

Involving children in design processes: a systematic review

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Abstract:

This article presents a systematic review of scientific research on children's participation in urban planning and design processes, examined through the lens of intergenerational change. It explores theoretical models, methodological approaches, interdisciplinary reviews, policy initiatives, and institutional mechanisms, as well as practical examples of involving children in the creation of architectural spaces. The review also discusses interaction tools, ranging from workshops and play-based methods to digital technologies (AR/VR), which may facilitate active collaboration between children and professionals. The study considers various levels of child participation, from symbolic involvement to full co-creation, as well as their possible influence on the inclusiveness, sustainability, and adaptability of urban environments. A key finding of the review is that, although children's participation is well represented in theory, practice, policy, and interdisciplinary studies, its long-term and intergenerational relevance remains insufficiently explored. Existing research rarely examines how participatory approaches retain their relevance over time or adapt to intergenerational change. By clarifying this underexplored dimension, the review systematizes existing approaches and provides a foundation for future research aimed at clarifying how children's participation can contribute to the creation of urban environments that remain adaptive and inclusive across generations.

Keywords:

children's participation, environmental design, urban planning, intergenerational adaptability, inclusive architecture

1. Introduction

In the context of rapid urban development, modern cities face numerous challenges, among which the key role is to ensure inclusiveness, sustainability, and adaptability of the urban environment. One of the important aspects of achieving these goals is the active participation of various population groups in the city's planning and design processes. Among them, special attention should be paid to children's participation, which is gaining increasing importance in contemporary urban studies and practices [1,6]. Consideration of the needs and perspectives of the city's youngest residents facilitates the creation of environments that not only meet their current demands but also ensure long-term sustainability and adaptability to future changes [10,27].

The participatory approach to working with children in urban planning has several important benefits. First of all, it contributes to children's development by providing them with the opportunity to actively participate in shaping their environment, which improves their social competence, self-determination, and responsibility [15,16]. Secondly, integrating children's voices into planning processes enables the creation of more inclusive and diverse urban spaces that accommodate the needs of all age groups [32]. Moreover, the participation of children in urban design contributes to the innovation of approaches and solutions, as the younger generation often brings new ideas and unconventional views [34,35].

Previous studies in the urban field, social sciences, and design emphasize the interdisciplinary nature of the topic, combining theories of participation, social justice, sustainable development, and inclusive design [41,50]. However, despite the growing body of research, there are still gaps in understanding

the long-term effects of child participation, methods for its effective implementation, and the impact of generational change on planning processes [41]. For instance, there is insufficient research on how generational changes affect children's spatial needs [54], as well as which architectural and planning solutions can ensure the durability and adaptability of the created environments [46].

This study aims to conduct a systematic review of scientific literature on children's participation in urban planning and design processes, with a particular focus on identifying research gaps through the lens of generational change. Using the methodology of carefully selecting literature from scientific databases such as Scopus, ResearchGate, and Academia, as well as specialized platforms, the study covers a wide range of sources, allowing for a comprehensive analysis of existing approaches and methods of involving children [52]. Particular attention is paid to the theoretical and conceptual foundations of participation, methods and tools for involving children, as well as the impact of this participation on the durability and adaptability of urban spaces [56].

By using an interdisciplinary approach that integrates social, environmental, and architectural aspects, it is possible to gain a deeper understanding of the role of children in shaping the urban environment [33]. The analysis of literature categories such as theoretical frameworks, practical methods, urban studies, and sustainability will help identify key trends, successes, and challenges in the implementation of participatory approaches. For example, theoretical studies examining the concept of the "ladder of participation" [35] and its evolution demonstrate a gradual deepening of understanding of the role of youth in decision-making processes. Practical cases, such as the use of AR and VR technologies for children's visualization of urban spaces

or interactive workshops, show high potential for the effective integration of children's voices into planning processes [2,27,50].

In addition, research on urban policies and strategies aimed at creating child-friendly cities will contribute to assessing the sustainability and long-term impact of such initiatives [1,6]. The analysis of institutional mechanisms and legal frameworks to support child participation demonstrates the importance of creating an enabling environment for participatory initiatives. [41,46]. This includes the development of policies that protect the children's rights as full-fledged participants in urban processes, as well as support of institutions that facilitate this participation [52].

Thus, this study aims to conduct a systematic review of scientific literature on children's participation in urban planning and design, with a particular focus on identifying research gaps through the lens of intergenerational dynamics. By examining how generational change influences the durability and adaptability of participatory approaches, the review contributes to understanding the challenges of creating urban environments that remain relevant across generations.

2. Materials and methods

To generalize and systematize the key aspects of children's engagement in design processes, this review employs intergenerational dynamics as an analytical framework making it possible to trace the influence of generational differences on the adaptability and durability of architectural spaces (Fig. 1). This includes examining aspects of the perception of space by representatives of different generations (e.g., Boomers, X, Z,

Alpha) [54] and the potential influence of the experience of previous generations on modern concepts; tools and methods that facilitate the involvement of children in design processes; the adaptation of architectural spaces to generational dynamics and social change and the identification of barriers to the integration of children's ideas into practical design. Intergenerational dynamics were selected as an analytical lens because questions of durability and adaptability are inherently connected to how spaces serve different generations over time. Research also indicates that generational change influences how other dimensions of inclusion – such as gender, social, and intercultural aspects – are perceived and experienced (e.g., [20,54,55]).

For further coverage of the topic, a thorough selection of literature was made using scientific databases such as Scopus, JSTOR, Sage Journals, and Taylor & Francis Online, which provide access to a wide range of scientific publications. In addition, specialized platforms such as Perlego, ResearchGate, Academia.edu, etc., were used to access certain sources. The search was carried out by title and keywords. For example, the Scopus database, at the time of the search, yields 155 results for the query in the Title, abstract or author-specific keywords (“children” OR “youth”) AND (“participation” OR “involvement” OR “engagement”) AND (“city” OR “planning” OR “design”) AND “generation” PUBYEAR from 2000 to 2024. With each refinement of the query (subject areas, type of source, language), the number of sources changed, and did not give the desired result. Therefore, it was mostly necessary to adjust and refine the queries while relying on the titles and annotations of the sources. Articles from various fields of knowledge related to the topic were included, as it is interdisciplinary in nature.

