Improving the quality of preschool outdoor environments: getting children involved

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ABSTRACT

The United Nations Convention on the Rights of the Child was the first international treaty to emphasize the importance of listening to children's views and including them in decision-making processes. In that line, the primary aim of this study was to show how the quality of preschool outdoor environments can be improved through a participatory intervention involving children, parents and teachers. A total of 1001 children aged between 3 and 6 years who were attending seven different preschools in the Basque Country (Spain) took part, along with 54 parents and 94 teachers. The data collection methodology included participant observation, images, photographs and drawings, as well as conversations and interviews with children, parents and teachers. The quality of the school outdoor environment was evaluated using the Preschool Outdoor Environment Measurement Scale. The results showed that the intervention led to improvements in the outdoor environment of schools, thus underlining the value of using participatory methods in which children are involved. In our view, the participatory approach not only respects the UN Convention on the Rights of the Child and helps to promote democracy in schools but also draws upon the creative potential of children to transform the world around them.

KEYWORDS

Participatory methods; outdoor environment; early childhood education; child participation; child perspective

Introduction

The United Nations Convention on the Rights of the Child (United Nations 1989) was the first international treaty to emphasize the importance of listening to children's views and including them in decision-making processes. More recently, the 2030 Agenda for Sustainable Development (United Nations 2015) has set out a broader social commitment to the development of democratic mechanisms that allow children to be involved in policy and community decision-making.

The education system is a context in which participatory projects have been openly encouraged, although few of them have cut across curricular domains and most have involved the infant and primary stages of schooling (Clark 2010; Groundwater-Smith, Dockett, and Bottrell 2015). This paper describes a participatory project whose aim was to involve preschool children in the process of improving the outdoor school environment.

Children's participation in preschool education

Childhood is a social construction that is subject to constant change, a space inhabited by boys and girls with rights, autonomy and the capacity for social interaction and participation (Leonard 2016). Participation refers to the process of being involved in decisions that affect one's own life and the context in which one lives (Hart 1997). Vygotsky's (1978) sociocultural paradigm develops the idea that each individual builds his or her knowledge through participation and interacting with different social environments. From that perspective and in the context of early childhood education, several notable initiatives have sought to encourage children's participation and involvement in the design and creation of educational environments (Clark 2010; Correia and Aguiar 2017). The education system needs to foster children' participation from its core. Participation provides children with an opportunity to develop their personal skills, autonomy and creativity, to construct shared meanings and engage in critical dialogue with peers, and to grow as individuals, all of which are key elements in personal and social development (Hart 1997; Pascal and Bertram 2009). Furthermore, ensuring that all stakeholders (children, parents and teachers) are involved in the co-construction of the learning space contributes to greater democracy at school (Pascal and Bertram 2009).

Consequently, we regard children's participation as essential to innovation in schools. In our view, this is an active process in which children, parents and teachers all become involved in modernizing the school — exchanging ideas and opinions, constructing new meanings, participating in decision making and working together for change.

Definitely, participatory processes should be based on the following principles: paying attention and seeking to meet children's needs, encouraging all agents' participation, encouraging school's transformation listening to children's voices and promoting democracy.

Children's participation in relation to the outdoor school environment

Several authors have drawn attention to the influence that the design of outdoor environments can have on children's development (Adams and Savahl 2017; Miranda et al. 2017). In the specific context of early childhood education, however, various studies have also concluded that greater attention needs to be paid to the nature of these

environments, the activities they enable and the uses children make of them (Miranda et al. 2017; Waller et al. 2010). It is argued, for instance, that outdoor environments should be seen as precursors of pedagogical contexts that facilitate play, learning and children's development as a whole (Miranda et al. 2017; Norodahl and Jóhannesson 2016). In this respect, outdoor environments are considered to be of high quality if they provide a range of spaces, equipment and materials that encourage a variety of interactions and types of play, at the same time as allowing children access to the natural world (Miranda et al. 2017). However, the outdoor environments of many preschools do not have these characteristics and tend to be designed from the perspective of adults, often failing to take children's needs into account (Larrea et al. 2019). Given this situation, from a pedagogical point of view, many outdoor environments can be improved to respond satisfactorily to the needs of the children and to enrich their daily outdoor activity.

