

Developing child-friendly cities: Young children's participation in urban planning

Terese Wilhelmsen¹, Steinar Øvreås², Hege Roll-Hansen³, Anne-Line Bjerknes⁴, Simen Thorrud⁵

Abstract: This article is based on a collaborative project between a municipality and a research team, aiming to investigate participatory methods that promote young children's interest and participation in, and access to express their views in connection with, urban planning processes. The research question was: What characterizes a child-friendly city for young children and their families? The article is framed within the perspective of children's rights, affordance and child-friendly outdoor environments. The project has employed multiple research methods. The participants were children (aged 3-6) and parents from three early childhood education and care institutions. The children (n=16) participated in guided tours, field conversations, drawing and constructive play using Lego. The parents (n=14) participated by identifying the locations that they preferred to frequent with their children, and a structured survey was used to identify what the parents liked and disliked about the places they identified. Our findings indicate that there are four important features that characterise a child-friendly city: 1) The availability of 'green lungs', 2) Creative and challenging play opportunities, 3) Places for the whole family, and 4) Safe playgrounds and walking routes. We discuss how better knowledge of what characterizes a child-friendly city can contribute to planning processes.

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Introduction

What if we could create cities with our youngest children in mind? What would these cities look like? While the idea of creating child-friendly cities is not entirely new, our understanding of what this might entail is still in its infancy. For centuries, architectural design and the planning of urban spaces have been governed by adult perspectives and needs, with those of our children largely excluded (Lange, 2018). The issue of how to develop child-friendly cities is now becoming imperative. An increasing number of people are living in cities, and urban populations are becoming younger (Gill, 2021). United Nations International Children's Emergency Fund (UNICEF) estimates that by 2050, 70 per cent of the world's population will be living in urban communities, which will include children of different ages (UNICEF, 2012). By 2030, 60 per cent of the world's urban population will be under 18 years of age (Gill, 2021). UNICEF maintains that we recognise an urgent need to identify and remove the barriers that prevent the inclusion of children, and in doing so acknowledge the necessity of including children's needs in urban planning. UNICEF (2018) describes child-friendly cities and communities as those where children are valued, respected and treated fairly, and where their voices and needs are taken fully into account when decisions are made that affect them.

The Convention on the Rights of the Child (UNCRC, 1989) sets out children's rights to freedom of

¹ University of South-Eastern Norway, Faculty of Humanities, Sports and Educational Science, Department of Educational Science, Drammen, Norway, e-mail: terese.wilhelmsen@usn.no, ORCID: <https://orcid.org/0000-0002-0062-2868>

² University of South-Eastern Norway, Faculty of Humanities, Sports and Educational Science, Department of Sports, Physical Education and Outdoor Studies, Drammen, Norway, e-mail: steinar.ovreas@usn.no, ORCID: <https://orcid.org/0000-0003-4364-1898>

³ University of South-Eastern Norway, Faculty of Humanities, Sports and Educational Science, Department of Culture, Religion and Social Studies, Drammen, Norway, e-mail: hege.roll-hansen@usn.no, ORCID: <https://orcid.org/0009-0005-7023-0295>

⁴ University of South-Eastern Norway, Faculty of Humanities, Sports and Educational Science, Department of Mathematics and Science Education, Drammen, Norway, e-mail: anne-line.bjerknes@usn.no, ORCID: <https://orcid.org/0000-0002-7129-9789>

⁵ University of South-Eastern Norway, Faculty of Humanities, Sports and Educational Science, Department of Sports, Physical Education and Outdoor Studies, Drammen, Norway, e-mail: simen.thorrud@usn.no, ORCID: <https://orcid.org/0009-0007-9314-1919>

expression (article 13), and their rights to be heard in matters affecting them (article 12). Article 31 explicitly states that children have the right to engage in play and recreational activities appropriate to the age of the child. General comment number 17 in the UNCRC (2013) states that:

“Children are entitled to exercise choice and autonomy in their play and recreational activities, as well as in their participation in cultural and artistic activities. The Committee underlines the importance of providing opportunities for children to contribute to the development of legislation, policies, strategies and design of services to ensure the implementation of the rights under article 31.”

In line with these principles, the question of how to involve young children in urban planning processes has gained increasing attention in the 21st century. The involvement of children’s perspectives is of key importance for several reasons, including the ecological, democratic and political. The greater part of the world’s growing population lives in urban areas, where the consequences of the planet’s current ecological crisis are most evident. On this criterion alone, there is no doubt that deep and systemic change is needed. The UN Charter of Children’s Rights, which has been formally ratified by Norway and most other states, stipulates that all children have rights to both a life in a healthy environment, and to be heard in matters concerning their future situation. Thus, urban planning with the participation, and for the benefit, of children is not a choice but an obligation.

