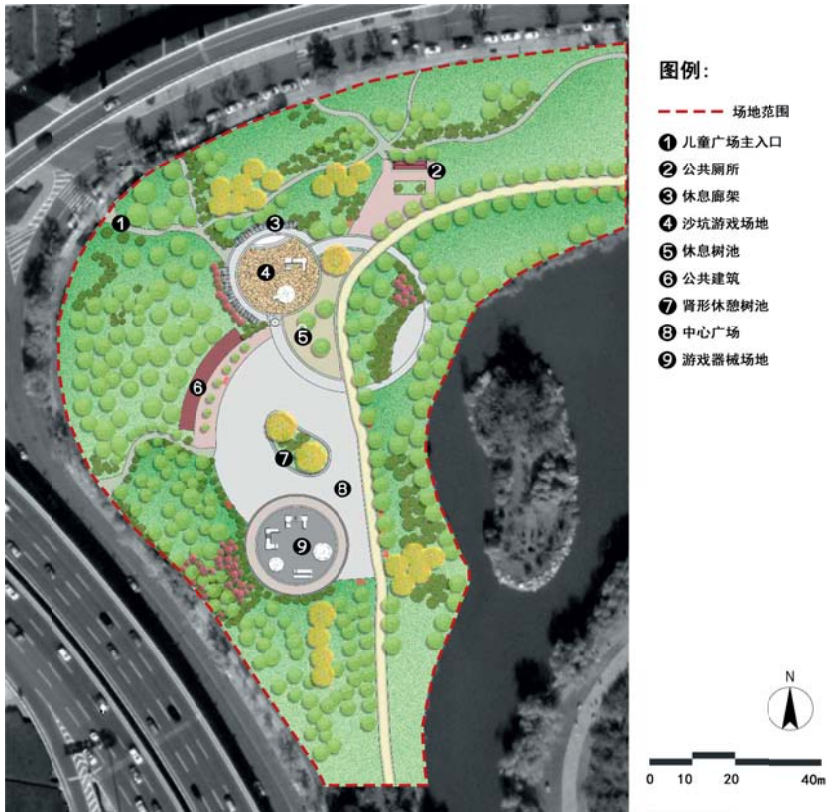


图3 儿童广场现状平面图 (© 联合设计团队)
 Figure 3 Planar Graph of Children's Square (©Joint Design Team)

