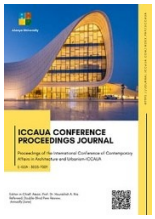

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Tools and Lifehacks for Participatory Design of Public Spaces with Children 5-16 as Co-Authors

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Abstract

The paper explore the transformative potential of children's empowerment in shaping public environments, including schoolyards. It provides insights why participatory practices are essential and can the methods of participatory design with children in learning environment be implemented in urban placemaking. The authors share practical methodologies that engage young children to harness their ideas to enhance public spaces. Architects, educators, psychologists and placemakers present the model of participatory design with children as co-authors based on theoretical framework of Vygotsky's theory, the "ladder of participation" of Roger Hart, and International Association for Public Participation (IAP2) model. They highlight unique challenges and opportunities, the crucial conditions for participation, techniques for interpreting children's wishes and assessing their involvement in decision-making processes, practical tools to support children's self-expression and active participation. The data is ten contextually relevant projects with kids, fostering a strong sense of identity and community. The outcomes, illustrating how these practices transform physical spaces and rejuvenate relationships within the school, promoting collaborative and project-based learning, and in public spaces for kids and their families.

Keywords: Co-design; Participatory design; Kids as co-authers; Placemaking; Early year children.

1. Introduction

As early as the 1970s, renowned urban designer Kevin Lynch proposed a program that would engage young people under the age of 18 in evaluating urban spaces to make cities more child-friendly (Lynch, 1977). The evolution of urban and educational space design increasingly emphasizes user-centeredness (Amen 2021; Amen and Kuzovic 2018b; Aziz Amen 2022; Al-Dujaili, and Amen 2018), yet children, the primary users of school environments and public playgrounds, remain underrepresented in planning and decision-making. Cultural-historical psychology, particularly the theory of L.S. Vygotsky, affirms children's capability to act as cultural agents. Global initiatives such as UNICEF's "Child-Friendly Cities" and Reggio Emilia's pedagogical frameworks reinforce the view that inclusive design processes must engage children authentically. In Russia, however, participatory approaches involving children are seldom institutionalized in spatial planning. Even conventional architectural practices often neglect the voices of children, despite their unique experiential insights. However, practitioners in design consider child engagement fruilful, because the benefits in terms of innovation and appropriateness of design outweigh the negative factors such as the time and resources required (Nesset, Large, 2004).

While international studies have explored children's roles in designing urban and educational spaces, Russian and European contexts stil lack practical, theoretically grounded models for meaningful child participation. Existing practices tend to tokenize children's involvement rather than enable real influence over design outcomes. This study addresses the absence of such models by proposing and testing a participatory design framework tailored to Russian educational institutions and public spaces for kids and their families.

The research aims to conceptualize, implement, and evaluate a seven-step participatory design model that treats children as legitimate co-authors in public spaces transformation. We hypothesize that such participation leads to more functional, emotionally resonant, and well-maintained spaces while fostering children's socio-emotional growth, community engagement, and environmental ownership.

This paper not only contributes a replicable model for participatory design but also demonstrates its practical value. Following the introduction, the methodology section elaborates the model's development and its implementation, the results section describes empirical outcomes, and the discussion interprets findings in light of cultural-historical theory.

2. The model of participatory design

Based on the “ladder of participation” presented in the work of Roger Hart (1992), we understand participatory design as the involvement of users in decision-making about the space created for them. This metaphor reflects the degree of agency of a person in the design of an environment: from manipulation (for example, when designers ask children to draw playgrounds, they want, and then take what they concider to match adults’ project best of all, and do not provide any feedback to the authors) and “tokenism” (when children are asked to express their opinions, but no one takes seriously what they say) - to true participation (when children's ideas are discussed with them, really used in the creation of a project; when the process of transforming children's ideas into architectural and design objects is transparent to them; when decisions are made jointly by adults and children). The International Association for Public Participation (IAP2) model identifies 5 options for citizen participation in design (International Association for Public Participation) (Fig. 1): true participation includes three options - involvement, collaboration (cooperation) and partnership (empowerment). These options differ in the scope of joint activities and the specifics of their types, in the degree of delegation of authority in decision-making. Informing people that a certain space will be created or transformed, how this will happen, as well as the use of various methods for studying existing problems, people's preferences and relationships, including consultations with users, are not the main steps of participatory design, but only precede it. The first two preliminary stages lack the idea of shared responsibility for the outcome. These participation options do not require the "energy" of the community: people can participate as individuals, presenting their personal point of view.