An increasing focus on citizen participation in urban planning has boosted awareness also of children’s participation, but children still remain marginalized in planning processes, and we have little knowledge as to how such participation can be promoted (Ataol et al., 2019; Mansfield et al., 2021). This is true also in Norway (Hagen & Andersen, 2021; Thorén & Nordbø, 2020). A study by Thorén and Nordbø (2020) demonstrated that local municipalities struggle to include children’s perspectives in their planning processes. The challenges identified in previous research included a lack of projects that promote real participation in the planning and implementation of measures beyond tokenistic consultation, and an inability to take children’s contributions seriously when such contributions challenged expert assessment of the best solutions (Hagen & Andersen, 2021; Källsmyr et al., 2013; Mansfield et al., 2021). The main risks inherent in not recognizing children’s interests and needs will be restriction of children’s opportunities for mobility and insufficient investment in the appropriate provision in local communities of creative outlets and spaces for play and recreation. One example, commonly observed in many cities, is that a greater focus on vehicle facilitation in urban development significantly inhibits children’s opportunities for independent mobility and social affordances.

Only very few studies have explored the involvement of pre-school children in urban planning (Ataol et al., 2019; Mansfield et al., 2021). Such studies have shown that even at the age of two, children can make important contributions to urban planning if processes are appropriately adapted to their level of maturity and forms of communication (Ergler et al., 2021; 2022; Freeman et al., 2017; Smith & Kotsanas, 2014). In order to explore the views of toddlers (children aged between 0 and 2), techniques such as observation and interviews with their carers have commonly been adopted (Agarwal et al., 2021). For children aged between 2 and 6, a multitude of approaches are available, including drawing, map making, interviews, the use of photography and three-dimensional constructions, guided tours, or a combination of these (Ergler et al., 2015; 2021). We believe that the relative lack of research in this field is not due to a shortage of methodologies, but more likely a lack of understanding of how such methods can be applied with children, combined with a poor appreciation of the social and political reasons why children’s participation in urban planning may benefit both the planning process and the children themselves. Sinclair and Franklin (2000) offered a summary of the reasons for children’s participation that involved i) the upholding of a child’s right to participate, ii) the enhancement of democratic processes and the need to meet legal responsibilities, iii) the improvement of relevant services and promotion of child protection in local communities iv) improved decision-making, v) the enhancement children’s skills, and vi) the promotion of empowerment to help enhance children’s self-esteem.

In the light of the foregoing, this present project has aimed to further explore some of the methods that promote young children’s interest and participation in urban planning, and to look into how children can be given a meaningful voice. The study is based on a collaborative research and development project

carried out by a research team and a Norwegian municipality. As outlined above, the project is framed within the context of a children's rights perspective, in which children are viewed as citizens living in a democracy with the right both to have their voices heard and to participate in matters affecting their everyday lives. The research question that guided this study was: What characterizes a child-friendly city for young children and their families?

Context of the Project

Previous projects aimed at designing participatory urban planning systems involving children and young people have mostly addressed situations in underprivileged areas characterised by poor living conditions and social problems (Kruger & Chawla, 2002). Our project is contextualised within a similar background, and was initiated when Drammen municipality invited us to explore ways to promote the participation of young children in an urban development project. The project, funded by the state and called 'Områdesatsing Strømsø', was centred on the redevelopment of Strømsø, an inner-city district in the city of Drammen. The district is characterised by working-class neighbourhoods subject to heavy vehicle traffic and high levels of air pollution. The area has a mixed housing stock, dominated by apartment buildings and areas of detached and semi-detached townhouses, characterised by high rates of resident turnover (Ruud et al., 2022). When the project was being carried out, the area was the subject of comprehensive redevelopment plans, involving the restructuring of its communications infrastructure (train lines) and extensive commercial development in an attractive riverside setting. In order to meet the requirements of the Planning and Building Act, the municipal authorities were seeking ways to involve local residents and the business community in the planning process. Both groups were invited to participate and to express their hopes and aspirations for their future urban environment (Drammen Municipality, 2023).

As is the case in many such situations, and despite the broadly democratic and participatory ambitions of the planning process, the views of the youngest residents seemed to have been given little consideration. While the stated visions and future scenarios for the area included the apparent needs of young families, only very limited efforts were made to obtain contributions from the children themselves. Participatory events and methods were clearly designed primarily to reach the adult population. This caused concern among some municipal officials, who recognised a need to mobilise for the rights of the district's most vulnerable citizens and counterbalance the overreaching interests of the developers. Their argument was driven by a motivation to develop a child-friendly urban environment, combined with a political ambition to address the area's social challenges and hopefully promote greater levels of social justice. Hence, our 'target group' (young children) was in the first instance marginalized in terms of influence on two fronts; firstly because of their age and limited access to voice their views, and secondly as a result of their class affinities.

Theoretical Perspectives

According to Carrol et al. (2019), children have as much 'right' to a city and its communities as adults. The inclusion of children in urban communities entails recognizing them as citizens with an equal right to be seen and to express themselves; to be regarded collectively as a natural component of public areas, and as active members of the community in which they live (Kallio et al., 2020). To restrict the presence of children to child-designated spaces is not sufficient to make a city child-friendly. One problem with child-designated spaces, such as playgrounds, is that these are inherently segregational and encourage social isolation from the adult world (Haikkola et al., 2007; Lange, 2018). A child-friendly environment is one in which children can feel safe and secure; in which they have access to basic services, a clean environment, and opportunities for play, learning and development with a high level of independent mobility and actualized affordances (Arup, 2017; Broberg et al., 2013; Kytä, 2004; UNICEF, 2018).