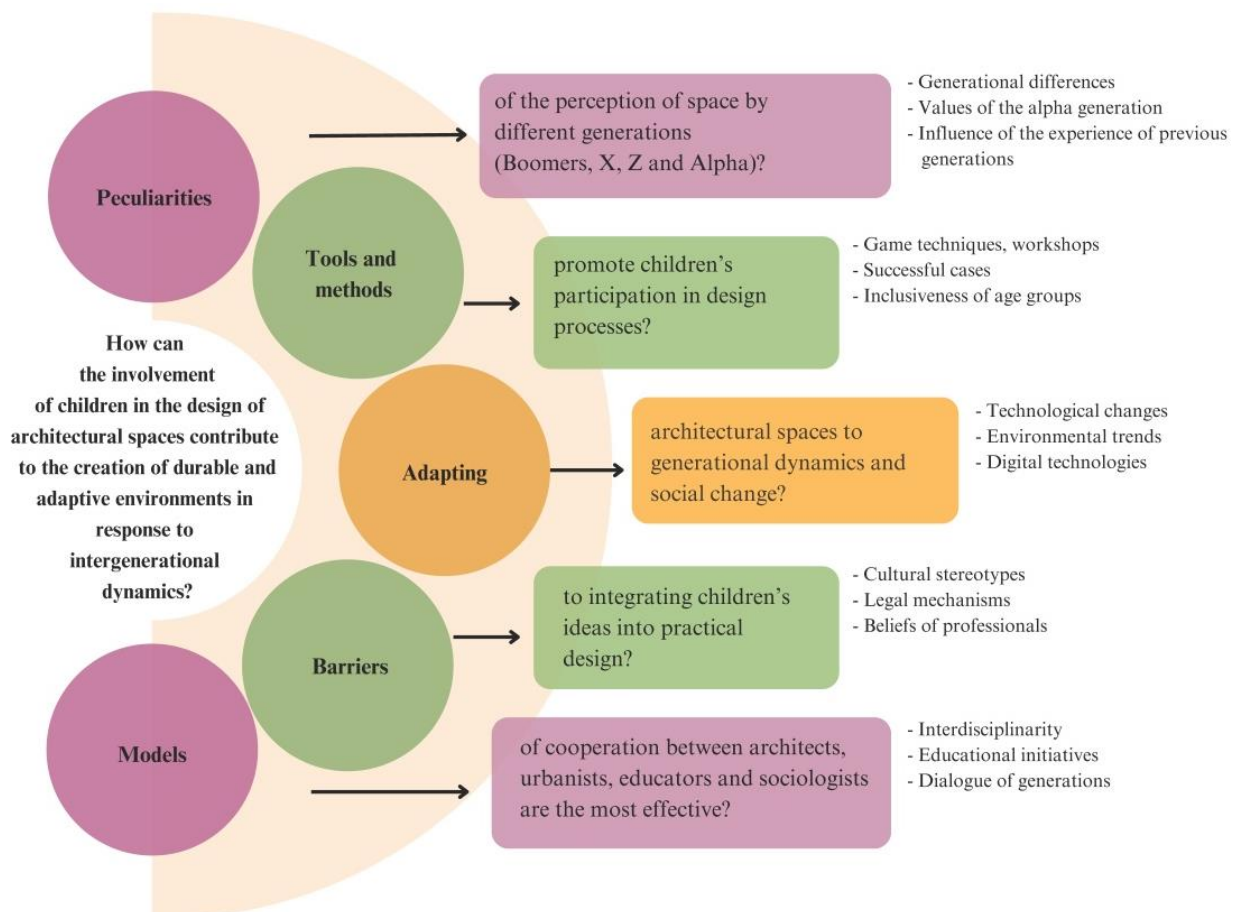


Fig. 1. Analytical framework for structuring the literature review: key aspects of children's participation in design processes and their relationship to generational differences, adaptability, and durability of architectural spaces. Source: author's design

2.1. Inclusion and exclusion criteria (Fig. 2)

The analysis of each source consisted of reviewing the title and short descriptions (if provided) of each publication. The main goal was to find specific signals or keywords that indicate a participatory approach to working with children. Particular attention was given to sources that mentioned “children’s participation”, “children’s involvement”, “children’s engagement”, “participatory design”, “right to the city for children”, as well as phrases about how children participate in decision-making in the planning or design process. If the description or title explicitly mentions children’s involvement, this was the first reason for including the source in the list.

A review of the content and context made it possible to identify those sources that emphasized the process of child participation rather than merely considering their needs. If the text was mainly about “children’s comfort” or “design features for children” without mentioning how they cooperate or interact with adults in decision-making, this source was not included in the selection. At the same time, if the authors talked about “including children in collective design” or “involving them in the planning process,” this was a clear indication of participation.

The next step was to formulate questions that helped to systematize the sources:

Does the work describe how children are involved in design or planning processes?

Does the publication contain information about methods of involving children (workshops, game-based approaches, VR, social research, etc.)?

Does the author emphasize children’s “voice” and their role in decision-making, or is it just a general description of children’s needs?

Is there any mention of participatory theory or methodology (e.g., Hart’s ladder of participation)?

Is there a detailed analysis of policies or programs with a focus on child participation (child-friendly cities, children’s councils, etc.)?

After the initial review and answers to the above questions, each source was subjected to a kind of “filter” to determine its relevance to the “participatory” topic. If it clearly described the forms of participation (participation, involvement, cooperation of children and adults), it was included in the list. If the publication focused more on theoretical discussion about children’s play or design without child participation, it was considered irrelevant. If there were works with the words “participation” or “involving children” or “engagement” in the title, but the content is reduced to general phrases, the source was examined to determine whether it included a description of the process or at least a concept of participation.

From the selected pool of sources, the categories that most often appear in scientific papers on child participation were formed and grouped by thematic areas:

- Theoretical and conceptual frameworks (papers that focus on the theory, principles, and concepts of child participation, literature reviews).