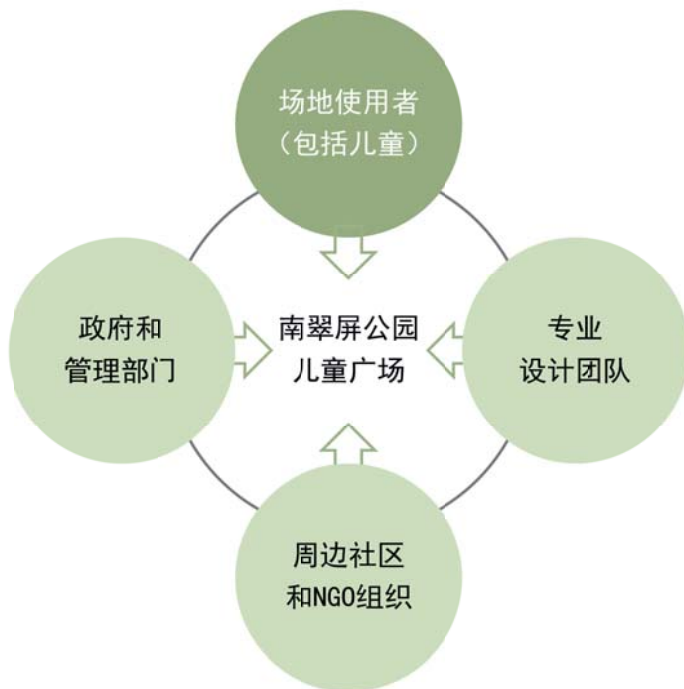


图4 工作坊参与者
 Figure 4 Participants of the Workshop

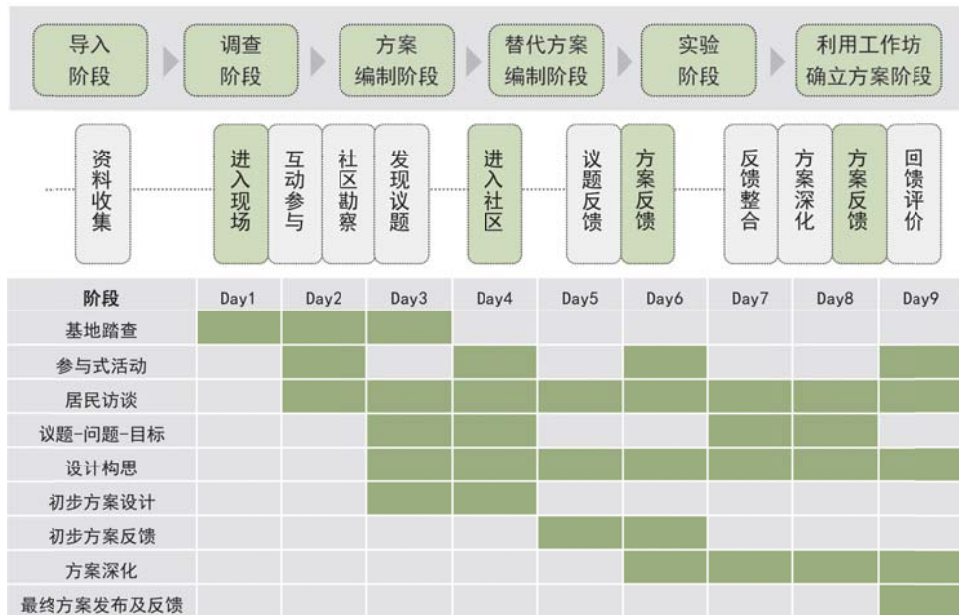


图5 工作坊流程

Figure 5 Process of the Workshop

场域介入方式。首先，进行被动式全天候观察，进而采用更为积极的互动访谈、调查问卷方式直接进行信息采集，最终获得使用人群的行为信息，分析处理后可总结为“问题和议题”。另一种是参与式研究方法，需要儿童参与到活动之中，本次实践设置儿童互动闯关游戏和设施拼贴模型等，将儿童群体的需求信息汇总分析，为后续的改造“目标”提供参考。

5.1 使用人群行为信息的直接采集与分析

设计者就是使用者行为的预见者，使用者的行为即是场所规划的前提要素，要预知使用者的行为，就必须对其行为进行研究^[20]。设计团队运用“渐进式”场域介入的方式，由远到近、由被动到主动观察逐步获取信息，在视域范围内，通过提前绘制的地图全天候、分时段、非打扰性记录使用者行为特点^[21]，掌握该场地使用人群在时间、空间维度上的行为变化，尊重场地已有的行为规律。

根据被动式全天候观察统计结果显示（表 2），南翠屏公园儿童广场工作日使用者以婴儿、青壮年和老年为主，学前幼儿和学龄少年在 8:00~12:00、16:00~19:00 时段活动比例较高，19:00 后儿童所占比例下降，中青年和老年所占比例上升，周末儿童所占比例会上升。儿童广场功能复合、使用者年龄跨度大，因而某一场所的使用者及其行为会根据时间变化而变化，选取沙坑活动场地、休息树池、中心广场、公共建筑、游戏器械场地五个观测点进行被动式观察，主要行为类型见表 3。场地内部分群体间已建立使用次序规律，例如，使用同一场地的儿童早冰练习团体和中老年舞蹈团体的使用时间基本无冲突。

5.2 与儿童的互动游戏

游戏能够让儿童更加自然、积极地表达自我，联合团队设置互动闯关游戏，引导儿童及家长参与到“我是谁、在哪里、做什么、为什么、怎么做？”五个方面、四个游戏之中（表 4），理解儿童对于场地环境的真实看法和意愿。例如“怎么做”环节的“你想怎么玩？”图片选择活动中，提供如踩水、跑跳、可以爬很高等可视图片，由儿童选择他认为最符合他期望的前三项，分享选择理由（图 6、图 7）。

5.3 基于使用者视角的场地“问题、议题、目标”的确立

互动游戏“做什么、为什么”中获取的场所记忆标记点（图 8）和便利贴记录的言语信

表2 儿童广场工作日被动式全天候观察法对使用者年龄的统计
 Table 2 Statistics on Age Groups of Users Based on the Passive All-day-long Observation to Children's Square in Workdays