The theory of affordance is ecologically-based and has been developed by Gibson (1979). Affordances are described as invitations to action that are found in the relation between an environment and a person perceiving the same environment through the active detection of information (Gibson, 1979, Kytä, 2003). Children and adults may perceive different affordances in a given environment based on their

age, body capacity, interests and experience. An urban community with a high number of actualized affordances will offer many meaningful activities for young children. At the same time, we must also be aware that a given environment may be emotionally appealing even if it lacks a large number of affordances. A high rate of affordance does not guarantee appeal or a sense of belonging to a given space or environment (Kyttä, 2003, p.72). To understand the connections that young children establish with given places, we must look beyond affordances alone, and embrace the embodied sensory and emotional experiences that children encounter through play (Jørgensen, 2017; Raymond et al., 2017). Another key aspect here is to consider how a child's independent mobility can be restricted by physical barriers and regulations. For example, anxious parents may impose safety rules that restrict a child's engagement in play (Little, 2015). If parents are bored standing around in a playground without benches or other adults to talk to, then the time spent in the playground with their children will be curtailed (Kyttä, 2003; Ataol et al., 2022). Clement and Waitt (2018) emphasised that independent mobility among children under the age of four is linked to pram mobility and the presence of safe transitions and corridors in their city. It is interesting that in some cities, abandoned railways have recently been rehabilitated as public green spaces and corridors (Zhang et al., 2020). Such initiatives may have multiple benefits in terms of their ecological value, improved landscape design and possible enhancement of the quality of urban life (Zhang et al., 2020).

Children's Engagement with Nature

The benefits of children's engagement with nature are well documented. A systematic literature review conducted by Gill (2014, p. 18) identified well-founded support for claims that allowing children to spend time in natural environments is associated with improvements in motor fitness, mental health and emotional regulation; that it promotes greater knowledge of the environment and the development of adult pro-environmental views; that it enhances their feelings of connection with nature, and that living close to green spaces is associated with greater physical activity.

However, we also have clear indications that the chances of an urban child growing up close to green spaces depends very much on the family income. Studies have shown that people from low-income, inner-city households suffer more from air pollution, noise and traffic incidents than those living in the more affluent outer suburbs where green spaces are more abundant (Hillman et al., 1990 cited in Barker, 2003, p. 136). Furthermore, the benefits and disadvantages of urban vehicle mobility are often unevenly distributed. Groups including children, people with disabilities, women, ethnic minorities and those from low-income households, typically exhibit lower levels of mobility (Gauvin et al., 2020). Green spaces are also recognised as increasing the quality of life by providing various social, economic, and environmental benefits (Mensah et al., 2016). Thus, we recognise a need to create and conserve urban green spaces in ways that are socially just, making them easily and equally available to all urban residents (Cutts et al., 2009).

Children's Independent Mobility and Affordance in Cities

Children's independent mobility is an important determinant of the child-friendliness of a built environment (Cutts et al., 2009; Kamruzzaman, 2017). An important issue here is the degree to which young children's mobility and play opportunities are taken into account in urban planning. Both Barker (2003) and Cutts et al., (2009) have highlighted that children living in cities face increasing restrictions on their independent spatial mobility due in part to safety concerns originating from the traffic that is required to facilitate the mobility of other citizens. The main explanations offered in the literature for the reduced opportunities for children's independent movement in cities are increased volumes of traffic, the fear of 'stranger danger', and changes in the roles of family members, such as the increased participation of women in the labour market (Barker, 2003).

Another concern is the availability of appropriate spaces for children to play in. In Norway, children experience that an increasing amount of their leisure time is subject to formal organisation by their parents and caregivers, thus reducing their opportunities for free play (Nordbakke, 2019). There may be many reasons to why parents actively choose to organise their children's leisure time, such as a lack of accessibility to natural play areas (Broch et al., 2022; Nordbakke, 2019), a perception of danger (crime or

traffic) in certain neighbourhoods (Skar et al., 2016), an absence of available playmates, or a devaluation of the inherent value of play (Brown, 2011).

The literature offers two reviews that summarise how a child's life is affected by its local environment (Christian et al., 2015; Nordbø et al., 2020). Nordbø et al. (2020) found that lower volumes of traffic and higher levels of perceived safety in a given neighbourhood are positively associated with more outdoor play among children. However, only three of the studies reviewed included children under the age of six. Christian et al. (2015) examined the association between the neighbourhood environment and the health and development of children up to seven years of age. Their results were somewhat similar to those of Nordbø et al. (2020) for the same age group, in which outdoor play was negatively correlated with traffic volumes. It was also found that children with limited access to recreational and community facilities such as playgrounds, enjoyed fewer peer play and family outings.

Method

We identify two major aspects to our project. On the one hand, the practical development of a useful planning tool that takes account of an obligation to include the participation of the youngest children in planning processes and, on the other, a scientific contribution to a research project. Both elements are naturally closely intertwined. Adult-framed research that commonly regards children merely as respondents in a research context is likely to miss key aspects of their lives, thus raising questions of research quality (Kleine et al., 2016). Children have the right to express their views on all matters affecting their lives, and also to have due weight given to those views in research studies. In this present study we have adopted a multi-method and multi-perspective methodology inspired by the Mosaic approach (Clark, 2017).