If we consider that confidence and the ability to participate should be acquired gradually through experience (Hart 1997), then involving preschool children in the design of outdoor environments could be a highly useful initiative. Furthermore, if we take empowerment pedagogy as a reference point, children should participate actively in the world around them, including the outdoor environment, deciding and choosing what they want to do or learn (Loizou and Charalambous 2017). Although some recent research has looked at ways of improving the school outdoor environment through children's participation (Clark 2010; Merewether 2015), we are unaware of any intervention studies that have also used the aforementioned quality indicators to evaluate the extent to which the outdoor environment has actually been improved as a result of any changes made.

The main objective of the present study was therefore to improve the outdoor environment of several preschools through a collaborative initiative that took into account the perspective and needs of children, parents and teachers. However, we also aimed to evaluate both the quality of the outdoor environments subsequent to implementation of the proposed changes, as well as participants' views of the collaborative process itself.

Method

Participants

The participants in this study were 1001 children aged between 3 and 6 years who were attending a total of seven preschools in the Basque Country (Spain). Fifty-four parents and 94 teachers also took part. The criteria to select the Early Childhood Education centres was the commitment shown to foster participatory projects. Written informed consent was obtained from all the children's parents, as well as from the management board of schools. In addition to parental consent, the children themselves were asked directly if they were happy to take part on each occasion that this was required

(Harcourt and Conroy 2011). The teachers involved also expressed their interest and commitment to participate in the projects.

Instruments

Mosaic approach (Clark 2017)

This method is designed to capture how children represent, communicate and express their thoughts about specific issues that affect their lives and the context in which they live. It is a multimethod, participatory, reflexive and adaptable approach that focuses on children's lived experiences. In order to gather children's views, and so as to take into account the different 'languages' they use, the Mosaic approach uses a variety of methods, including observation, interviews with children, photography (by children), children-led tours of the target environment and map making. The material that is generated through this process is then reviewed, discussed and interpreted by both children and adults, thus reinforcing the participatory nature of the exercise.

For the purposes of the present study, data collection included participant observation, images, photographs and drawings, as well as conversations and interviews with children, parents and teachers.

The methodology was implemented by three widely experienced early childhood education teachers and educationalists.

The preschool outdoor environment measurement scale (POEMS, DeBord et al.2005)

The POEMS is designed to measure the quality of the outdoor environment of pre-schools. It consists of 56 binary-choice items grouped into five domains: (1) Physical Environment, (2) Interactions, (3) Play and Learning Settings, (4) Program and (5) Teacher/Caregiver Role. The first domain, Physical Environment, refers to the quality of the physical characteristics of the preschool outdoor environment. The second domain, Interactions, refers to the extent to which the outdoor environment encourages children to interact with it. The third domain, Play and Learning Settings, refers to the organization of the outdoor play and learning space and the materials available within it. The fourth domain, Program, refers to the integration of the outdoor space within the curriculum. The fifth and final domain, Teacher/Caregiver Role, refers to the extent to which the educational community (teachers, families and community resources) seeks to promote high-quality outdoor spaces. It also alludes to the pedagogical style of the teacher/caregiver.

The lay-out and use of the school outdoor environments was examined through observations of children and teachers in that setting. Their task as observers was to check whether or not each scale item was present. The observation period required for application of the scale was 45–60 min.

Once all the POEMS data had been gathered the percentage value for each domain on a scale ranging from 0 to 100 points were calculated. The overall mean percentage was then interpreted as follows: 30 or less, very low quality environment; 31–41, low quality; 42–60, medium quality; 61–70, high quality; and 70 or above, very high quality. The POEMS shows adequate internal consistency, content validity and concurrent validity (DeBord et al. 2005). The seven playgrounds were coded by two raters, both experts in early childhood education. In the present study, the information gathered through observation was complemented by interviews with teaching staff.