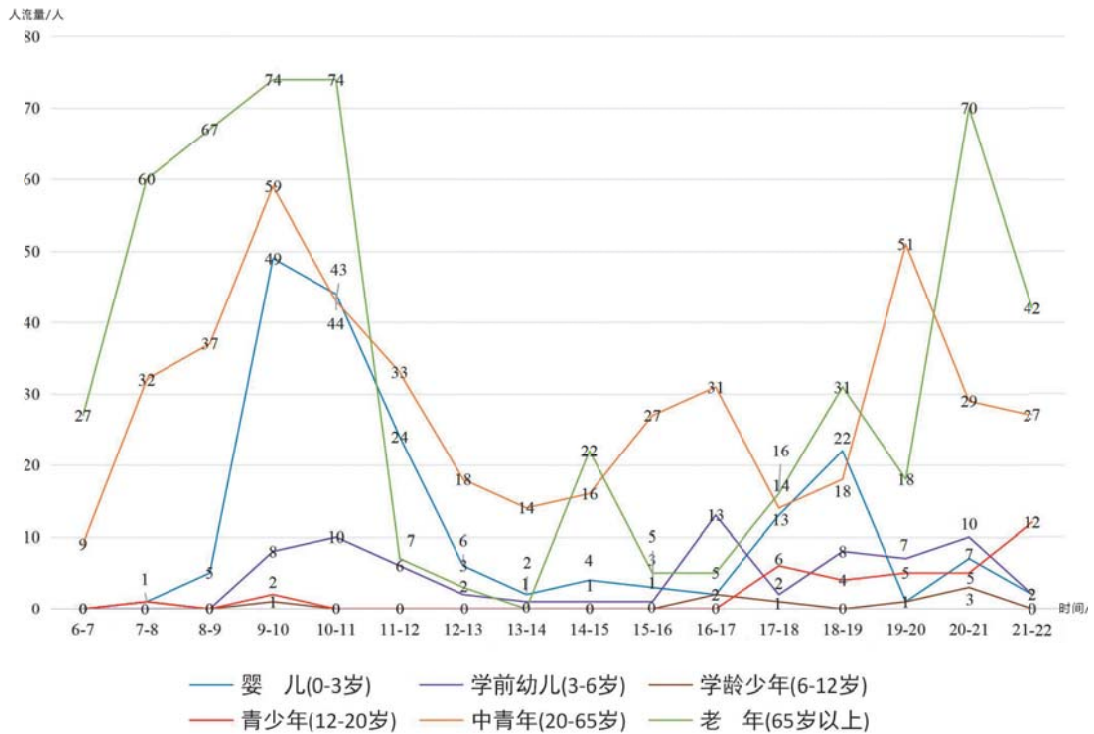


表3 儿童广场各时间段儿童、中青年、老年的行为活动类型
 Table 3 Behavior Activity Types of Children, Middle-aged and Young People and Elderly in Different Time Periods of Children's Square

地点	时间	行为活动（儿童）	行为活动（中青年）	行为活动（老年）
沙坑 活动场地	6:00-8:00	/	健身、拉伸、散步	
	8:00-21:00	沙坑玩耍、遮阳休息	陪护儿童、休息	打牌娱乐、休息
休息树池	6:00-21:00	休息、更换衣物	陪护儿童、遮阳、聊天休息	
	21:00-22:00	/	观赏舞蹈、聊天休息	
中心广场	9:00-18:00	滑旱冰、赛跑、吹泡泡、玩耍嬉闹、玩玩具	踢毽子、散步、休息聊天、陪护儿童	
	18:00-22:00	/	广场舞、交际舞、打羽毛球	
公共建筑	8:00-18:00	购买玩具、食品	摊贩玩具售卖、商品经营	
	18:00-22:00	/	广场舞练习、聊天休息	
游戏器械 场地	8:00-20:00	游戏器械玩耍	陪护儿童、散步	
	20:00-22:00	/	/	

表4 互动游戏法在工作坊中的应用

Table 4 Applications of Interactive Games in the Workshop

参与活动		内容	目的
我是谁 在哪里	【互动游戏小热身】 空间互动模型	制作场地大型模型 专人讲解、收集儿童使用信息	明确改造空间 收集场地记忆点
	【互动游戏第一关】 居住地	在地图中贴出你来自周边哪个居住社区	了解使用者基本情况
做什么 为什么	【互动游戏第二关】 故事分享	在场地地图中贴红色和蓝色的标记点，标示拥有快乐和不快乐回忆的场所或设施，并分享原因，用便利贴记录	对场地现状存在的问题和可保留的设施进行汇总
怎么做	【互动游戏第三关】 “你想怎么玩” 图片选择 模型拼拼拼	请儿童在“你想怎么玩？”图片墙中选出他心中的前三排名活动类型，贴上他们喜爱的贴纸，分享选择理由；手作一些娱乐设施模型，鼓励儿童选择喜欢的并摆放在场地模型中	理解儿童对户外游戏的喜好和期望

息利用“互证”的方式分析总结（图 9）。根据儿童分享的故事的分布结果，有关于沙坑游戏区和器械游戏区的故事记忆约占90%，好的记忆和不好的记忆各占一半，分享关于玩沙、荡秋千和溜滑梯愉快记忆的儿童较多，而对于中心广场和公共厕所都留有不好的记忆；并进一步总结，诸如没有灯具、游乐设施单一等问题，明确活动空间混乱等议题。在互动游戏第三关“怎么做”中，最终获得 90 名儿童关于“你想怎么玩”的贴图作品信息（图 10）。根据选择出现次数进行数据处理，人气排名前五分别为“吊挂、练习平衡、可以爬很高、玩沙堆土以及自然材料制成的游戏环境”（表 5），这些游戏其实是属于游乐场的基本玩法和设施。但是，儿童户外活动场所配置虽然不断更新，却呈现出千篇一律的状况，忽略了儿童对于自然、创造性活动及冒险精神的追求。



图6 公园使用者在现场参与工作坊1 (© 联合设计团队)

Figure 6 Park Users Participated in the Workshop on the Field 1 (©Joint Design Team)



图7 公园使用者在现场参与工作坊2 (© 联合设计团队)

Figure 7 Park Users Participated in the Workshop on the Field 2 (©Joint Design Team)

