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**Children's Experiences Outdoors: Education and
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Children's experiences outdoors: Education and community contexts

Mehmet Mart¹, Helen Little², Helen Bilton³, Michaela Kadury-Slezak⁴

Children's right to play is enshrined in Article 31 of the United Nations Convention on the Rights of the Child (Office of the United Nations High Commissioner for Human Rights, 1990). The early childhood period is a time when children's values and dispositions towards outdoor play and environments are formed. Children have an intrinsic drive and natural curiosity to explore the world around them and outdoor environments are a key context for this exploration. Outdoor play and learning provide significant benefits for all aspects of children's development - physical, cognitive, social and emotional (Brussoni et al., 2015).

Outdoor learning provides opportunities to learn diverse subjects and supports children's holistic development (Fiennes et al., 2015). Children also experience feelings of enjoyment during outdoor play (Waite & Rea, 2007). Spending time outdoors affects children's well-being and increases physical activity (Stone & Faulkner, 2014). In addition, engagement in challenging physical and adventurous or risky play is positively associated with a range of physical and social health behaviours. Brussoni et al. (2015) including acting as a potential mechanism for reducing the risk of childhood anxiety (Dodd & Lester, 2021).

This issue focuses on outdoor play and learning due to its importance and contribution to children. In addition, the Covid-19 crisis and its influence on children also contributed to the understanding of the importance of playing and learning outside.

When considering outdoor learning contexts, we wanted to include research projects from as wide a field as possible and as such lending itself to a wider brief than simply standard educational settings. Ratinen et al. (2023) offer a useful discussion about the potential breadth of what can be construed as learning outdoors, incorporating non-educational settings. In this way this edition was hoping to attract research that could be undertaken in any manner of spaces outside, such as local sites (parks, woodland, farms, city farms, community gardens, allotments, nature reserves, etc.); Forest School - and bushcraft - style on-site learning, in-school/classroom ecology projects, projects within urban areas, as well as educational settings. We also wanted to attract research involving not only children, but also parents, carers and grandparents. The importance and impact of nature and the natural world were considered through the lens of Kaplan and Kaplan's (1989) Attention Restoration Theory, pertinent to this special edition, which suggests the increase in concentration and attention gained by individuals through experiences in and with nature. Through this engagement, when children return to the more formal aspects of education they can be more engaged and therefore have improved performance and achievement across all subject areas.

Eleven articles completed the process successfully to be published in this thematic issue, and Figure 1 indicates the word cloud from the published articles in this thematic issue. From the combined word cloud from these articles, the prominent words are children, play, outdoor, nature and so on. This gives us a brief explanation about the contexts of each research paper, and our aim to focus on the children's

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research suggest themes and approaches so that the early child settings can break down those barriers. Gessiou and Mart (2023) compared outdoor play and learning practices across three cultures in order to reveal different approaches, so the findings might provide an overall perspective to enact a common practice and develop outdoor practices.

The voice of families is heard through the paper by Kadury-Slezak et al. (2023) who found that post-pandemic parents are not going out as much as they used to with their children. The authors offer guidance for parents to help them see the benefits of children playing in nature. The theme of the parental voice is researched by Figueiredo et al. (2023) who carried out a comparative study of parents to identify the motivators for them enrolling their child in a nature-based club. As the authors suggest this is research that needs to be expanded to better understand a person's connection with nature.

The importance of culture is explored by Bjerklund and Arnot (2023) and this research illustrates the importance of children learning alongside adults and how this approach enables culture to be passed onto the younger generation but also secures children's well-being. Culture is further explored by Matafwali and Mofu (2023) through their analysis of indigenous games and songs and how these can be incorporated into learning within schools, emphasizing that learning doesn't have to be by direct instruction only.

Dardanou and Karlsen (2023) used a range of approaches for their children to communicate their experiences of outdoor play and argue that this approach of recording children's ideas through Land Art and drawings may be a way forward for others.

Sanchez-Perez et al.'s (2023) research suggests that young children's working memory skills are aided when they have more contact with nature, and this is despite the educational level of the mother. Outdoor learning experiences of young children and educators. Finally, the paper by Donison and Halsall (2023) indicates the depth of knowledge of children and how they are fully able to appreciate what they can learn in nature and through nature.

In conclusion, we consider this special edition showcases a breadth of experimentation we were looking for. We have articles from Canada, Greece, Israel, Netherlands, Norway, Portugal, Spain, Türkiye and Zambia. Particularly heartening was the number of articles which included the 'voice' of the child in the research. This 'voice' was expressed through a range of mediums: the spoken word, gestures and body language as well as: photographs, videos, drawings, reflecting the 'mosaic approach' to research devised by Clark and Moss (2011) acknowledging that children do have agency, and have a right to express their ideas and feelings and that this approach does offer insight into other peoples' lives. This approach reflects the child's right to 'freedom of expression' and 'right to be heard' (Office of the High Commissioner for Human Rights, 1990). We hope this collection is both informative and inspirational.

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Contact with nature and executive functions: A pilot study with Spanish preschoolers

Noelia Sánchez-Pérez¹, María Gracia-Esteban², Rebeca Santamaría-Gutierrez³, Ginesa López-Crespo⁴

Abstract: In the last decades, studies have suggested that contact with nature might impact positively on children's Executive Functions (EF), although results are not consistent across studies. The present research aimed to explore a set of contextual factors (family socioeconomic status, residential area, and contact with nature) and their relations with preschoolers' EF. Specifically, the research proposed to examine whether there were differences in preschoolers' EF between rural/urban environments, to analyze the relation between exposure to natural surroundings and EF, and the potential interaction between contact with nature and family socioeconomic status in explaining children's EF. A total of 56 preschoolers (30 boys, 26 girls) aged 4-6 years ($M = 4.86$, $SD = .82$) participated in the study. Families reported children's contact with nature and EF through validated questionnaires. Results suggested that rural/urban environments were not related to children's EF, but preschoolers who had more contact with nature exhibited higher Working memory skills. Moreover, mothers' lower education was related to more difficulties in preschoolers' Working memory when they have less contact with nature, but spending more time in natural surroundings seems to buffer that negative relation between lower maternal education and children's EF. These preliminary findings highlight the relevance of the exposure and contact with nature for early childhood years.