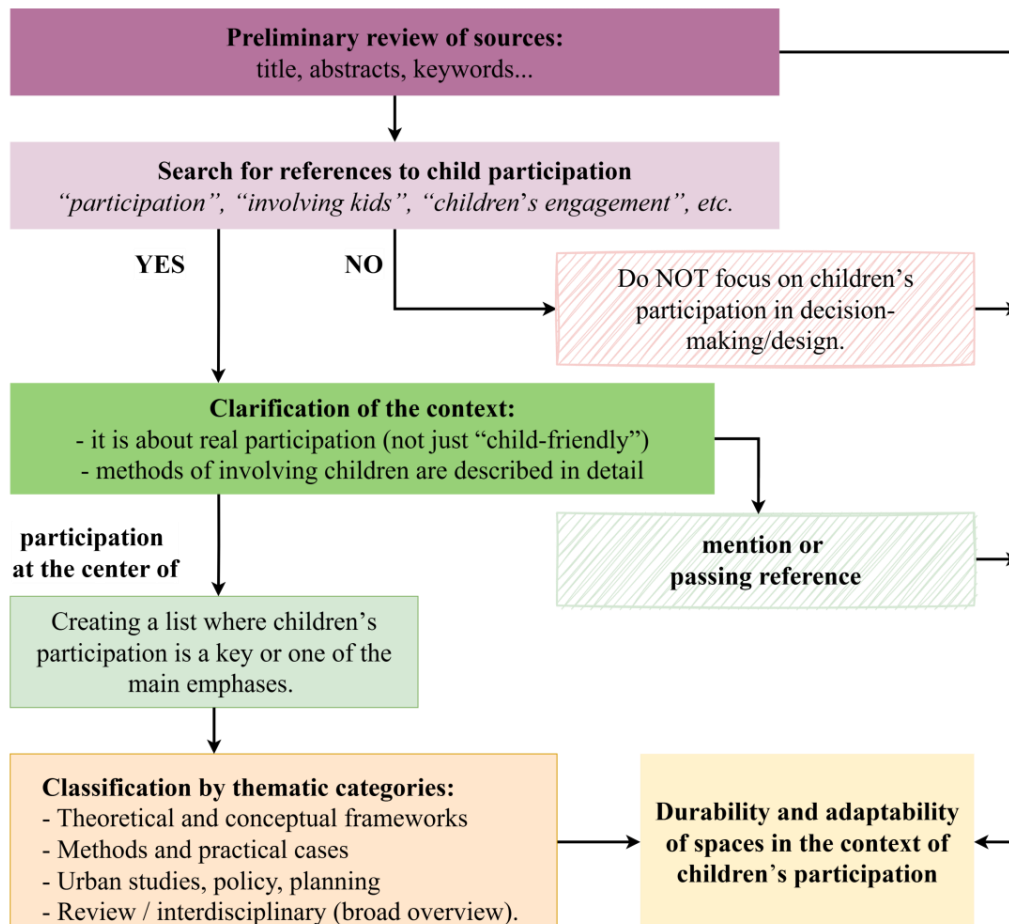


Fig. 2. Logic for selecting and categorizing sources on child participation. Note: this diagram shows the logic from preliminary screening of irrelevant sources, through identifying the degree of focus on child participation, to the final list with a detailed breakdown by category. Source: author’s design

- Methods, tools, and practical cases (studies in which the authors describe specific workshops, programs, game formats, AR, VR, GIS, etc.)
- Urban studies, policies, and planning (on the organization of urban space, child-friendly cities, official strategies, resilience).
- Review/interdisciplinary/synthesis studies (books, large reviews that simultaneously cover methodology, theory, and examples).
- Durability and adaptability of spaces in the context of child participation.

Each category may overlap with sources from other categories (for example, a methodological manual may contain both theoretical foundations and practical cases).

Once the categories were formed, the titles and short descriptions were reviewed again to ensure that all resources that explicitly mention participatory approaches were included. It was also checked that resources that have overlapping themes (e.g., children's participation in urbanism and methodological tools) were mentioned in the appropriate places and categories.

Thus, the process involved a consistent screening of irrelevant references and a detailed review of the text (or its annotation). The main criterion was the degree of real participation of children (in particular, references to their voice in decision-making, joint work with specialists, researchers, and designers). As a result, a final list and a logical division by topic were formed, reflecting different aspects of children's participation in design processes.

The next step was to identify among the sources those that address the question of the durability and adaptability of spaces in the context of children's participation. First, the titles and available short descriptions (if any) were reviewed for direct mentions: "intergenerational", "age-friendly", "generations", "Baby Boomers", "Gen X/Y/Z/Alpha", etc. This made it possible to immediately identify those works that focus on intergenerational interaction or where the authors emphasize how spaces will serve different age groups over time.

Since not all authors explicitly use the terms "generations" directly, an indirect search was conducted through the concepts of sustainability and resilience. Therefore, attention was paid to synonymous or related concepts. Specifically, words such as "longevity", "durability", "sustainable development", "long-term use", "resilience", "future adaptability", as well as "age- and child-friendly" or "intergenerational space". If the text referred to cities or environments that are "friendly to all ages" and able to "evolve over time", this indicated a focus on durability and adaptability.

Sources that mentioned older people, children, and adults within the same space (e.g., "Age- and Child-Friendly Cities") were also identified, as they reflected the logic of intergenerational persistence or adaptation for different age groups.

A separate group of works that mention "sustainable built environments", "urban resilience", "long-term benefits" or "transformative capacity" implies that space is designed not only "for now" but also with an eye to the future generation. In such cases, even if the specific names of generations (Boomers, X, Y, Z, and Alpha) are not mentioned, the source was considered relevant in terms of adaptability and durability. However, if the mention of generations or adaptability was minimal and did not constitute a significant part of the publication, the source was not included in the sample.

The compiled list of papers reflects those that either directly addressed intergenerational issues (e.g., [11]) on "Age- and Child-Friendly Cities" or had significant sections on durability and

sustainable use (e.g., [19]) on sustainable development, or on resilience planning, where space remains relevant to different users over time. In this way, this approach allowed for identifying texts that are potentially relevant to discussions on generational theory and the adaptability of spaces for children who grow up and change their needs, as well as for other age groups. Although there is no direct mention of "generation alpha", "boomers", "generation X/Y/Z" in these works by title or abstract, the above works can serve as a basis for an intergenerational or long-term perspective (intergenerational spaces, sustainable development, resilience).

For a more detailed analysis of the approaches to children's participation presented in the literature, five tables (Table 1, Table 2, Table 3, Table 4, Table 5) were compiled, each summarizing the main studies within a thematic category. The tables present the results of the literature review in a structured form, allowing comparison across key dimensions. Each row represents a single study and includes the following categories:

Source: A reference to an article, book, or study used to gather information for analysis. This can be a scholarly publication, book, or other publication.

Level of Participation: Children's level of participation in the design or planning process: High – a high level of participation where children actively influence the process (e.g., through direct input into design or decision-making); Moderate – a moderate level of participation where children can provide ideas or feedback but do not have full control; Low – a low level of participation where children's role is limited to observation or consultation, with no real influence on the outcome.

Type of Study: A type of research that determines the approach to studying a problem: Comparative Research – a comparative study analyzing different options or cases; Practice-based – a practical study based on real cases or experiences; Research Article – an article published in scientific journals that contains original research; Conceptual Framework – a description of a theoretical model or conceptual framework that helps to understand a particular problem; Systematic Review – a systematic review that collects and analyzes existing research on a particular topic.

Source of Data: Sources of data used in the research: Case Studies – analysis of specific cases or projects; Surveys – surveys or questionnaires to collect data from respondents; Interviews – interviews with experts, practitioners, or other stakeholders; Literature Review – review of existing scientific publications; Observations – real-time observation of processes or people.

Field of Knowledge: The field of knowledge to which the research belongs: Urban Design – design of urban environments and spaces; Child Participation – participation of children in various processes, in particular in design and planning; Child Development – development of children and research on how the environment affects their growth and learning; Social Equity – social equity and ensuring equal rights and opportunities for all, in particular for children.

Approach to Issue: An approach to solving or studying a problem.

These tables enable a quick comparison of different studies based on key parameters, which contributes to a deeper understanding of existing approaches and methods for involving children in design and planning processes.