Project Participants

The participants in this project included children (n=16), parents (n=14), and early childhood education and care (ECEC) teachers employed at three different ECEC centres. We applied participatory research methods as a means of engaging the children (Clark, 2017). Our aim was to gain insights into the children's perspectives on where, what and how they wanted to play in their neighbourhood. By introducing multiple ways of participation, our research approach acknowledges the myriad of ways in which children communicate their experiences and perspectives (Clark, 2017). The main criterion for selection of the ECEC centres was that they were located in the inner-city area that was scheduled for redevelopment. We invited all the ECEC centres (n=11) in the district to participate, and three of them agreed to do so. Eight preservice ECEC teachers were selected to act as co-researchers and, together with the ECEC teachers (n=3), involved three groups of children (aged between 3 and 6) in an exploration of the available play areas in their neighbourhood and the children's wishes for improvement of the areas.

Data

The participatory methods we applied with the children included guided tours, photography, drawing, constructive play using Lego and field conversations. By adopting various modes of communicating with children (Clark, 2017; Merewether, 2018), our aim was to support their direct involvement in the research process and to better understand the children's own perspectives on, and experience of, play. For example, a pre-service ECEC teacher, together with an ECEC teacher, invited a group of 4 to 6 children on a guided tour in the neighbourhood of the local ECEC institutions. During the tour the children were invited to take pictures and talk about the places where they played and why they enjoyed playing there. Two groups visited a nearby woodland area, and one group visited both a playground and a woodland. On their return to the ECEC institutions, the children were invited to draw and use Lego to express their ideas about what they wanted in their neighbourhood that was not already there. The data we obtained from these activities consisted of photographs from the tour, the drawings and

Lego constructions, as well as field notes from conversations with the children as the activities were taking place.

Project information and hard copies of maps and questionnaires were sent to the parents of children attending the three ECEC institutions involved in the project. The parents participated by marking on a map where in the neighbourhood they preferred to walk and play with their children. We then used a structured survey to ask the parents what they liked and disliked about their neighbourhood and if they had any wishes for change. The questionnaire used in the survey referred to specific locations marked on the map, and consisted of three open, and three closed, questions. Two of the open questions were: "Why do you use/not use this location to play and walk with your child/children" and "What improvements would you like to see at this location?". The closed questions asked the parents to indicate at what times of year they used the location, whether they enjoyed the location, and to provide descriptions of it. The questionnaire concluded with an open question as to what the parents would like to see in terms of opportunities in their neighbourhood that they currently did not have. The responses from the parents were delivered to the ECEC centres in sealed envelopes and then forwarded to the research team by the ECEC teachers.

Analysis

Our analysis of the responses from the children and parents was conducted in two phases. The first phase involved synthesising and categorising the locations identified by the children and their parents. We have used photos and citations from children as a means of presenting the locations and the affordances offered at the locations, based on the children's descriptions (see Table 1 and 2). Figure 1 provides an overview of the locations identified by the parents. The aim here was to establish an overall summary of the locations identified on the map and, in Table 3, to categorise the parents' descriptions of the benefits and shortcomings of these locations. The second phase involved a text-driven, content analytical examination (Graneheim et al., 2017) of the parents' responses to the open questions in the survey. After an initial review of the qualitative material, we developed short, illustrative and textual codes based on the main content of our informants' responses. Table 3 provides summary of the benefits and shortcomings of the different locations, followed by a more detailed description of the child-friendly infrastructure themes that emerged from the parental responses.

Ethical Considerations

Our inclusion of young children in this project raises issues of ethics as well as practical problems, all of which have been widely discussed and analysed in the literature (Bosco & Joassart-Marcelli, 2015; Wilks & Rudner, 2013). In a scientific context, the issue of research ethics is centred on a discussion concerning the fundamental question: How do we safeguard the principle of consensual rights when young children are involved in research? A careful and systematic discussion of the ethical aspects of this project is needed, not least because it will be of great value in terms of informing the dual aims of this project. The first of these addresses the development of useful and practical tools for urban planning involving young children, and the second, a theoretical exploration of the limitations and opportunities linked to these tools. How is it possible to achieve both authentic democratic participation and future-oriented, safe and child-friendly urban planning?

This present project was approved by the Norwegian Centre for Research Data. All participants were informed about the details of the project and their participatory rights, and special focus was directed at ensuring that the informed consent of the children was obtained throughout the project. Informed consent letters were sent out to the parents. Before engaging the pre-service teachers as co-researchers, we developed ethical guidelines for safeguarding the children's participatory rights. These guidelines stated that the children should be given information, adapted to their level of understanding, about the activities they were invited to be involved in. They were given the choice of taking part in all or none of the activities introduced, emphasising that their participation was voluntary and that they could withdraw at any time

without giving a reason. The guidelines also emphasised that the teachers had to be especially aware of children's non-verbal communication during all activities to make sure that they were enjoying taking part.