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Introduction

Executive Functions (EF), defined as a set of high-order cognitive skills including working memory/updating, inhibition, and shifting/flexibility (Miyake et al., 2000), support important mechanisms in individuals' self-regulatory goal pursuits (Hofmann et al., 2012), such as to allow children to pay attention (Diamond, 2013), achieve goals (Cortés Pascual et al., 2019), solve problems (Garon et al., 2008) and manage relationships (Wilson et al., 2022). Not surprisingly, EF have been found to be a relevant predictor for academic performance across the lifespan (Ahmed et al., 2018; Alloway & Alloway, 2010; Blair, 2016; Clark et al., 2010; Miller & Hinshaw, 2010), children's mental health and well-being (Brown & Landgraf, 2010). Their relevance lies in the support of children's socio-emotional adjustment (Jacobson et al., 2011; Riggs et al., 2006) and academic performance throughout infancy (Becker et al., 2014; Blair & Razza, 2007; Morgan et al., 2019), childhood (Bull & Scerif, 2001; Gathercole et al., 2004) and adolescence (Gathercole et al., 2004; Samuels et al., 2016). By contrast, difficulties in voluntarily managing thoughts, emotions, and behavior have been related to different neurodevelopmental disorders (Crisci et al., 2021; Otterman et al., 2019), internalizing and externalizing problems (Clark et al., 2002), as well as poor adjustment to the social environment (Hughes et al., 2000).

Given the powerful impact that these skills exert on human development, research has been focused on factors that facilitate EF, with the ultimate goal of enhancing their development and mitigating possible

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difficulties. Within this line, previous studies have analyzed how different aspects of personality, socioeconomic characteristics, and parenting practices are associated with the development of self-regulation skills (e.g. Conway & Stifter, 2012; Hackman et al., 2015; Latzman, 2009; Lucassen et al., 2015; Sarsour et al., 2011; Schoemaker et al., 2012; Unsworth et al., 2014). However, less well known is the possible impact that the environment (e.g., urban *versus* rural settings, exposure to nature) and its interaction with family context (e.g. family socioeconomic status -SES-) might have on the development of EF. In this sense, the present study aimed to examine the potential differences in preschoolers' EF depending on their residential area (urban *versus* rural areas), to study the relation between preschoolers' contact with nature and difficulties in FE, and to investigate whether contact with nature moderates the effect of family SES on EF difficulties.

Executive Functions: Skills and Development

Executive Functions are considered as a construct composed of a set of independent, but related constructs such as Inhibition, Flexibility and Working memory (Diamond, 2013; Lehto et al., 2003; Miyake et al., 2000). Neuroanatomically, these skills are related to the prefrontal cortex (Carlson et al., 2013; Müller & Kerns, 2015; Zelazo et al., 2016), that is operative since the first year of life, but its development is not finished until adulthood (Casey et al., 2000; Garon et al., 2008). Since the neurodevelopment of EF is associated with this region, it is not surprising that critical improvements take place at preschool years (Garon et al., 2008), although these skills are present at early stages of life (Garon et al., 2008). Regarding each EF component, *inhibition* has been defined as “the ability to control the own attention, thoughts, behavior, emotions to override a strong internal predisposition or external lure, and instead do what’s more appropriate or needed” (Diamond, 2013); *cognitive flexibility* is characterized as the ability to switch between multiple tasks, operations, or mental sets (Miyake et al., 2000), including the possibility of thinking about something from different perspectives (Diamond, 2016), and *working memory* (WM) is considered as the ability to work with information (Alloway & Copello, 2013), which can be stored and processed for short periods of time when cognitive activities occur (Gathercole et al., 2004).

Considering the early development of EF (Anderson, 2002; Best & Miller, 2010; Casey et al., 2000; Cowan et al., 2006; Garon et al., 2008; Kibbe & Leslie, 2013), together with the fact that preschool years are related to a fast growth of motor, language, social and cognitive skills (Anderson & Reidy, 2012), it is crucial to investigate the factors influencing EF skills at this development stage.

Executive Functions: Relations to Family SES, Residential Areas, and Contact with Nature

In explaining EF's development, scientifics have been focused on a wide range of factors, such as different aspects of socioeconomic and educational level (Hackman et al., 2015; Sarsour et al., 2011), residential area (Freitas et al., 2022; Gouin et al., 2015; Hermida et al., 2019; Linnell et al., 2013) and contact with nature (Madzia et al., 2019; Taylor et al., 2002). A huge body of research has demonstrated the associations between family socioeconomic status (SES) and specific cognitive functions (for a review, see Duncan & Magnuson, 2012). As Duncan and Magnuson (2012) pointed out, although correlations between parental schooling levels, and children's achievement “are among the most replicated results (Bornstein et al., 2003) from developmental studies. Yet, surprisingly, little is known about the causal nature of these associations (Sobel, 1998)”. In the case of family incomes effects, a meta-analysis concluded that household income has a positive causal effect on children's outcomes, including their cognitive and social-behavioral development and their health (Cooper & Stewart, 2021). In the same line, a recent study shows that infants in families who receive more support from child-related tax improved math and reading test scores and achieved a higher likelihood of high-school graduation (Barr et al., 2022).