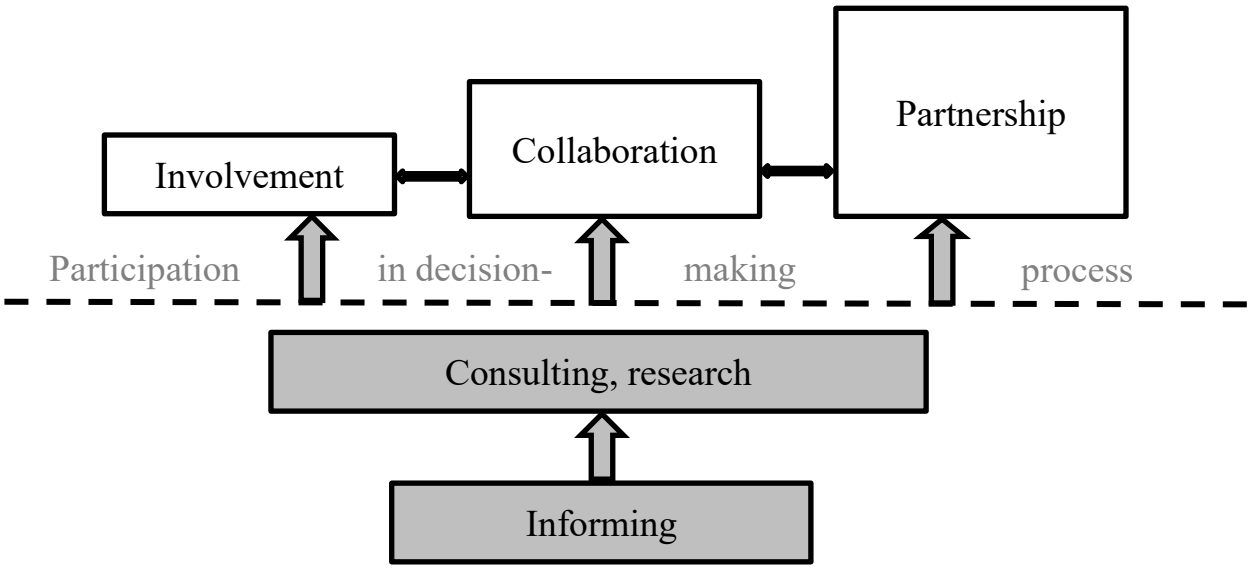

Figure 1. The IAP2 model, restructured by us from the perspective of user participation in decision making.

However, the real practice of participation is a process of creating or strengthening a community, since it involves collaboration, taking into account the opinions and interests of various parties, discussing and developing a common solution. Thus, participatory design with children is not just taking into account their views, it is their participation (in accordance with their age) in all stages of the project, including the preparation of sketches, a concept project, testing of prototypes, getting the approval of documents with adults, and construction. And, of course, users of all ages should take an active part in the development of the space as owners, bringing their identity to it.

According to the cultural-historical approach of L. S. Vygotsky, children master cultural means in the process of development (Vygotsky,1984). In the modern world, they need tools to gain successful experience of participation, because democratic values are only just being established in our society. Pedagogy, which should help children to gain such cultural experience, traditionally does not assume co-construction of their education and educational environment by the child, does not use methods for transferring such tools to children, although this is embedded in the educational doctrine of Russia, European and North American countries and many others. We also use a multimodal approach (Maarten van Mechelen and Jan Derboven (Mechelen, Derboven, 2014), Mara Mintzer and Victoria Derr (Mintzer, et al., 2013)), which focuses on the interests and needs of future users, their values and motives and contributes to a better understanding of them.

In order to develop the practice of participatory design with children as co-authors, it is necessary to find answers to a number of questions:

1) What is the correct way to ask questions to children of different ages? Can we directly ask young children about their preferences and attitudes to something?

2) If so, how should we interpret the statements of children of different ages?

3) What are the tools for involving children in participation? And what is the extent to which children's participation will be full and optimal?

The answers to these questions are reflected in the model of participatory design of public spaces with children as co-authors that we have developed (Le-van et al., 2020), which involves not only kids, but also their parents, teachers, and the entire community in this process.