Taken together, the tables complement the narrative review by condensing the analyzed material into a transparent comparative overview. They highlight both common tendencies and less developed directions in the literature, which are reflected in the analytical summaries of each section and in the overall conclusions of the article.

3. Findings of the review

3.1. Theoretical and conceptual foundations of child participation (Table 1)

The theoretical foundations of child participation in design and planning processes are inextricably linked to the idea of a “ladder of participation” that defines stages from symbolic presence to true partnership [37] and the study of different levels of participation. Building on this concept, Charles and Haynes [18] conducted quantitative and qualitative assessments of participation levels, proposing concepts and criteria for assessing the involvement of younger participants in decision-making. In turn, building on previous research, Haklidi, Orbey, and Shahin [35] reframe the foundational model, emphasizing diverse approaches to participation and the necessity of accounting for the cultural and social characteristics of each community. Thus, the evolution of participatory theory reflects an increasing recognition of youth agency in decision-making processes and emphasizes the importance of adapting models to specific conditions and contexts.

A deeper examination of the process of collaboration between the younger generation and architects and planners not only considers formal involvement in the discussion phase, but also recognizes their contribution and opportunity to influence strategic decisions in space design. This vision is highlighted by Behnia et al. [10], who developed a conceptual model of “deep participation”. A similar goal, analyzing the nature, meaning, and scope of participation through the practices of local governments, academic institutions, and community initiatives, is set in their study by AJA-PLA [1], using a case study with an inductive approach to identify patterns in four cases of child participation. The “deep engagement” approach demonstrates how important it

is to integrate their experiences, ideas, and values into all phases of design.

The idea of proactive design, which contributes to the “renewal” of childhood and the formation of urban spaces focused on the real needs of younger users, is revealed by Francis and Lorenzo [29], who argue that young residents can be catalysts for qualitative transformations if they are provided with the appropriate conditions and tools. Clark [20] supports this notion by proposing methods for engaging the youngest age group, thus emphasizing the importance of considering the characteristics of young children. Although her work is mostly focused on the environment of childcare facilities, it lays the groundwork for the realization that participatory design can be successfully implemented from the first years of life.

A systematic review of approaches and methods of engagement is offered by Ataol, Krishnamurthy, and van Wesemael [5], analyzing experiences with youth in various urban planning and design contexts, highlighting key success factors and barriers faced by practitioners, and outlining prospects for further research in this area. Their analysis emphasizes the need for interdisciplinary efforts and agreed standards to evaluate the effectiveness of younger participants in spatial development processes.

These theoretical models have evolved alongside broader social transformations, and their development can be traced to shifts in societal values and practices, including those associated with generational change. However, the reviewed studies do not explicitly address how participatory frameworks remain relevant across successive generations. Analyzing these models through an intergenerational lens may therefore be particularly valuable, as it points to the need for future research to consider durability and adaptability not only in spatial design but also in the conceptual foundations of participation.

Table 1. Theoretical and conceptual foundations of child participation. Source: own study

Source	Level of Participation	Type of Study	Source of Data	Field of Knowledge	Approach to Issue
1. AJA-PLA, 2023	High	Comparative Research	Urban Design Case Studies	Child Participation in Urban Design	Analyzes how children participate in urban design through different comparative case studies.
2. Ataol et al., 2019	High	Systematic Review	Literature Review	Children’s Participation in Urban Planning	Reviews existing literature on children’s participation in urban planning.
3. Behnia et al., 2021	High	Conceptual Model	Interviews, Design Case Studies	Child Participation in Architecture	Proposes a conceptual model for children’s deep participation in architectural design processes
4. Charles and Haines, 2014	Moderate	Research Article	Interviews, Case Studies	Youth Participation, Decision-Making	Focuses on measuring young people’s participation in decision-making processes, exploring how youth contribute to urban planning decisions
5. Clark, 2007	Moderate	Research Report	Case Studies, Educational Settings	Early Childhood Education, Space Design	Discusses the involvement of children and practitioners in the design of early childhood spaces, highlighting the educational impacts of such participation.
6. Francis and Lorenzo, 2006	High	Book Chapter	Case Studies, Literature Review	Urban Design and Childhood Renewal	Focuses on proactive processes in children’s participation in city design to renew childhood experiences
7. Haklidi et al., 2023	High	Research Article	Interviews, Literature Review	Children’s Role in Architecture and Planning	Revisits the participation ladder and multiple meanings of children’s involvement in planning
8. Hart, 2013	High	Book	Literature Review, Case Studies	Community Development, Children’s Participation	Explores the theory and practice of involving young citizens in community development and environmental care

3.2. Methods, tools, and practical cases of participation (Table 2)

Various approaches to involving children in design processes include creative forms of workshops, collaboration with professionals, and, today, the use of digital technologies. Using a VR (Virtual Reality) visualization tool, such as CAVE (Cave Automated Virtual Environment), which allowed children to interact with two virtual design models and choose their favorite option, Bakr et al. [9] emphasize the potential of VR technologies to empower children to engage in the design process. Similarly, AR (Augmented Reality) is being used in urban projects, which creates new opportunities for more active participation of young people in design processes and helps to better incorporate their opinions in city planning. AR technology makes the planning process more interactive and accessible [2]. Game-based methods in planning that use digital platforms also merit consideration, as noted in the Pop-up Pest project: the developed tool engages

children through an educational game, encouraging them to analyze and propose ideas for transforming urban space [53].

In addition to digital solutions, various forms of workshops are conducted to promote interaction between young people and architects, teachers, and local communities. Detailed descriptions of such activities are provided in the Built Environment Education (BEE) approach, where children, together with specialists, go through the stages from familiarization with the problem to the formation of proposals [26]. A similar emphasis on creative engagement can be found in The Box City Experience, where school-age participants build large-scale city models out of cardboard boxes, thus learning the basic principles of urbanism [49]. The importance of creative workshops is also emphasized in a review of practices published on the ArchitectureNow platform [17], which specifically highlights the role of short-term public sessions with children to enhance public spaces.