The residential areas (rural *versus* urban areas) is another contextual factor that may influence children's EF, yet the studies have yield mixed results (Freitas et al., 2022; Gouin et al., 2015; Hermida et al., 2019; Linnell et al., 2013). On one hand, studies have reported that children from rural areas achieved a worse performance than those from urban areas (Hermida et al., 2019; Wang et al., 2019). On the other hand, researchers have also found that children living in rural areas outperformed peers from urban contexts in WM tasks (Freitas et al., 2022), and behavior in the classroom (respect of classroom rules,

attention, independence when confronted with a task, speed of task execution, work organization, self-confidence, the ability to keep up with classroom rhythm, and tiredness; Boussicault et al., 2013). Given the mixed results, more research is required to clarify the potential differential EF development in children from rural/urban areas.

A different contextual factor related to children's EF is contact with nature. Although much less explored, studies indicated that children's contact with natural areas is associated with EF and self-regulation skills (Madzia et al., 2019; Taylor et al., 2002). Specifically, children's exposure to nature has been related to better cognitive skills, such as better recovery in attention (Amicone et al., 2018; Schutte et al., 2017), perceived restorativeness (Amicone et al., 2018; Schutte et al., 2017), and WM (Schutte et al., 2017; Torquati et al., 2017), as well as higher delay of gratification (Jenkin et al., 2018). This connection between exposure to nature and children's cognitive development has been also supported by a recent meta-analysis (Weeland et al., 2019). This study concluded that children who lived in greener neighborhoods or who are more frequently exposed to nature display better self-regulation, stating that natural environments have a positive impact on children's cognitive and affective development. However, the exposure to nature seems not to be equally beneficial across EF domains neither to all EF measures. For instance, the expected positive changes for inhibitory skills after playing outdoors were only found in one of three inhibitory computerized tasks in a new study (Rosiek et al., 2022). In this sense, more research is needed to clarify the effects of nature on specific EF components, as well as the different types of natural elements (including natural areas, green urban spaces, breaks on green areas, and watching natural elements on computers).

Present Study

The present research was focused on preschooler years because the scientific community recognizes that Executive Functions develop dramatically between 3-6 years of age (Carlson et al., 2004; Chevalier & Blaye, 2009; Wright et al., 2003; Zelazo & Müller, 2002), underlining the relevance of these ages in subsequent social and cognitive development (Carlson, 2005). However, most of the aforementioned studies were focused on school ages (Amicone et al., 2018; Freitas et al., 2022; Linnell et al., 2013; Madzia et al., 2019; Taylor et al., 2002), leaving a gap in the study of EF during preschooler ages. Another key point to consider is that the literature about the differences between urban and rural areas has been centered on children's academic achievement (Graham & Provost, 2012; Williams & Mann, 2006; Young, 1998) instead of studying the psychological mechanism underlying those preschoolers' academic outcomes, such as Executive Functions. In relation to sociodemographic characteristics, a review from Rosa and Collado (2019) already pointed out the relevance to consider these factors in the contact with nature links; unfortunately, only a few studies have included them in their studies (Duron-Ramos et al., 2020; Gifford & Nilsson, 2014; Hinds & Sparks, 2008). Moreover, the present study collected children's EF data from urban and rural populations, which is crucial to achieve a representative sample, especially in the case of Aragón (Spain), where 92 % of the areas are considered rural (Aragonese Institute of Statistics, 2019).

With those gaps in mind, the present research proposed to analyze the relationship between contextual factors and EF in a sample of typically developing preschoolers in both rural and urban areas in the province of Teruel (Aragón, Spain). Specifically, our objectives were:

1. To investigate the possible differences in Executive Functions of preschoolers from rural *versus* urban environments.
2. To analyze the possible association between contact with nature and preschoolers' Executive Functions.
3. To examine whether contact with nature was moderating the relation between SES and preschoolers' Executive Functions.

Method

Participants

The initial sample was composed of 61 preschoolers but, given the aims of the study, two children were excluded because they were 3 years-old, two because they had a neurodevelopmental disorder, and

one because the family did not complete the EF questionnaire. Consequently, the final number of participants were 56 preschoolers (30 boys and 26 girls) aged 4-6 years ($M = 4.86$, $SD = 0.82$). Among the participating families, 26.8% lived in urban areas, and 73.2% in rural areas in the province of Teruel (Aragón, Spain).

Related to the parents' education level, 21.8% of the mothers were educated at the elementary school, 25.5% at the high school level, and 52.7% at the university level. In the case of the fathers, the percentage were 38.5% studied until elementary school, 40.4% until high school and 21.2% until the university level. In terms of monthly income, 1.9% of the families reported to earn less than 750€ (lower extreme compared to the average family income), 17.3% reported to earn from 751 to 1200 (well below average), 7.7% from 1201 to 1600 (below average), 15.4% from 1601 to 2000 (in average), 28.8% from 2001 to 3000€ (above average), and 28.8% families reported more than 3000€ (well above average).

Measures

Contact with nature: the frequency of contact with nature was measured using a 4-item questionnaire (Gotch & Hall, 2004; Larson et al., 2011) translated to Spanish (Collado et al., 2015). Families were asked to fill it with the following questions that refer to the last 12 months: "How frequently your child has spent time in natural places such as the countryside, the beach, the mountains, etc.?", "How frequently your child has visited places such as zoos or aquariums?"; and another two questions about daily activities related to nature: "Does your child play in natural places after school time?", and "Does your child play in natural places during the weekends?". The 5-likert scale to reply ranged from "never" (1) to "more than 10 times" (5; for the first two questions), and from "never" (1) to "always" (5; for the last two questions). The final internal consistency was $\alpha = .76$. The total score of the scale was calculated by adding the scores from the 4 items.