The model we have developed combines the “voice of children”, architectural principles and cultural norms within the framework of a cultural-historical approach. The model includes seven steps (Fig. 2) that allow one to go from the idea of creating or redesigning the territory (school, kindergarten, public space for kids) through studying the context, traditions, roles of users, through searching for problems, solutions and identity to creating a comprehensive project with the participation of children, teachers and parents and the emergence of a cozy, diverse and unique space for the local community. The participation of any child and adult in this process is voluntary and depends on their desire to be involved and their capabilities. At each stage, a core (working group) is formed, the rest of the community is not so actively involved, but also participates. Let us give a brief description of these steps.

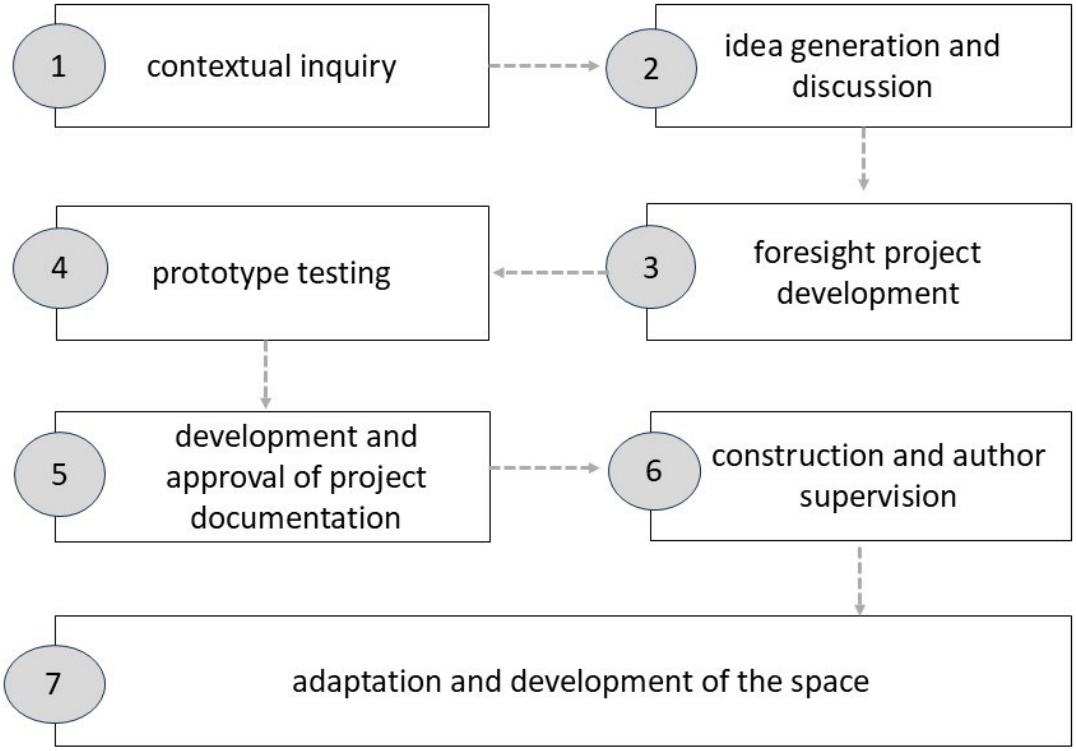

Figure 2. The developed model of participationary design with children as co-authors.

The model consists of seven sequential steps. In the first step (contextual inquiry) children and adults explore space usage, identity, values, and latent conflicts using interviews, storytelling, observations, drawings, photo / videography and mapping. These vatious methods enable children with different abilities to participate, while adults use the collected data to see new needs.

The second step (idea generation and discussion) visual methods are used, such as sticker voting, and moderated dialogues. Facilitators ensured equitable inclusion and mediated conflicting ideas.

The third step (foresight project development) involves collages, 3D modeling, block construction and other handycraft. Inspired by playful tasks, children articulated emotionally resonant visions.

The fourth step (prototype testing) take place during festivals and art-picnics where temporary installations are built and used.

In the fifth step (development and approval od project documentation) architects translate co-created concepts into professional drawings with community validation. Although this stage required technical expertise, children contribute by selecting drawings and giving names to future zones, thereby reinforcing their authorship.