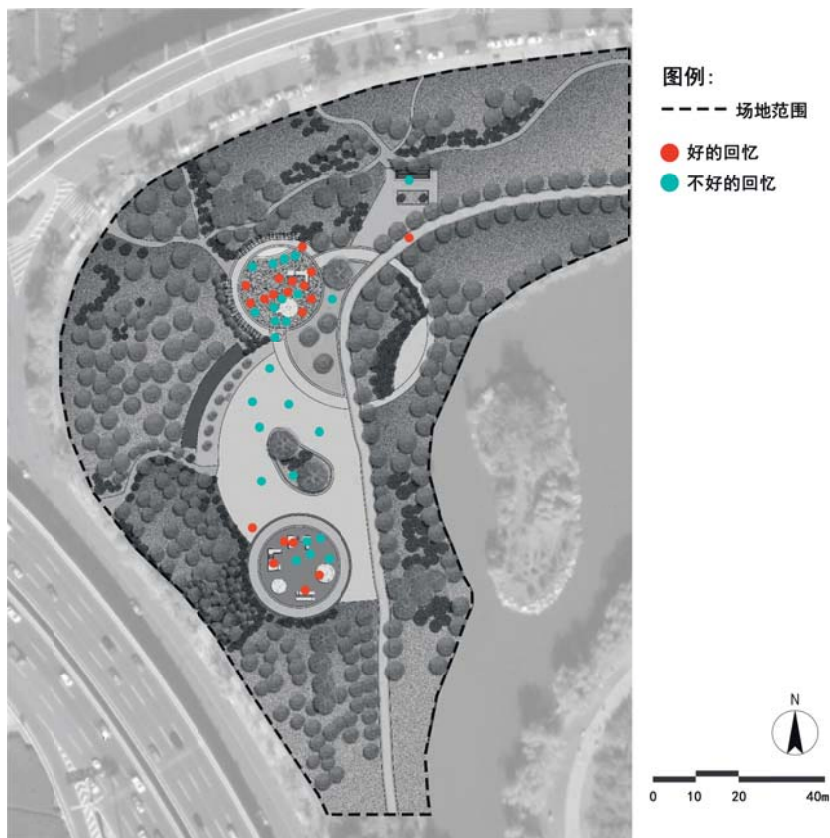


图8 互动游戏第二关：故事分享数据结果

Figure 8 Data Results of Breakthrough 2 in the Interactive Games: Story Sharing



图9 联合设计团队信息汇总与处理过程 (© 联合设计团队)

Figure 9 Information Collection and Processing by the Joint Design Team (©Joint Design Team)

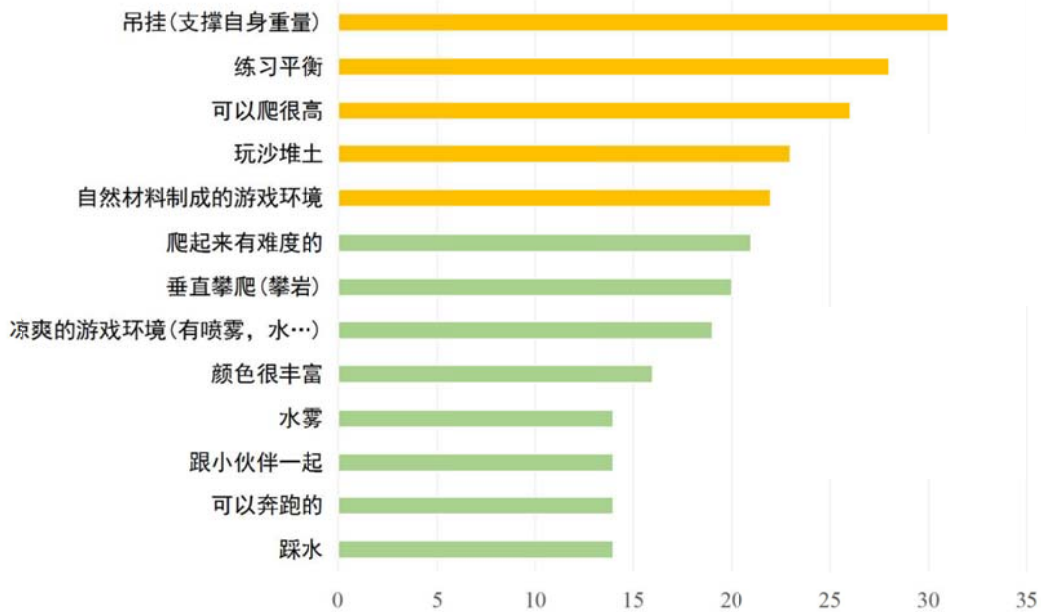


图10 “你想怎么玩”贴图作品 (©联合设计团队)

Figure 10 “What Do You Want to Play” Works (©Joint Design Team)

表5 互动游戏第三关：图片选择数据结果

Table 5 Data Results of Breakthrough 3 in Interactive Games: Picture Selection



按照“数据分析、发现问题、整合议题、制定目标”的次序，将儿童广场现状分为设施、管理、空间、植物、交通五方面，明确场所的问题、议题和目标，汇总后针对每一个议题进行团队讨论和空间层次契合度上的分析，整合出以下 16 条议题（图 11）。以此为参考探寻空间问题的景观优化策略。