Executive Functions: Behavior Rating Inventory of Executive Function, Preschool Version (BRIEF-P; Gioia et al., 2000; Spanish version adapted by Bausela & Luque, 2006) is a parents' report questionnaire to evaluate the daily, behavioral and observable aspects of Executive Functions. According the objectives of the study, three scales were selected: Working memory (WM; ability to hold information when completing a task, when encoding information, or when generating goals/plans in a sequential manner; $\alpha = .76$; $n = 8$ items; e.g.: "his/her capacity to pay attention has a brief duration"); Flexibility (ability to move freely from one activity or situation to another, to tolerate change; to switch or alternate attention, $\alpha = .60$, $n = 8$ items, e.g.: "the new situations can disturb him/her or make him/her uncomfortable"), and Inhibition (ability to control impulses and to stop engaging in a behavior, $\alpha = .81$, $n = 8$ items, e.g.: "s/he acts without thinking before"). The responses followed a 3-likert scale: "never" (0), "sometimes" (1) and "frequently" (2). The higher score the child obtained, the more difficulties in EF the child exhibited.

Rural and urban area: it was considered as urban area the place where the population was higher than 30.000 residents and the density was higher than 100 residents per km², following the description of rural area: "geographical space formed by the addition of towns or local entities [...] with a lower population than 30.000 inhabitants and a density lower than 100 inhabitants per km²" (Law 45/2007, 13 of December, law for the sustainable development of the countryside, BOE 299, of December 14th, 2007).

Socioeconomic and educational status: children's caregivers informed about their educational level (Primary education, Secondary education, and Postsecondary education) and monthly family incomes. For the analyses, three measures were considered: mother's, and father's education, and a composite score of SES (composed as the average of the standardized score of the three variables).

Procedure

The study was approved by the Research Ethics Committee of the Aragón (PI21-136), following Helsinki's guidelines. There were three forms to invite families to participate: (1) through public schools of Teruel province (Spain), (2) advertised in local journals, (3) publicized in social networks. A total of three schools agreed to participate and 23 families contacted the principal researcher by email/social network. The collection data took place at the end of the course (May-June 2021). In the case of schools, family's

consent, project information and the questionnaires were sent to the families through the teachers. Families had one/two weeks to fill them out and return the documents to the school (if they wanted to participate), or to give them back not complied (if they did not want to participate). The time required to complete the questionnaires was, approximately, 15-20 minutes.

Results

Descriptive statistics

According to the goals of the study, means and standard deviations for preschooler's EF distinguishing between their place of residence (urban *versus* rural) and their frequency of nature contact (higher *versus* lower contact) were calculated (see Table 1). To create the two latter groups, the total score of Contact with nature scale was split by the mean.

The normality of the distribution of each variable was evaluated based on the skewness and kurtosis values, considering distributions with values of ± 1 to be normal, with values up to ± 2 being acceptable (Field, 2013; George & Mallery, 2016). The skewness and kurtosis values allow us to assume that the distributions of the variables present a normal distribution. Assumptions for regression analyses was also verified (i.e., linearity, homoscedasticity, absence of multicollinearity, independence and normality of the standardized residuals; Field, 2013). All analyses were conducted in SPSS (IBM Corp, 2019).

Gender, age and SES differences

A series of preliminary analyses were run to test for potential gender, age, and SES' family effects on children's EF. Gender effect on EF was tested using *t*-test analysis for independent groups. The results showed that gender was not related to WM ($t(54)=.54, p=.595$), Flexibility ($t(54)=1.37, p=.176$), neither Inhibition ($t(54)=.60, p=.552$) difficulties. For testing potential age effects, analyses of variance (ANOVA) were run taking age as independent variable and EF scores as dependent variables. ANOVAs indicated that children at 5-year-olds ($M=7.00, SD=3.66$) tended to exhibit less inhibition skills than children at 4-year-old ($M=4.34, SD=2.42$) ($F(2,53)=4.07, p=.023, \eta_p^2=.133$). However, no significant result was found for WM ($F(2,53)=1.35, p=.268, \eta_p^2=.048$), neither for Flexibility scores ($F(2,53)=1.67, p=.198, \eta_p^2=.059$). Finally, zero-order correlations were conducted to test whether family' SES, mothers', and fathers' education correlated to EF scores, but analyses yield no significant results for SES composite score (WM: $r=-.16, p=.256$, Flexibility: $r=-.01, p=.936$; Inhibition: $r=-.02, p=.893$), and fathers' education (WM: $r=-.10, p=.505$, Flexibility: $r=-.05, p=.732$; Inhibition: $r=.11, p=.447$), whereas mothers' education was associated with WM ($r=-.28, p=.038$), but not related to the rest of child's EF (Flexibility: $r=.09, p=.517$; Inhibition: $r=-.23, p=.101$). Given the results, age and mothers' education were included in further analyses for Inhibition and Working memory scales, respectively.

Table 1. Descriptive statistics for variables under study

	Skewness	Kurtosis	Residential area					Contact with nature		Total sample		
			Boys (<i>n</i> =30)	Girls (<i>n</i> =26)	4 years- old (<i>n</i> =23)	5 years- old (<i>n</i> =18)	6 years- old (<i>n</i> =15)	Urban area	Rural area		Higher contact with nature	Lower contact with nature
Diff. WM	.86	.82	4.03 (3.24)	3.62 (2.48)	3.09 (2.94)	4.44 (2.97)	4.26 (2.65)	3.00 (2.24)	4.18 (3.09)	3.11 (2.45)	4.54 (3.08)	3.83 (2.90)
Diff. Flexibility	.49	-.39	3.60 (2.62)	2.77 (1.75)	2.57 (1.97)	3.78 (2.34)	3.53 (2.53)	3.33 (2.32)	3.15 (2.32)	2.93 (2.32)	3.46 (2.32)	3.21 (2.27)
Dif. Inhibition	.42	.04	5.73 (3.17)	5.23 (3.09)	4.35 (2.42)	7.00 (3.66)	5.47 (2.49)	5.40 (2.61)	5.31 (3.16)	5.56 (2.78)	5.11 (3.23)	5.50 (3.12)
Contact with nature	-.96	.63	7.33 (2.01)	7.84 (2.73)	7.43 (2.55)	7.43 (2.55)	7.88 (2.39)	6.80 (2.11)	7.88 (2.39)	9.32 (.86)	5.74 (1.99)	7.56 (2.35)

Objective 1: Are there differences between rural/urban areas and preschoolers' Executive Functions?