Procedure

The first step involved assessing the quality of the preschool outdoor environments through the POEMS. The purpose of the next stage was to propose and implement improvements to these outdoor environments. To this end, we began by holding an introductory meeting with adults (teachers, members of the school's management board and parents) and children in order to clarify the objectives and stages of the project. We then sought to build knowledge about the outdoor environment through children's participation. Specifically, and drawing upon the aforementioned Mosaic approach (Clark 2017), we used a visual method of data collection in combination with an exhibition of the children's drawings and subsequent informal discussion. In order to gain insight into what children thought would be an ideal outdoor environment we began by asking them to take photographs, with the help of their parents, of any objects or materials that caught their eye and/or which they would like to have in the outdoor space of their school. The photographs were then exhibited and shared in class.

In the next step, children were asked to make drawings of outdoor environments, in which they could include any of the elements featured in the photographs they had shared. They were also asked to talk about the things they had included in their drawings. The children's drawings were then exhibited in class. The final task was to create a group book including the children's comments and photographs, thus providing a focus for shared reflection. This classroom discussion enabled the material to be reviewed.

Interviews were then conducted with 54 parents and 94 teachers (45′−60′). In addition to reflection on the outdoor environment itself, the interviews with the teachers included information on the pedagogical purpose of the environment in question with respect to outdoor activities in the context of the school's educational plan. The material produced through this process formed the basis for the subsequent conversations and shared reflection between children and adults.

Series of interviews was held with a representative group of parents as the following step in order to gather parental views about children's priorities and interests in relation to school outdoor environments. The questions were designed primarily to gain insight

into what parents thought was a source of pleasure for their children, both in the school outdoor environment and outside the home in general.

Having obtained a general view of the school outdoor environments the researchers then presented teachers, members of the school management board and parents with the material that had been compiled into the group book, based on the children's depiction of an ideal environment. This enabled discussion of the differences between the perspectives of adults and children, and allowed the former to take on board the views and preferences of the latter with regard to the design of the outdoor environment.

Participants were then shown a gallery of images depicting other outdoor environments that fulfilled the research team's criteria for high quality. They were asked to select those images which they considered to be of most interest in terms of making changes to their own school's outdoor environment. The researchers then drew up a list of the selected images, grouping them by topic.

Having gathered the views of children, teachers, members of the school management board and parents, the research team then produced a summary of the improvements that had been proposed in each school. The researchers then asked teachers and parents, working in small groups, to weigh up the available information and the different proposals for improving the outdoor environment. Following discussion of priorities, they agreed on a specific set of proposals that the school would seek to implement. This process included discussion regarding the educational value of the proposed improvements, a definition of aims, the deadline for implementation, who would be responsible for the project, what materials and equipment would be needed and how they would be obtained.

After defining the proposals, some of the schools set up work groups to ensure that momentum was not lost. Children, parents and teachers worked together to implement the proposals, obtaining a range of materials and equipment and adapting the outdoor play and learning settings.

Once the proposals for improving the outdoor environments had been made the adults involved drew up a plan for implementing them. Children, parents and teachers were all involved in the implementation process.

In the final step, the POEMS was again used to assess the quality of the outdoor environments, this time following the changes made. The researchers also conducted a new series of interviews and conversations with children and adults in order to evaluate the participatory process. At this stage, not only did the teachers, in their respective classes, hold 65 informal conversations (20′−60′) about the participatory process with the 1001 children aged between 3 and 6 years, but also 27 parents and 47 teachers were interviewed (30′−70′) by the researchers.

Results

Descriptive analysis of the school outdoor environments prior to the intervention

As shown in table 1, the overall mean quality rating for the school outdoor environments using the POEMS was moderate (46.45). As regards the domains, similar ratings were awarded to Physical Environment (47.25), Interactions (46.15), Play and Learning Settings (50.55) and Program (50.79). The lowest rating corresponded to the Teacher/Caregiver Role domain (37.50), indicative of low quality.

A closer analysis of these domains showed that the outdoor environments generally comprised flat, concrete surfaces designed for playing sport. Although they did not include elements that might pose a risk to children's health and safety, they also lacked play equipment or complementary resources that could meet the diverse needs and interests of boys and girls. The outdoor environments did not encourage independent play and they fell far short of what might be considered a natural learning environment.