5.4 使用者意见反馈过程机制

根据使用者意见反馈过程机制（图 12），明确设计议题和目标，由设计团队进一步完善方案设计。工作坊建立“方案设计、意见反馈、设计优化”使用者意见反馈过程，并由专家、设计团队和管理方进行意见评审。第一轮方案设计从不同的目标提出三个设计方案：以“五感”为主题重视儿童的自身感知；以“丛林间”为主题启发孩子们童真的想象力；以“海港”为主题各年龄层共融，之后再进入社区收集居民建议（图 13）。

5.5 成果发布

最后，设计团队在南翠屏公园儿童广场举行成果发布，将方案设计以图纸和模型的方式进行展示，便于公众直观理解，并进一步收集反馈意见。针对成年人和儿童行为和心里差异设置不同的展示和互动活动，由团队按照“理念普及、模型展示、方案设计”循序渐进地引导公众对方案进行评析（图 14、图 15）。理念普及区向公众介绍社区营造、参与式设计理念和本次工作坊的成果；模型展示区通过实体手工模型向儿童和家长讲解方案；方案设计区通过展板向家长们介绍两套方案的理念和特色。最终两个方案得票数基本持平，居民希望可以把双方的优点进行结合（图 16、图 17）。

6 结语

适用于我国的儿童参与景观设计方法应依据中国具体国情和儿童行为心理特点，不断完善设计流程、方法和反馈机制。推动儿童参与式景观设计，需要重点关注：(1)提高公众尤其是儿童的参与率，组成长期双向沟通群体；(2)在多学科合作，大数据分析支撑研究的基础上，建立甄选儿童有效反馈的机制，以提高数据质量；(3)如何将意见反馈有效转化为景

观设计方案，并应用于实际项目之中。实践过程中需要避免非实质性参与、参与人群受限、目标、议题与方案设计、营造结合度差等状况。未来，逐步提高公众对于参与式理念的接受度，最终建立公众自组织团队和管理机制，以人为本，共同推进美好城市建设。

注：“2018年参与式设计理念与实践联合工作坊”由天津大学建筑学院主办，中国台湾中原大学设计学院景观系、北京林业大学园林学院、南开大学环境科学与工程学院共同参与，指导教师赵迪、连振佑。

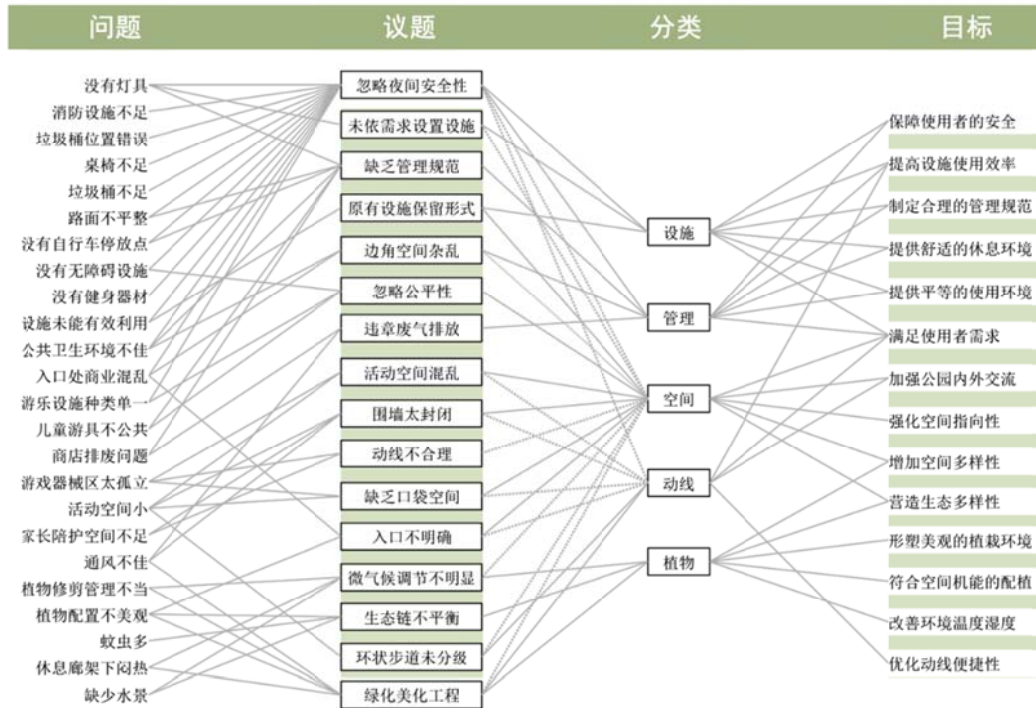


图11 儿童游戏场改造议题整合 (© 联合设计团队)

Figure 11 Integration of Topics of Children's Playground Transformation (©Joint Design Team)