Table 2. Methods, tools, and practical cases of participation. Source: own study

Source	Level of Participation	Type of Study	Source of Data	Field of Knowledge	Approach to Issue
1. Argo et al., 2016	High	Conference Paper	Case Study: Bandung City, Indonesia	Urban Environmental Planning	Focuses on youth involvement in urban planning via augmented reality learning
2. Bakr et al., 2018	High	Research Article	Case Study in Kindergartens	Participatory Design in Kindergarten	Uses virtual reality for children's participation in kindergarten design.
3. Can and Inalhan, 2020	High	Research Paper	Case Studies, Observations	Child Development, Design Processes	Discusses the importance of children's involvement in the design process for educational settings.
4. Carroll and Witten, 2019	Moderate	Practice-based	Interviews with Experts	Public Space Design for Children	Explores methods of involving children in designing public spaces through case examples
5. Carroll et al., 2019	High	Research Article	Surveys, Children as Researchers	Urban Planning, Child Participation	Focuses on children's roles as urban researchers and consultants in New Zealand
6. Derr and Tarantini, 2016	High	Research Article	Case Studies, Surveys	Child-Friendly Public Spaces	Analyzes the outcomes and reflections from young people's participation in the planning and design of child-friendly public spaces
7. El-Aasar et al., 2018	Moderate	Conference Paper	Workshops, Interviews	Participatory Design Education	Focuses on workshops involving children to teach participatory design in the built environment.
8. Ensarioğlu and Ozsoy, 2021	High	Research Article	Case Study, Design Analysis	Children's Role in the Built Environment	Investigates children's involvement in the design process through a case study of a play area project.
9. Feder, 2020	High	Ph.D. Thesis	Case Studies, Literature Review	Child-Centered Design	Explores a child-centered design approach focusing on how children interact with their built environment
10. Freutel, 2010	High	Master's Thesis	Case Studies, Surveys	Urban Planning, Children's Rights	A comparative study of children's participation in urban planning in three cities
11. Lozanovska and Xu, 2012	High	Research Article	Case Studies, Workshops	Child Participation in Architecture	Explores how children and university students work together in the architectural design process.
12. Noor Al Huda Mohammad Abu, 2024	High	Research Article	Case Studies, Surveys	Child Development, Kindergarten Design	Focuses on children's conceptualization of space and its role in enhancing creativity in kindergarten design.
13. Bowman et al., 2015	High	Research Article	Workshops, Educational Programs	Educational Design for Children	Discusses how elementary school children are educated through architecture, engaging them in design.
14. Schepers et al., 2019	High	Research Article	Case Studies, Interviews	Participatory Design, Children's Roles	Investigates the roles of children in participatory design processes, focusing on design methods.
15. Tóth and Poplin, 2013	Moderate	Conference Paper	Surveys, Game-based Activities	Participatory Urban Planning	Discusses an educational game for encouraging children and youth participation in urban planning

The third group of examples reveals structural scenarios for children's participation in design processes. For example, The Third Teacher [15] proposes a methodology in which children act as active "co-authors" of the school environment rather than passive users. A similar emphasis on the diverse roles of children in design processes is reflected in the study of participatory design [50], which emphasizes multi-level participation: from "expert users" to "co-designers". These ideas are in line with the work of Derr and Tarantini [25], who, analyzing the results of participatory practices, highlight not only the creative contribution of children, but also the social effects that arise from the realization by young people of their right to influence the environment.

In cases where children acquire the status of "consultants" and urban "researchers" at the stages of data collection and recommendation formulation, the methodology described in the study by Carroll, Witten, Asiasiga and Lin [16] is applied. The practical implementation of the scenario of "barrier-free" interaction between adults and children is presented in the "Play Without Barriers" project, where children's participation is aimed at improving the accessibility and inclusiveness of the children's environment [27].

Some studies focus on integrating child participation into educational programs for professionals themselves. This is the model proposed by Lozanovska and Xu [39], which involves children and architecture students in the co-creation of concepts, an approach that simultaneously enhances the skills of both parties. Another example of a methodological approach is described in the PhD research "Exploring a Child-Centered Design Approach", which attempts to systematize the principles of "child-centered design" across different projects and disciplines [28]. Instead, the work of Noor Al Huda Mohammad Abu [45] focuses on understanding how a child's inner world, world pictures, and spatial representations can directly influence specific architectural decisions in the design of kindergartens.

At the level of urban planning, the effectiveness of child involvement has been demonstrated in a study comparing the approaches of different European capitals [31]. Based on examples from Vienna, Copenhagen, and Madrid, the author analyzes how child participation can be scaled up and integrated into planning structures. These cases demonstrate the flexibility and diversity of mechanisms that enable children to engage in the creative and analytical stages of design, from the micro level of buildings (school spaces) to the macro level of the urban environment.

Modern technologies and evolving generational preferences have complemented traditional methodological approaches to children's participation, expanding practices from workshops to include digital tools. At the same time, most studies focus on individual case studies or pilot projects that capture short-term outcomes. The reviewed literature provides limited evidence about the long-term relevance of co-created spaces, and systematic frameworks for assessing the long-term performance of participatory methods across generational transitions remain underdeveloped in the current research.

3.3. *Urban studies, policies, and planning (urban planning scale) (Table 3)*

Comparative studies in the field of child participation in urban design demonstrate common features and criteria for evaluating the success of "child-friendly" approaches, which form the basis for analyzing the effectiveness of such initiatives. In particular, the AJA-PLA study [1] presents the experience of various cities where

systematic child involvement is integrated into urban planning [38], which allows assessing the sustainability and long-term impact of such practices. Meanwhile, Bridgman [14] focused on specific criteria for the development of "child-friendly cities", emphasizing the creation of safe and accessible spaces for play and active social interaction, which are key parameters for adapting the urban environment to the needs of the younger generation. Further development of these ideas is observed in the study by Wilhelmsen et al. [56], which examines the participation of the youngest children in urban planning. The authors argue that even preschoolers can make a meaningful contribution to the formation of the surrounding space, if they use flexible communication methods, such as visual and tactile interaction tools. For their part, Gomez Gamez and Butina Watson [33] complement the discussion by analyzing urban design methods aimed at involving children and adolescents in urban planning processes. They draw attention to the effectiveness of interactive workshops and consultations conducted in the format of real projects, allowing young people to directly influence decisions about urban space. Overall, the studies demonstrate the gradual integration of children into urban planning processes, which not only contributes to creating a comfortable environment for them but also shapes a new culture of urban coexistence and co-creation.

Another noteworthy paper is Cordero-Vinueza et al. [21], in which the authors explore the concept of cities oriented towards children's rights and analyze the socio-spatial aspects that determine why these cities have not yet been achieved. They examine three important aspects of child-friendly cities: children's rights, physical environment, and governance, which allows for a comprehensive approach to the problem. One of the strongest aspects is the emphasis on the importance of children's participation in the design and governance of cities, which is consistent with the principles of human rights and democracy.

The issue of legal frameworks and institutional mechanisms is addressed in studies on the "right to the city" [4] and "social sustainability" [36]. On the one hand, Ataol [4] proposes a concept of political and legal support that protects the interests of children as full-fledged subjects of urban processes. On the other hand, Hanssen [36] identifies social sustainability tools that make children's participation effective in the long-term development of the city. At the same time, Manouchehri et al. [40] offer a perspective from the Iranian context, analyzing barriers and opportunities in the context of more traditional planning approaches. Similarly, Mansfield [41] draws attention to institutional factors that can either support or hinder the integration of children's voices, especially in communities with informal housing.