The sixth step involves construction and landscaping. While professionals executed construction, children paint signs, help plant greenery, and design zone markers.

The final step emphasizes appropriation and cultural embedding. Post-construction, interactive walls continued to reflect the evolving relationship between the community and the space. These practices aligned with the idea that appropriation of space should remain open-ended and inclusive.

3. Material and Methods

The model was implemented in ten projects in different cities and towns of The Russian Federation involving interdisciplinary collaboration among educators, psychologists, architects, designers, and placemakers. Two of them were long-term in schools (public and private), three were middle-term in urban spaces (a city park near schools and centers of additional education, a new district for families with children, a chilling zone in an museum), five were short-term testing of some stages on urban festivals and workshops. Each model implementation cycle (long- and middle-

term) followed a structured participatory process (average duration of each project is about 1–2 years). The projects engaged children aged 5–16, parents, teachers, school leadership, and community stakeholders. Children's roles varied by age and stage but included conceptual design, prototyping, feedback, spatial appropriation, etc. Adults served as facilitators, interpreters, and technical supporters.

The model deployed multimodal engagement tools: storytelling kits, sketchbooks, stickers, participatory mapping materials, questionnaires, interactive forums, handycraft models, QR-coded surveys, cardboard installations, and photo/video booths for documentation and reflection.

Qualitative data were analyzed thematically, triangulating field notes, visual documentation, and participant interviews. Reflexive analysis emphasized developmental outcomes and spatial transformations.

4. Results

In each of the ten projects, formats for involving children aged 5-16 in the implementation of the model steps were tested. Below the formats are presented that showed the best results: children's prolonging interest in the process, the extent of their participation corresponding to their age capabilities and needs, and a tangible real contribution to the creation of the project.

In the first step children from middle school were encouraged to walk around the yard and record its use with photos and commentary. For the kids of 5-10 the algorythm of prepared commented drawing was developed (Iakshina et al., 2019). First, the moderator showed the children pairs of photographs of playgrounds that differed in one feature (natural - plastic, with and without risk, etc.), the children chose the one that evoked a greater response from them. At this stage, they learned that each of them could like something that the others did not like. In this way, they got rid of socially desirable answers in the next stage. Then the children were asked to draw a playground that they did not like, and the moderator wrote down for each child what he did not like about this playground. And then the children were asked to change their drawing of the playground so that they liked it, and to tell what visitors would do there, including the child him / herself. Children's ideas sometimes looked fantastic (for example, a chocolate fountain or a roller coaster on a playground). But adults interpreted them from the point of view of children's needs, not literally, in order to then find an architecturally acceptable form. After this, the children were optionally offered to build their own object from wooden blocks of different geometric shapes. Many participants were able to draw a more detailed picture of the site they liked and focus on more feasible ideas. They wanted all the details in the picture to be able to be implemented in the building.

In the second step we observed how a forum wall in the school corridor allowed both children and parents to engage by leaving drawings, notes, and stickers. This low-threshold engagement tool generated an ongoing conversation between children and adults, with ideas circulating daily through interactive posters and QR codes leading to polls. Another form is a cardboard voting column. Information about the project is placed on it. Voting can be organized using stickers and markers. Such a column can also become a video booth. A tablet is fixed in the box (you can use masking tape) and a chair is installed to show that only one person can record his / her opinion at a time. A simple visual instruction is placed in such a booth. The collected opinions are processed using thematic analysis.

In the third step we implement handycraft or block modelling the ideas. For example, the "edible model" event was very involving, where children created spatial models from marshmallows and cookies, helped them grasp spatial relationships and make collaborative decisions in a joyful setting. Playful tasks, such as drawing "a perfect day in the yard" or building spaces from sweets and biscuits, inspire children to create their visions.

The fourth step cardboard "privacy booths" were installed to simulate secluded areas, which children then used for storytelling. According to feedback collected through a video booth, many children appreciated having places "where no one interrupts you". Pop-up picnics also inspired children to participate in the project, when we created real-size objects, which they modeled before, together with them. This usually doesn’t require much money. Building supply stores provide materials in exchange for mentioning their brand on social media when telling about the event. Old furniture and recyclable materials that get a second life are also suitable.

In the fifth step children were given a feedback how their ideas were replicated in the project documentation. Young project participants give unusual names to the objects which are inspired their subculture and materials.