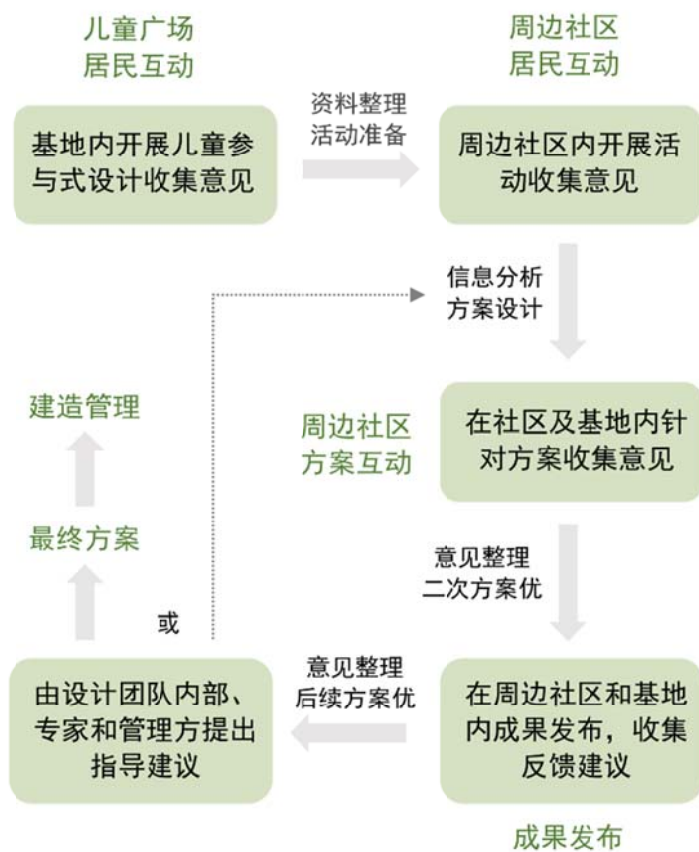


图12 使用者意见反馈过程机制
Figure 12 Mechanism for Opinion Reflection of Users



图13 与使用者一起讨论设计方案
Figure 13 Discussion with the Design Schemes with the Users



图14、图15 民众参与到成果发布会

Figure 14 and 15 Participation of Achievement Release Field by the Public



图16 方案一：“徜徉” (© 联合设计团队)
 Figure 16 Scheme 1: “Strolling” (©Joint Design Team)



图17 方案二：“丛林间” (© 联合设计团队)
 Figure 17 “Among Jungles” (©Joint Design Team)

1 Introduction

In recent years, the social governance pattern with general benefit, fairness, whole-people negotiation, joint construction, and joint governance, sharing and co-melting with the center of the public. The “public character” and “openness” are main reference indexes for city construction^[1]. It is needed to take users of different ages into consideration in city construction. With respect to children, activity fields are not only sites for game, entertainment and physical and psychological development, but also the second classroom for learning exchange, getting close to nature and ability cultivation, as well as important means for children to accumulate social knowledge^[2]. With the acceleration of city modernization process, there are increasingly prominent problems about activity fields for children, such as single space types, low greening rate leading to failure in feeling the nature, failure in meeting co-melting usage demands among children and safety hazards, away from real demands of children^[3].

It is difficult for children (especially young children) to express their ideas and opinions, and they are passive and arranged roles^[4]. According to traditional viewpoint on children, children are fragile in physiology and moral^[5]. The new sociological theory of childhood was emerging in western countries during 1990s. In which two core concepts were proposed by William Corsaro, to recognize and maintain children’s rights as city users and creators: (1) Children are positive and creative social agents, who produce their special children culture in an active way and participate in the adult society. (2) Childhood is a period constructed by the society to make children develop their life, which is a structural form^[6]. Therefore, it is needed to make children participate in design and building of activity fields as creators and users, to promote their physical and psychological development and cultivate children’s abilities in learning and communication. In the participatory design, stakeholders related to fields are invited to participate in the design. Users, the organizer and the designer can coordinate with each other, which is taken as one of effective means for design and building of children activity fields, contributing to building of activity fields really meeting demands of children on using.

2 Participatory Design

The participatory design was emerging firstly during 1950s^[7]. The theory of “public participation ladder” was proposed by Sherry Arnstein, to divide the participation ladder into three levels of non-participation, token and citizen’s power^[8]. According to scholars such as Stanley King, the participatory design is the combination among three parties, i.e., community design, cooperation design and coordinative design, referring to the participation and design process of any scale and type^[9]. During 1960s, the participatory design “action plan” frame was firstly proposed in foreign countries, with the practice of direct observation, interview, actual measurement and collective discussion^[10]. A lot of methods and technologies related to the participatory design were proposed in “Rational Visit” by Randolph Hester, such as the questionnaire method, basic skills of meeting

arrangement, basic works about community organization, attitudes and methods of listening, problem refining and importance of setting objectives ^[11]. During 1970s, the participatory design was conducted by Alexander in Eugene Campus, University of Oregon, to make students and staffs participate the design ^[12]. After that, such type of practice has been increasingly applied to people of various age groups and fields of various types.