It should also be noted that the use children made of the outdoor environment was generally restricted in both time and space. In many cases, children were limited to the traditional 30 min of 'playtime', and in the event of bad weather they might remain inside throughout the school day. Furthermore, in most of the schools the only outdoor space used was the actual playground. Only rarely did children have supervised access to another public space, such as the street, park, beach or market.

Finally, based on the low point scores obtained in the Teacher/Caregiver Role domain (37.50), there appeared to be little initiative on the part of the educational community (teachers, families and community agencies) to promote better quality outdoor environments in schools.

Table 1. Means and standard deviations for percentage quality ratings at pre-test and post-test.

Domain	Assessment	Mean percentage rating	SD of percentage rating	N
Physical Environment	Pre-test	47.25	8.22	7
	Post-test	63.74	8.56	7
Interactions	Pre-test	46.15	6.28	7
	Post-test	57.14	7.51	7
Play and Learning Settings	Pre-test	50.55	6.05	7
	Post-test	63.84	14.60	7
Program	Pre-test	50.79	5.94	7

	Post-test	87.29	7.67	7
Teacher/Caregiver Role	Pre-test	37.36	9.34	7
	Post-test	41.07	9.45	7
Mean Quality Rating	Pre-test	46.45	5.40	7
	Post-test	62.62	16.63	7

Children's depiction of the ideal outdoor environment

Children mainly depicted their ideal outdoor environments with a wide variety of resources that could be used to play. Indeed, those outdoor environments offered the possibility to challenge their motor skills in different ways, to seek shelter, to experiment with natural resources, as well as to draw and to reproduce sounds. By means of their drawings, children showed their desire to have natural resources such as sand and water. For example, Maialen, a four-year-old girl, said that she would like there to be a central area with stones and sand where she could play with buckets and spades, as well as a platform that you could climb up on from different points. She also said it would be good if part of the ground was painted in different colors so that you could jump around on it.

Mikel mentioned the following:

I'd like some slopes, a sledge. Also some sticks to build a small cabin. (Mikel)

Interviews with teachers

In general, they saw little of educational value in this space, and many of them considered that the playground was there for children to run around, let off steam and tire themselves out. For many professionals, playtime gave children a break from what was really important, that is, the curriculum-based activities that took place in class. This view is clearly illustrated in the following interview extract:

(…) it gives them a break from what we're doing in class. They go out, run around, let off steam and get tired. They come back inside in a different frame of mind (…) and we can carry on working. (Itziar)

Interviews with parents

Generally speaking, the parents saw the school outdoor environment as an important place in which children could enjoy themselves and relax, although they considered that greater attention should be paid to its design. They were also able to identify various elements which they had noticed their children were attracted to.

My daughter loves to play with small stones. She groups them as small hills, she plays with them as they were food and she places them on fallen leaves … She can play for hours (Uxue)

Discussion of the material

The discussion about the changes to be done in the outdoor environments was focused on the election of the materials. In order to answer to children's interests, different materials were selected. Therefore, resources that promote movement, symbolic and construction play, as well as materials that allow experimentation and quiet play were prioritized. Natural resources were also considered a priority.

The following comments were made by two teachers after participating in the group session in which the children's ideas had been presented:

It's important to offer children a range of possibilities so that each of them can choose whatever they prefer at the time. For example, we could create a space for quiet play in which there's also an object or equipment that would allow them to experience risk. Or something for symbolic play alongside material for building. (Elvira)

I think we could include benches, tree trunks of different sizes, containers, a sand pit with buckets, play mounds, a vegetable plot … . (Anne)

Implementation of the proposed improvements

Once materials were selected, a range of improvements were implemented in the schools taking part. In some cases, a physical challenge was introduced in the form of small climb-ing walls, tree trunks of different sizes that children could climb on and jump off, play mounds and slides. Symbolic and constructive play was promoted through containers of different sizes and moveable materials such as sand and stones. Spaces were also created for quieter and more private forms of interaction, for example, small amphitheatres or benches and tables shielded by bushes. Artistic and musical expression was encouraged through the availability of materials such as blackboards, chalk, paint and objects that made a sound, while contact with nature was fostered by introducing sand, water, stones, grass, plants and vegetable plots.