Through the lens of social justice, Awada [6] sees child participation as a mechanism for overcoming inequalities rooted in unbalanced access to space. A similar perspective is presented by research on Resilient Cities, where children and youth are involved in resilience and recovery plans [24]. Importantly, it is not only about formal consultations, but also about involving the most vulnerable children, as emphasized by Derr et al. [23], who propose to create "cities for all citizens" where the voice of marginalized children is taken into account on an equal footing with others.

The study of local examples and transformative approaches demonstrates the power of child participation to change the approach to planning at a deeper level. In Belfast [42], it is shown how children can build a sense of belonging to the neighborhood and influence decisions about improvement. Nordström & Wales [46] consider children's participation as a factor in the "transformative capacity" of cities, as the involvement of the

younger generation helps to identify new formats of urban interaction. In the case of the Indian project “Sthala” [48], children proposed solutions for organizing space that reflect the specifics of local culture. At the same time, Strachan [52] systematizes various methods for engaging children and youth in a practical guide, emphasizing the potential of participatory approaches in shaping “transformative” planning. Adding to this perspective, Gupta [34] emphasizes the importance of youth participation in sustainable development, stressing that involving the next generation in decision-making is a prerequisite for the long-term quality of the urban environment.

The analysis of different approaches to engaging children demonstrates the effectiveness of flexible communication methods, interactive workshops, and the legal framework for their participation. At the same time, children’s engagement is seen as a factor of social justice that helps to overcome inequalities in access to urban space. Local examples

demonstrate the ability of children to influence the improvement and transformation of urban spaces, which has a long-term effect on sustainable urban development.

The reviewed policy initiatives demonstrate current success in promoting children’s participation and creating child-friendly environments. However, they provide limited guidance on how such environments can be sustained as demographic and generational contexts evolve. Most frameworks remain tied to present-day needs, leaving unclear whether policies can ensure the long-term adaptability and relevance of spaces created with children’s input. While policies can establish enabling conditions, they cannot by themselves guarantee durability; their effectiveness depends on practical implementation and the extent to which they address intergenerational change. This highlights the need for policy strategies that move beyond immediate outcomes and incorporate adaptability over time.

Table 3. Urban studies, policies, and planning (urban planning scale). Source: own study

Source	Level of Participation Study	Type of	Source of Data	Field of Knowledge	Approach to Issue
1. Ataol, 2022	High	Policy Framework	Interviews, Policy Analysis	Urban Planning and Policy for Children	Discusses policies regarding children’s rights to participate in urban planning in Turkey and Istanbul
2. Awada, 2024	High	Research Article	Case Studies, Interviews	Social Equity in Urban Design	Focuses on the importance of involving children in creating socially equitable urban spaces
3. Bridgman, 2004	High	Research Article	Urban Planning Case Studies	Children in Urban Design	Investigates best practices for involving children in urban planning
4. Cordero-Vinueza et al. 2023	High	Literature Review	Literature Review, Case Studies	Child-Friendly Cities, Urban Design	Reviews the literature on creating child-friendly cities and provides insights on urban planning strategies to foster child participation and improve city environments for children
5. Derr et al., 2018	High	Research Article	Case Studies, Interviews	Urban Resilience, Children’s Participation	Investigates the integration of children and youth participation into resilience planning, drawing lessons from three cities.
6. Derr et al., 2013	High	Research Article	Case Studies, Interviews	Urban Planning, Marginalized Populations	Discusses how to integrate children and youth from marginalized populations into city planning to create more inclusive urban spaces.
7. Gomez Gamez and Butina Watson, 2007	High	Research Paper	Case Studies, Design Guidelines	Urban Design for Children and Teenagers	Discusses urban design approaches to fostering the participation of children and teens in their environments
8. Gupta, 2024	High	Opinion Article	Interviews, Case Studies	Urban Sustainability, Youth Participation	Explores youth engagement in sustainable urban planning.
9. Hanssen, 2019	High	Research Article	Case Studies, Interviews	Social Sustainability, Urban Planning	Investigates how to involve children in designing and planning for sustainable urban childhoods
10. Katsavounidou and Sousa, 2024	High	Research Article	Case Studies, Expert Interviews	Urban Planning, Children’s Rights	Investigates the role of children in reimagining urban spaces and planning for more inclusive cities
11. Manouchehri et al., 2022	Moderate	Research Article	Interviews, Survey Data	Urban Planning, Children’s Participation	Examines the views of Iranian planning professionals on children’s involvement in urban planning
12. Mansfield, 2022	High	Research Article	Case Studies, Interviews	Informal Settlements, Children’s Participation	Discusses institutional factors shaping children’s participation in urban planning for informal settlements
13. McAteer et al., 2023	High	Research Article	Surveys, Community Interviews	Urban Planning, Community Engagement	Investigates children’s perceptions of place-making in their community, focusing on participatory design
14. Nordström and Wales, 2019	High	Research Article	Case Studies, Interviews	Urban Sustainability, Youth Engagement	Focuses on how children’s participation enhances urban transformative capacity.
15. Khatavkar and Jadhav, 2023	High	Research Paper	Case Studies, Workshops	Urban Planning, Children’s Rights	Explores the involvement of children in urban planning processes to ensure inclusive urban development
16. Strachan, 2024	High	Research Book	Case Studies, Interviews	Urban Planning, Transformative Practice	Discusses transformative practices to engage children and young people in planning
17. Wilhelmsen et al., 2023	High	Research Article	Case Studies, Interviews	Child-Friendly Urban Design	Investigates young children’s participation in urban planning to develop child-friendly cities

3.4. Review / interdisciplinary / synthesis sources (Table 4)

The issue of children's involvement in the process of planning and creation of spaces is increasingly considered as a complex phenomenon that includes the experiences, needs, and perspectives of children themselves. An extensive international study in this area is presented in Derr, Chawla, and Mintzer [22], which compiles a range of "placemaking" practices from different countries and offers methodological recommendations for organizing child participation. Similar review works include the publication AJA-PLA [1], which contains a comparative analysis of models of children's participation in design and emphasizes the importance of a systematic approach to involving the youngest residents in the process of shaping the urban environment.

The experience and practical cases of projects where children not only consult but also directly influence the outcome are covered in detail in the book by Bishop and Corker [12]. This collection examines different scales and formats of participatory initiatives, from informal street workshops to institutionalized programs in schools and out-of-school settings. The important theses of this book are summarized in a brief review by Babb [7], which provides a concise overview of the key concepts of "design with children". Special attention is paid to the theoretical and practical aspects of the formation of urban spaces for children in the doctoral dissertation by Ataol [3]. It reveals how the principles of the "capability approach" can be combined with participatory methods, providing children with effective mechanisms to influence the development of their environment.