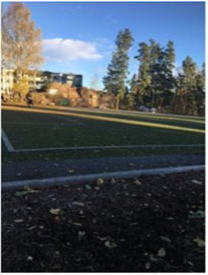


Results

The results section of this paper is divided into two parts. The first gives an overview of the various locations identified by the children, including descriptions provided by the children themselves. The second section presents the location identified by parents and what parents liked and disliked about the locations.

Characteristics of the Locations Identified by the Children

Table 1 provides a pictorial summary of the locations identified by the children taking part in the guided tours, and some of the reasons as to why the locations were selected.

Table 1. Photos and descriptions of locations identified by the children

		
<p>"It's fun to play with the bars, because I can hang on to them" (5-year old girl).</p> <p>"It's for the older children. The bars are too high for the younger ones" (ECEC teacher).</p>	<p>"It's no fun playing on the rocks, because I get tired climbing them" (5-year old girl).</p> <p>"It's fun to play on the rocks, because I can climb" (4-year old boy).</p>	<p>"It's fun to play and walk around in the woods" (5-year old girl).</p>
		
<p>"It's fun playing here because it's sunny" (5-year old girl).</p>	<p>"I like to play with the rocks, they're nice" (4-year old girl).</p>	<p>A 'snow angel' made by the children.</p>





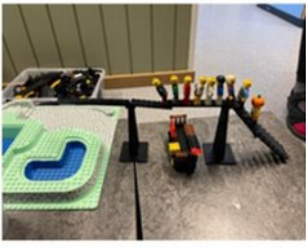


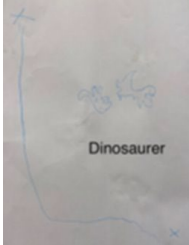

The guided tours with the children, combined with the use of photos and the children's descriptions of the various locations, offered us insights into the children's perceptions of the qualities of the natural areas and playgrounds in the vicinity of the ECEC centres.

It is difficult for children to recall their experiences of a place without actually having been there (Cele, 2006, p 124). For this reason, tours and drawings enable them better to express their creativity when it comes to outdoor play and their preferred place-interaction in relation to different spaces. Cele (2006) also found that a walk in itself stimulates both children's and adult's sensory inputs and interactions with the elements, and that this triggers conversations about their environment. The spaces selected in our project offered a multitude of actualized affordances for the children. Their play and activity preferences involved physical challenges, stimulating the use of their gross locomotor skills such as crawling, climbing and hanging, as well as activities such as sliding and swinging. This corresponds well with theories of affordance and the perceptions of functional opportunities in an outdoor environment (Gibson, 1979; Kyttä, 2003). The children also expressed their emotional connections with the natural environment and how their

enjoyment of the locations they were exploring was related to the weather and seasonal features such as the sun and snow.

Table 2 presents some of the children’s drawings, expressing their wishes for the development of their neighbourhood.

Table 2. Children’s drawings expressing their wishes for the development of their neighbourhood

		
'Fire play' apparatus, showing stairs and a slide	A cannon	Swings and slides
		
Fire station/castle	Diving board and pool	Space rocket
		
Mountains, a trampoline and slides	Dinosaur sculptures	Slides, a bonfire and trolls

Our participation in activities with the children causes us to agree with Cele (2006), who highlights the importance of recognizing drawing and other creative forms of expression as providing subjective mental impressions of a place that are then combined with memories, wishes, emotions and relationships. Talking to children about their drawings and Lego models enables us to obtain insights into their perspectives on their creation and the meanings they themselves would like to communicate. Their drawings and conversations with the teachers enable the children to express how they would like to see their neighbourhoods develop, including the opportunities for play that they already have access to in terms of natural features such as trees, rocks, quiet and running water, woodland shelters and bonfires. These are in addition to familiar playground features such as slides, swings, and something to jump on. They also wanted elements such as statues of animals, trolls and dinosaurs, as well as boats, cannons, and space rockets. These more exotic elements can inspire play that is both physically challenging and full of fantasy.

Characteristics of the Locations Identified by the Parents

The parents' responses provided data on 23 different locations, illustrated in Figure 1.



Figure 1. Locations of the 23 locations identified in the parents' responses.

Note: The locations identified are marked in black and green on an aerial photo of the Strømsø district in Drammen municipality. Some locations are physically linked to each other. The photo also shows traffic density expressed by the ADT (Average Daily Traffic) index, where Green = 1501-4000, Yellow = 4001-6000, Red = 6001-12000, Blue = 12001-20000, and Purple = greater than 20000 (Source: Drammen municipality).

All of the 23 locations identified by parents were public spaces in the sense that they were formal and informal urban areas that the parents understood were freely accessible for play and exploration with their children. The locations comprised six small local playgrounds, three schoolyards, six public parks, a town square, a town museum, five woodlands, one riverside walk and two beach areas. Figure 1 provides an overview of the heavily-trafficked roads that cross the district, causing obstacles for families with young children who wish to gain access to green spaces. The figure also shows that some of the locations offer larger areas of green space for play and exploration than others, while other spaces are restricted to isolated, small playgrounds.

Table 3 shows some descriptions offered by the parents of how and why they use the locations, and what they would like to see that is not currently available.