Independent *t*-Student analysis was run to explore the potential differences in preschoolers' difficulties in Flexibility based on their residential area (rural or urban). The results indicated that the place where children lived was not related to their difficulties in Flexibility skills ($t(54)=-.23, p=.815$). In the case

of WM and Inhibition scores, ANOVA analysis also indicated that the residential area was not related to Inhibition ($F(1,52)=.00$, $p=.997$, $\eta_p^2=.000$), even controlling by child's age ($F(1,52)=2.26$, $p=.139$, $\eta_p^2=.042$), neither to WM scores ($F(1,51)=.05$, $p=.819$, $\eta_p^2=.001$), even controlling by mothers' education ($F(1,51)=.07$, $p=.065$, $\eta_p^2=.065$). Means and standard deviations were shown in Table 1.

Objective 2: Is there any association between contact with nature and preschoolers' Executive Functions?

Zero-order correlations were calculated to investigate the associations between the frequency in contact with nature and children's difficulties in EF. As shown in Table 2, the analyses revealed that contact with nature was significant and negatively associated with preschoolers' Working memory, with a moderate effect (following Cohen's effect size recommendations). These results indicated that the more contact with nature preschoolers had, the less difficulties in holding information when completing a task, encoding information, or generating goals/plans in a sequential manner parents' observed in their children. Given the significant correlations between WM and contact with nature, WM was the EF variable considered in further analyses. The other two EF scales yield non-significant results, although the correlation between contact with nature and Flexibility scale was marginally significant ($p=.054$), suggesting that children with more contact with nature tended also to express less difficulties in moving from one activity or situation to another, to tolerate change, or to switch or alternate attention.

Table 2. Zero-order correlations between preschoolers' difficulties in Executive Functions and their contact with nature frequency

	Difficulties in EF scales		
	Working Memory	Flexibility	Inhibition
Contact with nature	-.34**	-.26 [†]	-.05

** = $p < .01$; [†] = $p < .10$

In order to reply to the second objective of the present study, linear regression was conducted considering difficulties in Working memory as a dependent variable, contact with nature as independent variable. The results confirmed that preschoolers' contact with nature was a significant predictor of their difficulties in Working memory ($F(4.11)=.022$; $\beta = -.31$, $p=.026$), even controlling by mothers' education ($\beta = -.18$, $p=.194$).

Objective 3: is family SES related to contact with nature and preschoolers' Executive Functions?

As mentioned before, mothers' education was associated with WM ($r = -.28$, $p = .038$), but not related to the rest of child's EF (Flexibility: $r = .09$, $p = .517$; Inhibition: $r = -.23$, $p = .101$), whereas WM was the only EF component correlated to contact with nature ($r = -.34$). Given these results, an analysis of variance (ANOVA) was computed to test whether the contact with nature interacted with mothers' education in explaining children's Working memory skills. With that aim, mothers' schooling (levels: elementary school, high school or university) and preschoolers' contact with nature (levels: high/low) were considered. The analysis revealed significant results for the interaction between mothers' education and children's contact with nature ($F(2,47)=2.97$, $p=.061$, $\eta_p^2=.112$). As shown in Figure 1, mothers' elementary education tended to be associated with preschoolers experiencing more difficulties in Working memory skills when they have less contact with nature, but not when they were more frequently in contact with nature.

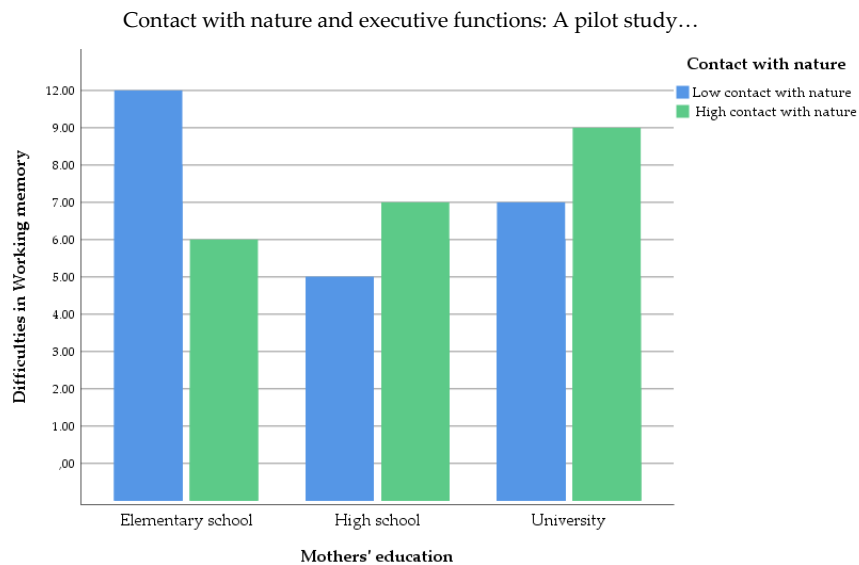


Figure 1. Bar-chart representation of the interaction effect contact with nature and mothers' education in children's Working memory.

Discussion

The present study pretends to approach to a booming line of research: the importance of the natural environment for preschoolers' cognitive development. Our results suggested that the rural/urban environment seems not to be a relevant factor for children's EF, but contact with nature is associated with Working memory skills. Specifically, those preschoolers who had more contact with nature by playing on it or spending more time in natural surroundings in the last 12 months were scored as exhibiting less difficulties in Working memory, as parents reported. Furthermore, mothers' lower education was related to more difficulties in preschoolers' Working memory when they have less contact with nature, but spending more time in natural surroundings seems to buffer that negative relation between poorer maternal education and children's EF skills.