An alternative perspective on "child-centered design" is presented in the study by Feder (2020) [28]. The author proposes to consider interaction with children not as an occasional element of the project, but as a cross-cutting approach in which the needs and views of the child become one of the determining factors at each stage of design. This concept resonates with the ideas of involving children in decision-making and space evaluation, which are also evident in Severcan's [51] work. She explores how children's participation in planning influences their attitudes toward their environment, self-esteem, and sense of belonging, combining approaches from urban planning, psychology, and pedagogy.

Francis and Lorenzo [30] made an important contribution to the development of the theory of children's participation in urban processes by introducing the concept of "seven realms" of participation, classifying different approaches (from romantic to

proactive). It describes the stages of evolution of children's participation, including child-sensitive planning approaches. The authors combine research from different fields, including psychology, sociology, urban studies, and design. This allows for a broader understanding of how different disciplines can work together to improve conditions for children in urban spaces.

In general, the contemporary approach to designing with children is moving from fragmented consultations to a deeper integration of their experience, which affects the formation of an inclusive and sustainable urban environment.

Interdisciplinary reviews provide a valuable synthesis by mapping the breadth of research on children's participation across fields such as architecture, sociology, and education. However, their focus on categorizing existing approaches produces a largely static picture of the field. These reviews rarely examine how participatory practices evolve over time or whether their outcomes remain relevant as social and generational contexts shift.

3.5. Durability and adaptability of spaces in the context of children's participation (Table 5)

The issue of durability and adaptability of spaces is increasingly being considered in the context of sustainability and focus on the needs of future generations. Studies emphasize the importance of designing spatial solutions so that they remain flexible and relevant over time, meeting the requirements of both the present and distant development prospects. In the literature on the role of children in this process, there is a general tendency to consider young users as key actors whose views should be integrated to create a healthy and sustainable environment.

Christensen and co-authors [19] emphasize "sustainable built environments" where architectural and planning solutions are focused on long-term relevance and preservation of value for children. A similar approach can be traced in the study by Derr and colleagues [23], which emphasizes the formation of sustainable communities that can withstand the challenges of time and ensure the integration of the younger generation. Badland and co-authors [8], drawing on the concept of the New Urban Agenda, put forward the idea that sustainable planning should include social and physical adaptability of spaces that can respond to changes in demographic composition and create equal opportunities for the youngest members of society.

Table 4. Review/interdisciplinary/synthesis sources. Source: own study

Source	Level of Participation	Type of Study	Source of Data	Field of Knowledge	Approach to Issue
1. Ataol, 2022	High	Thesis	Case Studies, Interviews	Participatory Urban Planning	Explores how participatory urban planning supports children and caregivers' capabilities
2. Babb, 2019	Moderate	Book Review	Literature Review	Urban Design for Children	Reviews a book about involving children and youth in urban design, beyond just play areas
3. Bishop and Corker, 2017	Moderate	Book	Case Studies, Expert Interviews	Urban Design, Youth Participation	Investigates how to design cities for children and young people, beyond just playgrounds
4. Derr et al., 2018	High	Book	Literature Review, Case Studies	Participatory Design, Sustainable Communities	Focuses on participatory practices for planning sustainable communities, emphasizing the role of children and youth in placemaking and urban development.
5. Francis and Lorenzo, 2002	Moderate	Research Article	Literature Review, Case Studies	Children's Participation in Urban Design	Identifies and discusses the different levels of children's participation in urban design
6. Severcan, 2015	Moderate	Research Article	Surveys, Interviews	Urban Planning, Children's Perception	Studies how children's participation in planning and design affects their perceptions of their neighborhood.

The involvement of children and young people in the process of shaping “sustainable urban areas” is emphasized by Gupta [34], who argues that appropriate participation can guarantee spatial solutions that are oriented towards future generations. It is young people who are capable of offering original ideas and at the same time, develop a sense of responsibility for the implementation of projects, which will contribute to the durability and adaptability of such spaces. Similarly, Gillett-Swan and Burton [32] highlight the importance of aligning project objectives with the Sustainable Development Goals (SDGs), which cover not only the environmental aspect but also the social component. They argue that inclusiveness and consideration of the diverse needs of children increase the shelf life of infrastructure and better prepare the environment for the challenges that will inevitably arise over time.

Adaptability and an intergenerational approach to urban space design involve creating conditions that cater to users of different ages, considering their evolving needs over time. Biggs and Carr describe the concept of “age- and child-friendly cities” as an approach in which space simultaneously addresses the interests of both the youngest and the oldest generations, ensuring flexibility and accessibility [11]. At the same time, Black et al. [13] note that the approach of integrating children and older people into the urban process is innovative and has great potential for the development of inclusive cities. This approach allows for the creation of an environment in which intergenerational interaction becomes a natural part of social life. Awada [6] considers social equity in planning as a factor that contributes to the long-term use of urban areas by different age

groups, as a balanced consideration of the needs of all segments of society meets the strategic goals of sustainable development. Similarly, Hanssen [36] emphasizes social sustainability, which allows spaces to “stay alive” for children and adults, forming an environment that can change in accordance with the dynamics of demographics and social expectations. All researchers agree that integrating the intergenerational dimension into urban planning creates conditions for interaction between different age groups, increasing the durability and adaptability of spatial solutions.

Resilience in the context of children’s participation in urban planning and architecture reflects the ability of space to withstand external influences, adapt to new conditions, and at the same time maintain its functionality and comfort for children. According to a study by Derr, Sitzoglou, Gülgönen and Corona [24], this approach is implemented through the integration of children and youth views into strategic development programs for “resilient cities”, where play and educational areas are planned that can quickly recover and adapt to unforeseen changes. A similar vision is expressed by Nyahuma-Mukwashi, Chivenge, and Chirisa [47], who emphasize that involving children in shaping space not only increases its resilience to climate or economic challenges, but also lays the foundation for the long-term safety and well-being of urban areas. In both cases, the key is to understand “resilience” as a process of collective learning and a willingness to design an environment that meets the needs of the present and has the potential for evolutionary adaptation in the future.