Table 3. Descriptions offered by parents of how and why they use urban spaces, as well as their wishes for change

Type of space	Current use and reason(s) for use	Wishes for change	Negative factors
Playgrounds (n=6)	Socialization area Often children there Green space Less traffic	Benches Upgrading More trees Make it more suitable for children under the age of 3	Rubbish Not safe Cat faeces
Schoolyards (n=3)	Meeting other children Exercising child independence Fences make it safe	Green spaces in schoolyards	
Public parks (n=6)	Walking trips with the children Nice play areas all year round Hills for sledding Nice green areas Benches Safe from traffic	Cafés/shopping facilities Make it more suitable for children under the age of 3.	Too little light
Town square (n=1)	Nice social area Kick-biking, water installation Café, shopping facilities	More activities for children Make it car-free, link it to the riverside walk	Few children and families use the space as it is.
Town museum	Nice green area	An interactive art installation,	Boring for the children (we

(n=1)	Small playground Culture and history Café Berry bushes	creative playground, and museum activities for children Install fences	never stay long) Fences Too much traffic
Woodlands (n=5)	Large green area, camping, berry picking, playing in the woods		Need to cross the road. Too much traffic. Pavement is perceived as bad and pedestrian area 'scary'
Riverbank walk (n=1)	Nice for walking, biking, and exploring the water	More activities for children and parents. Art installation and benches	
Beach areas (n=2)	Nice to visit the beach and explore the water	Cafés Playgrounds	Too much traffic makes it difficult to walk and cycle to the beach Rubbish

Our analysis of the features of the spaces identified as child-friendly by the parents revealed four main characteristics: 1) The availability of urban 'green lungs', 2) Creative and challenging play opportunities, 3) Places for the whole family, and 4) Safe playgrounds and walking routes.

Urban Green Lungs

In their responses, parents emphasized the importance of preserving, expanding and further developing the green lungs in their neighbourhood. As many as 20 of the 23 spaces identified were linked to nature, either in the form of green spaces or the presence of water. 'Green lungs' were described by parents as offering children and families an opportunity for collective physical activity and a chance to explore what nature had to offer them. In the following example, one parent elaborated on his/her use of a local green area throughout the year:

This is our closest green space. The children enjoy playing here both in summer and winter. During the summer, there is a popular zipline and a swing. It's nice that there are some woods that give the children experiences with nature. Our daughter says she likes to dig for worms in summer. In the winter, the place is great for sledding. Our daughter would like more climbing equipment. Otherwise, we need some lights. This is a popular area in a part of the city where there aren't many green spaces, but we can't use it when it's dark because there aren't any lights.

This statement highlights how the use and evaluation of an area by parents is connected to perceived and experienced affordance throughout the year, and how seasonal and weather variations influence how families use a given location. Another aspect that seems to influence parents' use of green areas is how they perceive the safety of their children. For example, while one of the green areas was acknowledged as an important green lung, several parents reported not taking their children there. One parent explained: "We seldom use this area because it not protected from the nearby road. It's a nice area, but boring for the children. However, it's still an important green lung!". Areas that were not linked to green areas included two primary school playgrounds, and a public square that served as a commuter and shopping hub. Parents wanted to see green areas introduced at these locations. They wanted water play facilities in the public square, as well as shopping facilities, which were highlighted as natural places for families to socialise, and therefore ideal locations for developing play opportunities for children.

Creative and Challenging Play Opportunities

Several of the parents' wishes concerned the expansion of already existing standardized playgrounds, the introduction of new play equipment, and the development of a larger playground for children. Parents also reported wishing for creative and challenging play opportunities adapted to children of different ages, localized within walking distance of their homes. As represented in the response from one parent:

We have used the small playground near our house more now. Most of the apparatuses are not adapted for children under the age of three. However, there are a lot of sand and many possibilities to play hide and seek without fearing traffic.

Important qualities emphasized by parents were areas that invited children of different ages to play,

climb trees, water play, art/installations to crawl, climb and explore, as well as the use of natural materials such as bark, moss, grass and other vegetation. One example of an identified area with great unused potential was a green area surrounding the city's museum, which was, in its current form, described as boring and without life. Another example was a walking path along the river that divides the city in two.

A Place for the Whole Family

Playgrounds in the area were mentioned as important socialization arena for both children and parents. Some playgrounds also served as important areas for local traditions, such as Christmas tree lighting ceremony. In the parents' responses, there was also a clear desire for more of the areas to be equipped with seating, dining places, protection from weather and fire pits. We interpret this to mean that the parents wanted areas that invite the whole family to stay there for a longer period. The youngest children's use of the local environment is to a large extent made possible and limited by the family's and parents' use of the local environment with them. By creating areas in the local environment that invite the whole family to stay, social areas are created which will benefit the whole neighbourhood.

Safe Playgrounds and Routes in the City

Children's freedom of movement and safety is one of the main features in the parents' responses. They wanted places where children could play without fearing traffic, and where children's independent movement was supported. One parent highlighted one of the larger green areas marked on Figure 1 as a child-friendly place in the neighbourhood allowing the family to be active together without fearing traffic:

The area is very well adapted for cycling, skating, running, ice skating and playing with different climbing apparatuses. It invites activities all year round. It also offers small spaces throughout the path until the green areas located at the end. We have spent many afternoons here. Here you will find no cars, and the children can run fast and far.