The first objective argued that children living in urban and rural areas might exhibit differences in their performance in Executive Functions. Our results indicated that the place where children lived was not related to their difficulties in Working memory, neither Flexibility, nor Inhibition, which is in line with previous literature (Okur, 2020; Rojas-Barahona et al., 2015). However, there are also studies pointing to differences in EF performance in favor of children living in rural areas (Freitas et al., 2022), or in urban areas (Hermida et al., 2019). These mixed results might indicate that children's EF might not be directly associated with the residential area, but related to poverty and amount of resources (Hermida et al., 2019), specific parenting behaviors and daily routines. In this line, a bunch of research has repeatedly pointed the importance of household chaos disorganization and parenting environment on early EF skills (Lucassen et al., 2015; Valcan et al., 2018; Vernon-Feagans et al., 2016). Therefore, it seems that in studying the contextual factors contributing to preschoolers' EF skills the residential area might not be a key factor, but that the potential differences in EF would emerge from the family' social and material conditions and parenting behaviors.

The second objective of this study was to analyze the possible association between contact with nature and preschoolers' Executive Functions. The results confirmed that there is an association between contact with nature and Working memory, while Inhibition and Flexibility scores did not yield significant results. Moreover, preschoolers' contact with nature in the last 12 months was a significant predictor of their Working memory skills. This association is coherent with previous findings in scholars' samples (Dadvand et al., 2015; Taylor et al., 2002), although it remains unclear the mechanism underlying these benefits (Schutte et al., 2017). The majority of the studies (for instance, Dadvand et al., 2015; Mårtensson et al., 2009; Schutte et al., 2017; Taylor et al., 2002) explain the benefits of nature on children's development based on Attention Restoration Theory (ART; Kaplan, 1995). Following this theory, the decrease in

cognitive resources developing over time on sustained cognitive demands might be better overcome by spending time in natural settings, as these spaces –unlike built and urban environments– would facilitate the default mode network or mind-wandering. In this condition the occurrence of thoughts is not tied to the immediate environment –thoughts that are not related to a given task at hand (Murray et al., 2020)–, but to a range widely and spontaneously across other topics that do not require sustained attention (American Psychological Association, 2015). Another explanation for the connection between cognitive skills and contact with nature may be the relation between exposure to nature and physical activity, which is related to cognitive improvement (Fedewa & Ahn, 2011). However, a recent meta-analysis has questioned the causal evidence supporting the link between regular physical exercise and an overall enhancement of cognitive function (Ciria et al., 2023). Taking into account the possible explanation, it is possible that, by spending more time in natural spaces, children’s cognitive resources might better recover than in urban settings, as Amicone et al. (2018) already confirmed with school-age students in school environments.

The non-significant results between the other two EF and contact with nature would be explained by different reasons. In the case of Inhibition, the lack of significant findings is coherent with previous studies (Koepp et al., 2022; Schutte et al., 2017), suggesting that playing and spending time outside may not have the same relation with inhibitory skills as have with WM skills. However, our results contrast with the study of Taylor et al. (2002), who found that girls with greener views from their home performed better on tasks involving inhibitory control. There are several differences between the studies that may account for this difference in results. First, the tasks differ: Taylor et al. (2002) used a battery to evaluate inhibition of initial impulses administered to the child (Matching Familiar Figures Test, Stroop Color-Word Test, and Category Matching), whereas our parents’ reports (BRIEF-P) may not be as sensitive to capture individual differences in children’s inhibitory skills. There is also possible that the developmental stage (preschoolers *versus* scholars) and our small sample size might have affected the results. As Schutte (2017) proposed, future research should replicate the influence of nature on inhibitory control in preschoolers and schoolchildren using different inhibitory control measures. Finally, although no studies relating contact with nature and Flexibility were found, the small sample sizes would be a limitation, as the magnitude of the correlation was low-moderated ($r=-.26, p=.054$), but with larger sample size may reach significant levels.

The final objective of this research was testing the relation between contact with nature and family’ SES in connection to preschoolers’ EFs. Our results showed that mothers’ elementary education was related to more difficulties in preschoolers’ Working memory when children spend less time in contact with nature, whereas spending more time in natural surroundings seems to buffer that negative relation between lower maternal education and children’s EF skills. This finding brings interesting aspects in the discussion. First, mothers’ education was the only SES variable related to children’s EF (not fathers’ education, nor the composite SES score considering parental education and family incomes). This result might be explained because Spanish mothers are the principal caregiver at home (Spanish Statistics National Institute, 2016), which means that they spend more time caring for their children and have responsibility for the everyday care of their child and the decisions that affect that care. In the same line, the manuscript published by González et al. (2020) revealed that maternal education was the strongest factor contributing to children’s cognitive development among diverse socioeconomic factors, such as social class, fathers’ education level and employment. However, it is not only the time spent, but also the child-mother dyad characteristics. As Rivero et al. (2022) showed, Spanish mothers exhibits more affection, responsiveness, encouragement, and teaching attitudes to their child than Spanish fathers do, which might affect the child-father dyad and their effects. Secondly, the significant relation between mothers’ education and children’s cognitive skills has been consistently found in previous literature (Andrade et al., 2005; Greenwood et al., 2021; Hackman et al., 2015; Stevens et al., 2009). In this sense, it has been suggested that attending a higher education helps mothers to provide a more intellectually stimulating environment to their child, resulting in a higher performance in executive functioning tests (Ardila et al., 2005). However, our study suggests that the relation maternal education-child’s EF is not the same across different EF domains, as only WM was found to be correlated to mothers’ education. The positive result for WM is in line with Hackman et al. (2015), who showed that lower maternal education predicted children’s worse