Evaluation of the proposed improvements

Table 1 shows the means and standard deviations for the percentage quality ratings before and after the implementation of changes.

Differences between the pre- and post-test quality ratings were examined by means of the Wilcoxon test. The results showed that the intervention led to statistically significant improvements in the overall quality of the school outdoor environments ($Z = -2{,}023$; $p=$

.043). The effect size associated with the difference in ranges between pre-test and post-test was large (r = .54).

Regarding the five domains, a significant improvement was observed for Physical Environment (Z = −2,384; p = .017), Interactions (Z = −2,388; p = .017) and Program (Z= −2,388; p = .017). In these cases, the effect size associated with the difference in ranges between pre-test and post-test was once again large (r = .64 for all three variables). By contrast, the pre- vs. post-test differences for Play and Learning Settings and Teacher/ Caregiver Role were not statistically significant, although the effect size associated with the difference in ranges was moderate in both cases (r = .36 and r = .38, respectively).

As regards the qualitative information obtained through interviews, the children reported that the changes had made their school outdoor environment much more appealing. Overall, they felt that they now had a wider choice of play activities.

I used to prefer to stay indoors because all you could do outside was play football. But now I'd rather go out (…) I can play lots of things. (Jokin)

The general view among teachers was that the changes made to the outdoor environments had had a positive impact on children.

The children seem happier now (…). You can tell there's less conflict between them (…). They all have something to do, something to play (…). And they go for it. (Bidane)

There was also a shift in teachers' views about the educational value of the outdoor environment.

I think we should take this further (…) We could do a lot of things, spend time … that up until now we've done in class. (Irati)

Furthermore, they also emphasized that the participatory process had led them to reflect on their daily practices and on the possibility of making more extended use of such processes.

It has been demonstrated that we should foster the children's participation much more. They have showed us that they have good sense and that, if you ask them, they answer and defend their opinions (…) I think that we should ask them and listen to them more (…) also about indoor activities. (Urko)

Parents were likewise satisfied with the changes made, and in fact, they began to make greater use of the school outdoor environment:

It used to be that school would finish and we'd go straight home. Now, we usually hang around a while, the children playing and us chatting. (Elene)

In addition to their satisfaction with the improvements, the children, teachers and parents also had a positive view of the participatory process. Importantly, and as

illustrated by the following comment, they considered that the redesign of the outdoor environments was the result of collaboration and cooperation:

The improvements to our outdoor environment are thanks to everybody's input. We've all been able to take an active role, to give our opinion, to be listened to (…) The new space has something of all of us in it. (Nora)

Discussion

The primary aim of this study was to show how the quality of preschool outdoor environments can be improved through a participatory intervention involving children, parents and teachers. The results confirmed that the intervention led to significant improvements in quality, affecting both the design and the use made of these environments. In this respect, we believe that, after the modifications were carried out, the outdoor environments looked more like designs that could encourage curiosity and exploration in both boys and girls, stimulate their imagination and foster the development of competencies. The improvements also made it easier for children to interact with the natural world, with one another, and with teachers and parents. However, although the results suggest that progress was made in the domain of Play and Learning Settings, further efforts are required to consolidate the improvements observed. In this respect, we believe that continued emphasis must be placed on creating differentiated areas (for active play, storytelling, sand and water play, etc.), as well as on the use of natural materials and bringing children into closer contact with nature.

As regards the degree of interest shown by teachers and schools in relation to improving the quality of outdoor environments, the results suggest that the participatory intervention helped to draw their attention to the contribution that these environments can make and to recognize their educational potential. In our view, however, much remains to be done in this area. As other authors have noted (Miranda et al. 2017; Norodahl and Jóhannesson 2016), a change of mentality is required, especially among teachers, in order for the school outdoor environment to be appreciated and used as an educational resource that can help to promote children's development (Adams and Savahl 2017). In our opinion, school-based campaigns are needed to foster such a perspective and to encourage schools to implement initiatives that ensure their outdoor environments are of sufficient quality. Furthermore, we believe that schools must listen to all the members of the educational community and consider their opinions as far as other spaces and educational activities are concerned. In this regard, we consider that early childhood education quality can be improved my means of such participatory processes.