In the sixth step children implement author supervision and check if everything goes on correctly according to the location of the objects and the whole conception. But one project saw a team of parents and children painting the playground fence with motifs based on children's collective drawings.

In the final step, a school in a developing territory started the project “Neighborhood” which turned a former billboard into a dynamic timeline of events, incorporating recognition stickers, hashtags, and responses to user feedback. At this stage, the sense of responsibility for the space created with their participation grows best in children. We observed a steady decrease in vandalism, even where the main users were teenagers who were prone to damaging architectural objects. Even when someone broke or painted something, the other teenagers were indignant and corrected the situation.

The model demonstrated high levels of engagement across age groups. Children expressed pride and emotional attachment to spaces they helped shape. Adult participants reported improved collaboration and insight into children's perspectives. Spaces transformed through this model showed increased multifunctionality, creativity, and child-appropriateness.

Observational logs captured children's agency and negotiation processes. Visual materials illustrated developmental trends (e.g., increased complexity of ideas with age). Parent feedback underscored shifts in community dynamics and perceptions of school space and public spaces for kids, such as public playgrounds.

It is important to note that all these steps were permeated with constant open communication with the community. Neighborhood and school chats became a point of attraction and a tool for involving more and more new participants. We noted that children needed to have a secret space for communication, where there were no adults. There, they were not shy in discussing and expressing their thoughts, but as a result, they brought to adults the most thoughtful and

supported by the entire community ideas. Another lifehack is regular feedback to children about how their ideas are being implemented in a real object. This is especially important at the time of developing and approval of project documentation. Since during this period, active discussion is already ending. Also, thinking about event formats and specific scenarios of events that will occur when the object is built helps to activate the community during this period.

4. Discussions

Participatory engagement activates children's cognitive, communicative, and social competencies. The model transforms design from a top-down process into an educational opportunity. Children's imaginative and emotionally laden contributions enhance spatial diversity and symbolic value.

The effects of reduced vandalism and increased child responsibility are consistent with the research of American scientists Mara Mintzer, Victoria Derr and their colleagues, who showed in their article how a number of public organizations work in partnership to integrate children and youth from disadvantaged environments into the process of transforming residential areas and parks based on their many years of experience using participatory design methods (Derr et al., 2013). Angela Kreutz, Victoria Derr and Louise Chawla emphasize that "the product is not the end of the process" (in the words of Henry Sanoff), it needs to be monitored, re-evaluated and adapted to changing needs (Kreutz et al., 2018). This is part of the transformative practice of participation (Fuad-Luke, 2009) – a continuous and evolving process, part of the democratic culture of community needs (Kreutz et al., 2018). This is why we see participatory design as a process of community and organizational culture formation.

Involving children in the participatory design of the school's outdoor space can act as a first step towards transmitting the values of participation and democratisation of the entire educational process and relationships within the school. These values can be explicated towards the community of parents in the districte where the school is situated.

Findings align with global research by Francis (Francis M., Lorenzo, 2002), Derr (Derr et al., 2018), and Hart (2008) on participatory design with children. Our model expands upon the "ladder of participation" by integrating cultural-historical insights into co-agency development. Unlike tokenistic consultations, our approach emphasizes shared decision-making and outcome co-ownership.

Strengths include methodological rigor, multimodal tools adapted for age variability, and integration of design thinking into educational contexts. Limitations include reliance on facilitator skills and institutional readiness. Some phases, such as construction, remained adult-dominated due to regulatory constraints.

5. Conclusions

The participatory design model enables children to act as co-authors of their spatial environment, resulting in higher satisfaction, developmental benefits, and community resilience.

Embedding such practices within institutional frameworks can promote long-term democratic habits and empower young citizens. The model offers a replicable framework for participatory innovation in education and beyond.

Limited generalizability due to contextual specificity; quantitative impact measures were not systematically captured.

Future research should focus on longitudinal impact assessments, scalability across diverse socio-economic settings, and digital enhancements to participatory processes.

The model is adaptable, for example for public parks and squares, residential courtyards, libraries, etc. It suggests revising educational policy to embed participatory culture into school governance. Further integration with urban planning can enhance civic education and social sustainability.

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Conflict of Interests

The Authors declare that there is no conflict of interest.

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