Additionally, walks with little traffic, such as the path along the river, are highlighted as nice to go with children. Parents also wished for child-friendly infrastructure such as secure pavement, walking and cycling paths that provide better access to places without having to walk and cycle among the cars. One parent elaborated on the need for areas allowing children to roam more freely:

Green areas in our neighbourhood are limited. We strongly wish for a path/road underneath or over the road that allow us to travel from one green area to another so that we get larger hiking opportunities without having to rely on driving. Lack of such paths also make it difficult for children to cycle safely without having to cycle next to heavy traffic.

Several parents highlighted the need for development of child-friendly paths in their neighbourhood. Bad pavements, heavy traffic and paths often cutting across roads with heavy traffic, was experienced as limiting the families' opportunity to be physically active together and forced them to use car for transport to family friendly places in the city.

Discussion and Conclusion

In this study we explored what characterizes a child-friendly city for young children and their families. Drawing on perspectives of children's rights, affordance and child-friendly outdoor environments we discuss the main characteristics emphasized by parents and children, and how this knowledge contributes to urban planning.

Places and Paths to Play and Explore, Alone or with Supervision

By looking at how cities are designed for children we get a small glimpse into the cultural ideas of what it means to be a child and what childhood should entail. Take for example the idea behind playgrounds. As emphasized by Lange (2018) "Playgrounds are places made by adults, for children, always with the hope of harnessing their play to a specific location". Architectural historian Roy Kozlovsky (cited in Lange, 2018) termed this the "paradox of modern discourse of play" - with specific places being adapted to children and the development of play areas often sheltered away from a city developed by and for adults. Upholding, and further development of playgrounds in the local community was emphasized by parents

in the study, both in terms of the play opportunities offered, sanitation, as well as accommodations for rest and eating. Adults' emphasis on the need for adult activities, waiting spaces, and other adults to talk with on playgrounds is also found in other studies (Kytta, 2003, p 51; Krishnamurthy, 2019). While developing playgrounds with these wishes in mind does not necessarily influence children's perceived affordances with the place, the changes might encourage families to stay there for a longer period.

Parents also emphasized the need for child-friendly routes from one recreational place to another. Parents identified some areas in the city district that allowed for child-friendly transitions as important hiking opportunities allowing children to roam independently within sight of parents and out of reach of traffic. However, they wished for more such transition opportunities in the district. Figure 1. show that the green lungs in the city district are unevenly distributed. The parental reports show how limitations in child-friendly paths limited the family's opportunity to be physically active together and parents experienced that the infrastructure forced them to use car for transport between destinations for family outings instead of walking or biking with their children. Thus, this study contributes knowledge of how child-friendly infrastructure impacts how families use the city. The findings also complement previous research that show reduced opportunities for children's free play (Nordbakke, 2019) and research that has explored the associations between neighbourhood environment and children's outdoor play (Christian et al., 2015; Nordbø, et.al. 2020). Child-friendly transitions that allow children degrees of independent movement and the opportunity to play and explore on the way would be an important element in designing a city for children, rather than just creating additional zones for play designed to protect children from the city. Making green corridors, such that for long has increased mobility for wildlife, where a traffic free mobility for children and adults may occur also seems to be important when planning child-friendly cities (Zhang et al., 2020).

Availability and Use of Nearby Nature in the City

It is well documented that contact with nature is good for children's motor fitness, mental health, feelings of connection with nature and the development of adult pro-environment views (Gill, 2021; Mensah et al., 2016). The children in this study enjoyed playing in natural environments. In the children's drawings and guided tours, the children focused on nature elements often connected to motor activities, fantasy, play and exploration in nature. This corresponds with previous research with young children, in which the children raised awareness of the importance of colourful natural public spaces to play and explore (Ergler- et al., 2015). Parents also reported that most places they use with their children for play and exploration were either green lungs in the area, such as forests, parks or playgrounds with a natural environment. The natural environments were also important reasons for why the parents choose to visit these areas. In areas where there was no or little vegetation, such as the school yards, parents wished for further development of such elements. Parents living far away from green areas also reported wishing for paths that allowed them to commute by walking or cycling with their children. Thus, natural environments and destinations in close connection to families' homes, and ECEC institutions are important elements in the development of child-friendly cities. Building green corridors for mobility may increase the availability of these natural environments for children.

What Do Young Children's Perspectives Add to City Planning?

Working on this project with the municipality we were curious about what was meaningful for the children and how this could be included in urban planning. As highlighted by Ergler et al (2015), young children's engagement in urban planning can contribute with perspectives and ideas that go beyond adult imagination. The findings from this study show that the perspectives of children and parents gave different but complimenting insights into children's use of the local environments. While parents' perspectives gave insights into important qualities of different locations they preferred to visit with their children, the children's perspectives gave insight into how children themselves preferred to use the locations they explored. Thus, while safety, facilities for relaxing and eating, was of great concern for parents, the children were more preoccupied with exploring and sharing experiences with the playful affordances they experienced at the location. The children's guided tour with the pre- and in-service teachers clearly showed