In light of our results, we would also argue that such initiatives should be participatory and involve children, parents and teachers. As we have seen, the starting point for change is paying attention to and seeking to meet the needs of children. This approach not only respects the UN Convention on the Rights of the Child (United Nations 1989) and helps to promote democracy in schools (Pascal and Bertram 2009), but also draws upon the creative potential of children to transform the world around them. In that line,

as active participation, answering to children's needs and decision-making are pillars of democracy, we believe that this participatory process could provide children with an early and meaningful experience on these values.

However, it is also important that adults are actively involved in initiatives of this kind, as this helps to create synergies and to consolidate the process of change.

A further point to note is that it is not simply children's participation that matters.

Rather, and with the aim of achieving high levels of engagement (Mayne, Howitt, and Rennie 2018), they must be actively involved in the implementation of change and the process of evaluating ongoing improvements. The present study, summarized in Figure 1, has sought to be faithful to this aim.

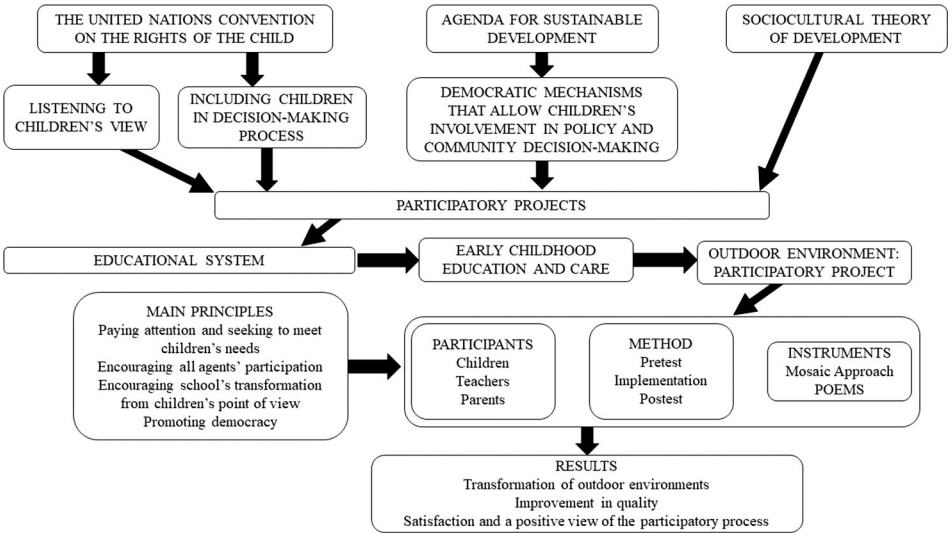

Figure 1. Participatory project.

Finally, given the small number of empirical studies that have applied participatory methods with children under the age of eight, we believe that our work makes a useful contribution to the field. As Mayne and Howitt (2015) point out, we must avoid treating children as merely objects or subjects of research, seeking instead to include them as active participants. By doing so, we can create a rich body of knowledge that will improve our understanding of childhood.

Regarding the limitations of our study and implications for future research, the first point to note is that the results relate to preschools. Given that school outdoor environments are often shared by children of different ages, it would be useful in future studies to widen the scope so as to include participatory interventions aimed at improving the outdoor environments used by children of primary and secondary school age. In addition, a larger sample of schools would help to strengthen the external validity of the improvements in outdoor environments obtained through participatory projects of this kind. Finally, transcultural studies would be useful for identifying

differences and similarities across cultures in relation to the use of participatory methods for improving school outdoor environments.

Despite these limitations, the results of our study show that innovation projects which achieve the active participation of children, parents and teachers can make an important contribution to improving the quality of preschool outdoor environments.

Disclosure statement

No potential conflict of interest was reported by the authors.

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