Table 5. Durability and adaptability of spaces in the context of children’s participation. Source: own study

Source	Level of Participation	Type of Study	Source of Data	Field of Knowledge	Approach to Issue
1. Badland, et al., 2023	Low	Conceptual Framework	Data from Neighborhoods	Early Childhood Development	Proposes a framework for urban areas to support early childhood development through equity
2. Biggs and Carr, 2015	Moderate	Research Article	Surveys and Case Studies	Age-Friendly Cities, Social Work	Explores the relationship between children’s participation and social work in urban environments.
3. Black et al., 2004	Moderate	Research Book	Urban Design Projects	Urban Design, Applied Practices	Discusses applied urban design through contextually responsive approaches for urban areas
4. Christensen et al., 2017	High	Book	Case Studies, Literature Review	Sustainable Built Environments	Explores how children living in sustainable environments interact with the built environment and how their participation shapes such environments.
5. Gillett-Swan and Burton, 2023	High	Research Article	Case Studies, Interviews	Education, Health Architecture	Explores how children’s participation in urban design impacts education and health architecture
6. Meuser, 2019	High	Research-based Design Book	Case Studies, Literature Review	Design for Children, Architecture	Examines the theory and practice of building environments for children based on research
7. Nyahuma-Mukwashi et al., 2021	Moderate	Book Chapter	Literature Review, Case Studies	Urban Vulnerability, Children’s Rights	Discusses urban vulnerability and resilience options for children in the context of climate change
8. RIBA, 2019	High	Case Studies, Design Examples	Research Article	Urban Play Design, Children’s Participation	Explores how to design public spaces with children’s play in mind, encouraging creativity and exploration.
9. Whitzman, 2015	Moderate	Research Chapter	Case Studies, Literature Review	Urban Design, Child-Friendly Environments	Examines strategies to create child-friendly environments in urban centers, especially vertical living

A transformative approach to the formation of urban spaces implies the ability of the environment to adapt to new challenges while maintaining functionality and quality of life for different groups of people. A study by Nordström and Wales [46] indicates

that one of the important factors in this approach is the involvement of children in the planning process. The authors emphasize that the participation of the younger generation expands the “transformational capacity” of the city, as children, with their

original vision and openness to innovation, contribute to the development of spatial solutions that can withstand technological, environmental, and social changes. Strachan [52] works in a similar direction, proving in his handbook on “transformative practice” that accounting for children’s experiences and needs allows designing urban environments with a long-term perspective and flexibility. Here, “transformational practice” implies not only the creation of spaces “for growth” but also the introduction of mechanisms through which architecture and planning can respond to future challenges in time, reformat, and remain viable.

This focus on flexibility and the integration of children’s interests aligns with broader concepts of urban sustainability and resilience, which emphasize the long-term development of the environment. Shifting the emphasis from short-term solutions to creating a city that can “learn” from its inhabitants ensures greater variability and adaptability to unpredictable changes. In this context, the active participation of children not only improves spatial organization in response to their needs, but also creates conditions for innovative ideas that can support the dynamic and at the same time stable functioning of the urban environment.

Contemporary approaches to child-friendly architecture increasingly embrace the theme of durability and adaptability of space, so that the environment remains child-friendly throughout their growth and in changing urban environments. The studies described by Meuser [43] emphasize “research-based design” for children, an approach that implies flexible solutions that can be consistently adjusted to meet the needs that arise as children grow or with changes in socio-spatial realities. In contrast, Whitzman [55] analyzes the creation of child-friendly spaces in the vertical environment of large cities, emphasizing the importance of designing high-rise buildings to provide appropriate conditions for children and their families in the long term. The RIBA’s guidance document [44] aligns with this idea, offering “future planning guidance” for designing play spaces that can withstand the test of time and consider children’s evolving needs. All these approaches share a common focus on futureproofing design solutions, which enhances the sustainability and flexibility of spaces for children of all ages and in various socio-cultural contexts.

The analysis of the sources shows that they cover many aspects, but some key questions remain unanswered. Although the references consider the adaptability of environments, they do not analyze how generational changes affect the durability of architectural spaces. There are no empirical studies that would show how children’s spaces created today remain relevant for future generations. There are no clear criteria or conditions under which the participation of children is most effective or inappropriate. There is no analysis of which types of spaces (public, educational, playgrounds) benefit more from children’s involvement. Although some articles mention generational differences, there is no specific analysis of how these differences affect architectural design. Not enough attention is paid to how different generations perceive space and what differences this creates in design. There are no tools for assessing the durability and adaptability of spaces created with the involvement of children.

Given this, it is important to conduct further research to study the impact of generational changes on the durability and adaptability of architectural spaces and the conditions under which a participatory approach is most effective. These questions form the basis for further scientific discussion and identify areas that require deeper analysis in future research.

Although these works are not related to the design of spaces in the context of generational differences in perspective, they can serve as a basis for creating spaces that meet the specific requirements of each generation, providing not only physical comfort but also emotional attachment to the environment.

Sustainability-oriented studies highlight the importance of durability, resilience, and adaptability in child-centered design. Yet most contributions remain conceptual, with limited empirical evidence on whether participatory spaces actually retain their relevance across generational change. This gap prevents a deeper understanding of how children’s participation translates into environments that endure and adapt over time.

4. Conclusion

The analysis of five groups of studies – theoretical and conceptual foundations, methodological approaches, policy-oriented works, interdisciplinary reviews, and sustainability-focused research – highlights the broad scholarly and practical interest in children’s participation in urban planning and design. However, most contributions remain either conceptual or limited to case studies and short-term projects. This restricts the ability to evaluate the long-term outcomes and adaptability of participatory approaches.

Despite a substantial body of literature, research on the long-term relevance of spaces co-created with children remains scarce. Most examples capture only initial outcomes without addressing whether such environments continue to meet children’s needs under shifting cultural, social, or technological conditions. Furthermore, no standardized methodologies currently exist for assessing the durability and adaptability of these spaces over time.

By systematically comparing findings across the five categories of studies, the review highlights one overarching but multifaceted research gap: the lack of systematic knowledge on how generational change determines the long-term relevance and adaptability of participatory practices in urban planning and spatial design. This overarching gap becomes evident in several dimensions:

- Lack of empirical evidence: Few studies provide longitudinal data on the enduring effects of child participation.
- Lack of evaluation tools: No consistent methodologies exist for assessing the durability or adaptability of co-created spaces.
- Limited spatial differentiation: While studies address various types of spaces (public, educational, residential, recreational), they rarely assess whether the long-term relevance of children’s participation differs across these contexts.

Taken together, these gaps underline the need for a perspective that connects immediate participatory outcomes with long-term questions of durability and adaptability. Intergenerational dynamics offer such a perspective, providing a lens particularly suited to examining how spaces remain relevant for different generations over time while also influencing broader notions of inclusion (gender, ethnicity, disability, or neurodiversity).

This article contributes to the field by synthesizing diverse approaches and proposing a five-group classification of the literature. Such structuring clarifies the current state of knowledge and helps to outline gaps that emerge across different strands of research through the lens of intergenerational change. This review also opens possibilities for understanding how other

dimensions of inclusion – particularly gender and socio-cultural factors – evolve across generations, which may support more holistic approaches to participatory design in the future.

Future studies should focus on:

- developing and testing methodologies for evaluating long-term outcomes;
- conducting comparative and longitudinal research across diverse contexts;
- integrating intergenerational perspectives into urban planning and design practices.

While some conceptual attempts at such models exist, they often remain limited in scope and highlight the need for further empirical and methodological work aimed at assessing the durability and adaptability of spaces over time. Understanding intergenerational dynamics may inform the development of more robust models of children's participation in design processes.

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