the importance of the environment's invitations for physical challenges such as crawling, climbing, sliding, and exploration in nature. Moreover, it is in the children's contributions that the creative wishes for the local environment were most visible. Other studies have also found that children prefer nature in the city, both for activities and aesthetic value (Ergler et al., 2016; Freeman et al., 2017; Smith & Kotsanas, 2014;). These studies also found that children were fascinated by houses, trains, and the people working in the city. Smith & Kotsanas (2014) explored children's response to their walk along busy roads in the city. By inviting children to share their experience of areas not seen as particularly child-friendly, Smith and Kotsanas's (2014) study opened for children's expression of negative experience with the smell, sound and traffic. In our study, the children only visited playgrounds and forest area on their guided tours. Additionally, as shown in Table 3, majority of the locations identified in our study were playgrounds, public parks or forest areas. Only one busy public space was identified, namely the town square in the inner-city area, which was mentioned as a place with unused potential in its offer for recreational opportunities for families with young children. The fact that we did not explore busy public spaces or areas with traffic with the children, might have limited our understanding of children's responds to more busy city areas and infrastructure, and characteristics of the locations where children did not like to play and why.

Young children's perspectives are often left out of urban planning projects or parents are used as a proxy for children's perspectives, wishes and needs. However, as also visible in this study, children and adults often perceive different affordances in an environment based on their age, body capacity, experience and interest (Gibson, 1979, Kyttä, 2003). Thus, by leaving out young children's perspectives from urban planning, urban planners and municipality actors will limit their opportunity to develop recreational areas in the neighbourhood that caters for children's wishes for and their use of these areas. This is not to say that parents' perspectives are not important. Parental ideas and perspectives on the appropriateness and safety of different areas in the neighbourhood shape where, how and with whom the children can explore and play, as also emphasized in previous research (Ergler et al., 2016).

Designing Playgrounds in a District to Offer Different Affordances

Many of the playgrounds identified by parents were small and offered a few fixed climbing apparatuses. While they were used by the families because they were within walking distance of their home, and often offered the opportunity to meet other children and safe play under adult supervision, several parents wished for further development of the playgrounds, as well as new locations offering different affordances such as being allowed to visit animals, berry picking etc. The children's perspectives also invite us to think of new ideas on what a playground should be and offer, and how playgrounds in the city could be designed to offer different affordances for children. Some playgrounds might offer more traditional fixed apparatuses, while others can be designed more for imaginative play or exploration, considering both what the baseline material offered at the places should be (natural material, sand, water, piles of wooden scraps, or stones) or the structures offered at the playground (animal structures, forts or rocket ships). By planning and designing parks and playgrounds in a district to promote different affordances, young children might get enriched creative and challenging play opportunities in their neighbourhood.

The Boundaries of User Participation in Urban Planning

Urban planning is a highly complex field, involving a broad spectre of professional knowledge, as well as large commercial interests. In Norway, as in other democratic countries, the planners are judicially obliged also to include the population. This obligation represents an important assurance of quality and a creative input to the shaping of future urban landscapes but can also inflict challenging conflicts. When involved in participatory processes, all subjects are limited by their previous experience, background and knowledge. With limited exposure to creative and/or natural environments for recreation or play, the likelihood of giving this as an answer is small. This is of course the case for adults as well, but it calls for special consideration when including children.

Furthermore, to social scientists the dilemmas concerning participation in planning processes have been widely discussed (Bosco & Joassart-Marcelli, 2015; Derr & Kovács, 2015; Sinclair & Franklin, 2000;

Wilks & Rudner, 2013; Yao & Xiaoyan, 2017), the participation of young people poses additional questions in terms of asymmetrical power relations (Bosco & Joassart-Marcelli, 2015; Wilks & Rudner, 2013). In our study, which aims at developing tools usable for the purpose of making the voices of the youngest children heard, this is of uttermost importance. Parents, in-service and pre-service ECEC teachers, and researchers provide mediating technology for the children's interests, and an important question is therefore: how to ensure that the recorded experiences and suggestions correspond to the viewpoints of the children and not the mediators? This question does not end with reporting the data from workshops or activities with children and parents but continues into the planning and decision processes at the municipal level. It is important to be receptive for possible divergences from this, to include nuances and discussions (Cele & van der Burgt, 2015).

Limitation and future research

There is still much to learn about how to include the youngest children in urban planning. In urban development, the most relevant policy tool, and most of the local services such as ECEC centres, schools, parks, housing, and transport resides at the municipal level (Gill, 2021). Although shaped by national governments and other bodies, the largest scope for action is therefore at the level of the municipality. While the project was based on a collaborative research and development project with the municipality, the main data collection was conducted by pre-service teachers and researchers, and the analysis of the data generated was analysed by the researchers. The aim of developing participatory methods for young children's engagement in city planning will be dependent on easy-to-use methods that generate available data for systemization and interpretation by actors at the municipality level. Thus, further research should explore how to train municipality actors in the use of participatory methods in city planning and in interpreting the data provided by children and their parents. Furthermore, while this project provides municipalities with a better understanding of what to consider when developing a child-friendly city that preserves and develops children's opportunities for outdoor play and exploration in the local community, further research should explore how such knowledge is used in the planning process by municipality actors and urban planners.

Declarations

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