performance in Working memory skills. Moreover, the null result for Inhibition scale is coherent with previous research showing that maternal education level was neither related to children's inhibitory control scores measured by computerized tasks (Pauli-Pott et al., 2010) nor by face-to-face battery tasks (Montroy et al., 2019). Given the mixed results, more studies are needed to address the influence of mothers' education on preschoolers' EF specific skills by using multiple approaches to catch the potential differences at multiple levels, such as brain imaging techniques (EEG, fMRI), teachers' and parents' reports, and observational measures. Lastly, maternal education seems to interact with contact with nature in relation to children's WM. As mentioned before, mothers with lower education tend to have children with higher WM difficulties; however, when these preschoolers spend more time in contact with nature, the negative relation between lower maternal education and children's EF skills seems to be mitigated. As far as authors know, the present research is the first study addressing this issue, but results might be explained based on the ART (Kaplan, 1995). According to this theory, although preschoolers from mothers with lower education tend to exhibit more difficulties in WM skills, this negative effect might be buffered by spending more time in natural spaces, as natural environments would help children with better recovery of their cognitive resources than in urban contexts.

Conclusion

Bearing in mind that this research is a pilot study, our findings still provide meaningful evidence to reinforce the importance of spending time in natural areas for public health, education services, and clinical practice. Meaningful, because 82% of Spanish children up to 12 years old play outdoors for less time than recommended (Technological Institute of Children's Products and Leisure, 2019), but also because the benefits of nature contact (Weeland et al., 2019) are comparable to school-based prevention programs for child depression and anxiety (e.g., Werner-Seidler et al., 2017). In this line, our findings add more empirical evidence for nature exposure as a promising tool for stimulating cognitive development and self-regulation skills (Weeland et al., 2019), promoting pro-environmental attitudes (Collado et al., 2015), and preventing child psychopathology (Werner-Seidler et al., 2017). The implications of these data include the encouragement of green areas and natural environments from public policies, as well as the enrichment of school areas with green schoolyards to promote children's Executive Functions development.

Limitations and Future Research

The current study presents a set of limitations, such as the nature of measures, the cross-sectional design, the sample size, and the potential consequences of lockdowns due to COVID. First, the instruments to measure children's EF and contact with nature were reported by parents, whereas a multi-informant variable (e.g., also considering teachers' perceptions about child's EF or administering a battery of EF tasks) would have provided a more comprehensive vision about children's executive functioning. As mentioned in the discussion section, more research with multiple measure levels and approaches is needed to better understand the connection between family context, contact with nature, and executive functioning development. Second, although parents were asked about the frequency of their contact with nature in the last year, and the hypotheses were drawn based on previous studies and theoretical frameworks, the cross-sectional design of the study makes it not possible to establish causal relations between the variables. Thirdly, as our sample size is limited, the size effects and statistical power might be lower than expected from a larger sample. Lastly, the data collection took place during the sanitary restrictions derived from COVID and, although preschoolers were not required to wear a mask, the specific situation might have affected the results.

Regarding future research, one potential line would address the potential benefits of being in contact with nature for families with lower education; for example, studying the effect of nature exposure on parents and the possible contribution to the parent-child dyad. This line of research would have an important impact in designing new educational and social intervention programmes for these preschoolers based on empirical evidence. Furthermore, it would be also interesting to address the effect of spending

time in urban green areas *versus* in nature to test the potential differences as well as the applications for prevention and intervention programmes.

Declarations

Authors' Declarations

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Children's participation in documentation processes in local outdoor spaces

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Abstract: This article describes a study that aimed to investigate how children perform and document Land Art in local places near their kindergarten and the visualization of their experiences through their drawings back in the kindergarten. Documentation is important for a kindergarten's planning and evaluation of pedagogical practices and activities. Studies have shown that using visual methods, such as drawings and photographs created by children themselves, to provide information related to children's perspectives, actions and attitudes is a way for children to communicate and make meaning of their experiences. Encounters with the natural world through the performance of Land Art offer children the opportunity to directly sense, interact with and know 'the world of materials'. Children's interactions correspond with natural materials and the environment. Participatory observation was used, following a group of twelve children, aged four and five years in a year's period to their trips near a shoreline. Data consists of photographs, voice recordings, video, drawings, and narratives to explore ways children interact with and make meaning of place by performing Land Art. The results show that children's photographs and drawings are ways to 'communicate' with their experiences and engage with, pay attention to and visualize their perspectives. The findings might have implications for new approaches to documenting children's voices and experiences through performing Land Art and drawings.

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Outdoor local spaces; Land art; Documentation; Children's voices; Drawings

Introduction

Research has shown that early childhood educators employ different methods for documentation of children's experiences and learning in early childhood settings and outdoor spaces (Kumpulainen & Ouakrim-Soivio, 2019; Pramling Samuelsson, 2010). These processes of documentation often include stories, observations, pictures, and narratives to explore children's learning, progress or achievements. Nevertheless, children's perspectives, voices, and reflection are lacking in these processes (Clark & Moss, 2011; Formosinho & Passos, 2019; Spyrou, 2011; Tangen, 2008; Twigg & Garvis, 2010; Urbina-García, 2019). According to the Norwegian Framework for the kindergarten's context and activities (Norwegian Directorate for Education and Training, 2017), children's active participation in the kindergarten everyday life and activities include both planning and evaluating the activities in relation to their age and their maturity. Smith (2015) underlines the principle of respect for the child's views and feelings outlined by the United Nations Committee on the Rights of the Child (UNCRC) and argues that this principle should be enacted in all Early Childhood Education (ECE) settings. Canning et al.'s (2022) study of Hungarian kindergartens highlights the importance of including children's voices through play-based creative activities that focus on eliciting children's thoughts and feelings and providing insight into their lives. Additionally, according to Article 13 [1] of the Convention on the Rights of the Child (United Nations, 1989),

[T]he child shall have the right to freedom of expression; this right shall include freedom to seek,

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receive and impart information and ideas of all kinds, regardless of frontiers, either orally, in writing or in print, in the form of art, or through any other media of the child's choice (United Nations, 1989, p. 4).