3 Children-participatory Design

Childhood is a stage of rapid development in physiology, psychology and behaviors. When compared with adults, there are certain limitations on expression, cognition and understanding abilities of children. Please refer to Table 1 for regularity of behavior psychology and activity character of young children. There may be some differences due to influences such as regional cultures of various regions and other factors. Life means games for children. Games provide children with diversified activity methods such as body movement, cognition and social communication, forming the complete life ^[13].

The theory of “children-participatory ladder” was developed by Roger Hart, a British scholar, based on the theory of public-participatory ladder theory in 1992, concentrating on necessity of children participation, type of children participation as well as communication skills and tools during participation ^[15]. The Mosaic Approach for research on children was proposed in “Listening to Children: the Mosaic Approach” by Doctor Alison Clark, a Norwegian scholar, and Peter Moss, a British scholar. “The Mosaic Approach endows children with a possibility, making them arouse one hundred types of languages and present and express themselves with different methods” ^[16]. In the 21st century, the method of “coming in from the side” was proposed by Fiona Robbé, an Australian children-participatory design expert: If the participation of children in design is not required by governments, such activities are often launched by schools, communities, developers or designers, which is the most frequent condition, to achieve “coming in from the side” (CIFTS) ^[17]. With respect to participation form, according to Qianhai Yizhi, a Japanese scholar, workshop is a favorable tool for the participatory design, which has changes in operating contents with different environments and objectives, with unchanged basic composition mode ^[18].

4 Practice of Participatory Landscape Design of Outdoor Children Activity Fields

The Children’s Square of Nancuiping Park, Tianjin was taken as the base for the “participatory design idea and practice workshop (2018)”, to make users and children participate in scheme transformation in a direct way, to express true demands on fields, so as to describe the future vision together with designers. The workshop has promoted close cooperation between residents, designers and management department in an effective way. Opinions from multiple parties have been collected, to arrange information and include into proposals for transformation, so as to plan more suitable living environments for planning of residents and build closer neighbor relations.

4.1 Overview of the Base

Nancuiping Park is a comprehensive park in Tianjin, and the Children's Square is in the northwest corner of the park, with the area of 14,500 m². It is close to the city fast road, with convenient traffic and high degree of aggregation, with ordinary infrastructure (figure 1~3). The children's Square has composite functions, including children activities, cares by adults, outdoor activities, traffic collection and distribution and comprehensive services of the park. However, the field has insufficient types of children game facilities, in lack of parent-child interaction space and opportunities for children to contact with the nature, adverse to motivating creativity of children.

4.2 Participant Setting and Process Design of the Workshop

In order to ensure wide participation of the workshop, the design team conducts investigation on field users, surrounding communities and management department of the park, to determine the ranges of the participants of the workshop, and communities around the park such as Longbin Garden, Times Olympic Residence and Jingu Garden are selected as the community work station. The participants of the workshop include users of the field, surrounding community residents, community organizations, professional teams and management department (figure 4). Especially, children are encouraged and guided to participate in the transformation design of the activity field. Please refer to figure 5 for the process of the workshop.

5 The Mosaic Approach for the Children-participatory Design

According to "One Hundred Languages of Children", written by Loris Malaguzzi, Father of Education in Italy, children have one hundred languages to express themselves, and we need to listen with one hundred methods. The core of "the Mosaic Approach" is listening to voice of children with multiple channels. The Mosaic Approach is a comprehensive children research technology combined by different methods, just like a mosaic assorted color tray, to finally "information mosaic" aiming at interests, needs and opinions of specific children. The Mosaic Approach includes mainly three procedures of information generation and collection, information arrangement and processing as well as conclusion reflection and practice transformation[19]. With related guidance, it is needed to guide children and the public to participate in transformation of the activity field aiming at behavior psychology and activity characteristics of children.

There are two types of information collection. The first one is direct collection. Aiming at behavior characteristics of using groups, the intervention method of "progressive" field is adopted in this research. Firstly, passive 24h observation is conducted; secondly, more positive information collection methods such as interactive interview and questionnaire are adopted. Finally, behavior information of using group is acquired, which can be summarized as "problems and topics" after analysis and treatment. The other one is the participatory research method, and children are required to participate in activities. Children interactive breakthrough game and activity facility model are set for the practice, to conduct arrangement and analysis on demands of children, to provide reference for subsequent

transformed “objective” .

5.1 Direct Collection and Analysis of Behavior Information of Using Groups

Designers are foreseers of users’ behaviors, which are premise element for field planning. In order to foresee users’ behaviors, it is needed to research on it^[20]. By utilizing the “progress” field intervention method, the design team shall observe actively in a remote - near and passive - active way. It is needed to record behavior characteristics of users with no disturb in different periods of time based on the map drawn in advance within the ranges of view field^[21], to master changes in behaviors of field users in time and space. It is needed to respect existing behavior rules of the field.

Based on the statistical results of the passive all-day-long observation (table 2), most users of Children’ s Square of Nancuiping Park are infants, young people and elderly. Preschool children and school age teenagers have high activity proportion during 8:00-12:00 and 16:00-19:00. After 19:00, children have reduced proportion, and young and middle-aged people and elderly have increased proportion.

Children have increased proportion during weekends. The Children Square have composite functions, with large span in ages of users; therefore, users of certain field and their behaviors change with time. Five observation points of sand pit activity field, rest tree pool, central square, public building and game appliance field are selected for passive observation, with main behaviors described in table 3. Rules for using orders have been established among some groups in the fields. For example, using the same field, the children roller skating exercise group and the middle-aged and elderly dancing group have no conflict in using time.

5.2 Interactive Games with Children

Games make children express themselves in a more natural and more positive way. The joint team sets the interactive breakthrough gams to guide children and parents participate in four games on five aspects “who am I? Where am I?What am I doing? Why? How?” (table 4), to understand children’ s true opinions and intentions on field environment. For example, in the picture selection activity in “what do you want to play” in the “how” process, pictures of treading water, running and jumping as well as climbing high activities are provided for children to select their favorite three items and share the reasons (figure 6 and 7).

5.3 Determination of “Problems, Topics and Objectives” on Fields based on the Viewpoint of the Users

The “mutual evidence” method is utilized to analyze and summarize the field memory markers acquired from “what am I doing and why” (figure 8) and verbal information recorded by the sticky note (figure 9). According to stories shared by children, the memories about the sand pit game area and the appliance game area occupy about 90%, with 50% good memories and 50% bad ones. Many children share happy memories about playing sand, playing on a swing and playing on a slide. Most of children have bad memories in central square and public toilets. Problems such as having no lamps and insufficient types of entertainment facilities are summarized, to clarify topics such as messy activity space.

In breakthrough 3 “how” in interactive games, information of “what do you want

to pay” from 90 children is acquired (figure 10). Data processing is acquired based on frequency of selected items, the top 5 are “hanging, balance exercise, climbing high, playing sand and game environment made by natural materials” (table 5). Such games belong to basic playing methods and facilities in the play field. However, although there are more and more updating in configuration of outdoor activity fields, they are almost the same, ignoring pursuit to nature, creative activities and spirit of adventure of children.

According to the order of “analyzing data, finding problems, integrating topics, formulating objectives”, Children Square is divided into five aspects of facilities, management, space, plants and traffic. It is needed to clarify problems, topics and objectives of the field, and conduct team discussion aiming at each topic and analyze on space layer integrating degree, to arrange the following 16 topics (figure 11), which are taken as references to seek for optimization strategic for landscapes about the space problems.

5.4 Mechanism for Reflection of Users’ Opinions

According to the mechanism for reflection of users’ opinions (figure 12), it is needed for the design team to clarify design topics and objectives, and further complete the scheme design. The “scheme design → opinion reflection → design optimization” users’ opinion reflection process is established by the workshop, and experts, the design team and the management party give reviews on opinions. Three design schemes on different objectives are proposed in the first round: “five senses” are taken as the topic to lay emphasis on senses of children; “among jungles” is taken as the topic to enlighten children’s images; “harbor” is taken as the topic for various age groups. After that, suggests from residences are collected in communities (figure 13).

5.5 Achievement Release

Finally, achievement release is held by the design team in Children’s Square in Nancuiping Park, to exhibit the scheme design in ways of drawings and models for the public to understand. Furthermore, more reflection opinions are collected. Different exhibition and interaction activities are set aiming at behavior and psychological differences between adults and children. The public are guided by the team as per “theory popularization, model exhibition and scheme design” for evaluation and analysis (figure 14 and 15). In the theory popularization area, the public are introduced with ideas about community building and participatory design and achievements of the workshop. In the model exhibition area, children and parents are explained with the scheme in a way of manual models. In the scheme design area, parents are introduced with ideas and features of two schemes based on exhibition plates. Finally, the two schemes have almost the same number of votes, and residents wish that the advantages of the two schemes can be combined (figure 16 and 17).

6 Conclusions

With respect to the children-participatory landscape design method applicable in our country, it is needed to perfect the design procedures, methods and

reflection mechanism according to specific national conditions in China and behavior characteristics of children. In order to promote the children-participatory landscape design, it is needed to lay emphasis on: (1) improve participation rate of the public, especially children, to form long-term dual-direction communication groups; (2) based on multi-discipline cooperation and big data analysis, it is needed to establish and select mechanisms for effective reflection to improve data quality; (3) convert opinion reflection to landscape design scheme and apply to practical projects. There may be conditions such as non-material participation, limited participation groups and unfavorable objectives, topics and scheme design and building combination degree in practical implementation, which shall be avoided. In the future, it is needed to improve acceptance degree of the public to the participatory idea, to finally establish the self-organizing teams and the management mechanism of the public, to promote the construction of cities by putting people first.

Notes: The “joint workshop of the participatory design idea and practice of 2018” is hosted by School of Architecture of Tianjin University, jointly participated by Department of Landscapes of School of Design of Chung Yuan University, School of Landscapes of Beijing Forestry University and School of Environmental Science and Engineering of Nankai University, with the advisers of Zhao Di and Lian Zhenyou.

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