Documentation has an important role in the kindergarten's planning and evaluation (Norwegian Directorate for Education and Training, 2017) and is a way to visualize both the pedagogical practices of the educators' and the children's engagement and interests. Furthermore, 79% of Norwegian kindergarten staff report that a camera is among the most common digital tools found in Norwegian kindergartens (Fjørtoft et al., 2019). Studies have shown that using visual methods, such as children's drawings and photographs, to provide information on the child's perspective, actions and attitudes is a way for children to communicate and make meaning of their own experiences (Einarsdottir et al., 2009; Johnson et al., 2012; Lindsay, 2016). Additionally, current literature recognizes the importance of outdoor experiences in early learning and development (Bento & Dias, 2017; Gessiou, 2022; Hagen, 2015; Sandseter et al., 2020). The Norwegian kindergarten has a strong tradition of spending most of the day outdoors (Moser & Martinsen, 2010). Likewise, the Framework Plan for the content and tasks of kindergartens (Norwegian Directorate for Education and Training, 2017), highlights the importance of children's outdoor experiences during all seasons and in all weather conditions. Play in outdoor kindergarten settings is central to the Norwegian kindergarten tradition. The *Local community and society* section of the Framework Plan advises that kindergarten staff must help children explore nature's various landscapes and to get to know their local environment (Norwegian Directorate for Education and Training, 2017). Children develop a close relationship with the outdoor space and natural materials in their community with the kindergarten staff and other children. The process of collecting and gathering materials from nature and putting them in a new constellation contributes to sensory-motoric skills (Karlsen & Dardanou, 2020). Trimis and Savva (2009) argue that children's artistic activities in relation to their *chorotopos* (space-place, area, landscape, region, village or town) and in-depth exploration of materials help children be more engaged with their own local environment and "[enable] them to understand the potential expressiveness of materials and their inherent meaning" (p. 527).

In this article, we draw attention to children's own expressions of their trip experiences through their engagement in documentation processes that highlight children as agents of their own everyday lives. Taking a rights-based approach considering research as co-created with children, not for them (Bessell, 2015), this study focuses on what children see, perceive, and make meaning of during a trip to a nearby local space. We acknowledge children's participatory practices as an important factor for children's inclusion in their own lives. Therefore, the aim of the study is to investigate how children perform and document Land Art in their local spaces and in what way these experiences are visualized through their drawings back in their kindergartens. This article will examine the following research questions:

1. How do children's performance of Land Art and drawings document their experiences in local places?
2. In what way can children's participation in visual documentation of their experience in local places contribute to democratic and inclusive practices?

Thus, this paper reports empirical research, building on the ideas of children as protagonists in documentation activities that contribute to ECE practices that connect children's actions and experiences and insights into children's performative (through Land Art) and photographic agency (through documentation with photographs and through drawings).

Theoretical Foundations

The Perspective of Land Art

This study builds on previous research that has explored nature through art and art through nature and its ability to encourage curiosity, sense stimulation and personal expression (Sørenstuen, 2011). Land Art falls under the overarching concept of environmental art, which includes eco-art, ecological art, earthworks and art in nature and 'can be often understood as art that is made in outdoors environments, close surroundings or other closes places' (Sørenstuen, 2011, p. 27). Therefore,

Land Art as collaboration and education constitutes a unique mixture of pedagogic form and art dialogue. Doing land art together is a pedagogical means: there are no detours, no vicarious motifs, no techne needed to start off. Artwork is real, it's what we do, using our real bodies, our real minds, real materials, and real actions (Solberg, 2016, p. 21).

Outdoor space and place-making involve exploration of the immediate surroundings (Parnell & Procter, 2011). Children's knowledge about the local environment can be articulated in a "physical, verbal and visual way" through walking, sensing, talking about their experiences and documenting images (Clark, 2010, p. 36). A walk on the shoreline or in the forest often means that stones, shells, sticks or cones are brought back to the kindergarten or home. Children's curiosity and attraction to nature's diverse elements can be a starting point for an approach to Land Art. Land Art as a pedagogical practice in kindergarten could add an aesthetic dimension, whereby the materials and landscapes of the place form a diverse foundation for creative activities. Children's presence and interaction with the place allow for visual expressions in both two- and three-dimensional forms (Karslen & Dardanou, 2020, 2022).

Various forms of expression reflect the child's development in many different outdoor areas. Inner experiences are made sensible by exploring different materials and trying out different techniques. Activities that promote creative ways for children to express their perspective of the world and what is 'real' for them involve aesthetic dimensions. These expressions are made visible, audible and responsive to the child and to others (Buaas, 2016). Experiencing nature and its materials through the senses while in a close relationship with nature can lead children to develop respect and responsibility for the environment from the perspective of sustainability (Kaga, 2008). Land Art is a form of creative expression in close relationship with nature as creativity can be practiced by playing directly with materials, expressing feelings, engaging in fantasy and meeting challenges. Natural elements, such as water, stones, earth and sand, which we often encounter, can provide a foundation for our understanding of nature, such as develop observational skills in nature's diversity and working in natural environments, in the familiar and unfamiliar (Miraglia & Smilan, 2009, p. 172). Furthermore, outdoor spaces, such as a shoreline, are spaces where children play freely. As Almon (2013, p. 6) argues, "play is the way children discover the world around them. They explore, invent, and transform it to suit their needs". Children's outdoor play often involves moving from one interest to another, reflecting the natural rhythms of children's concentration and curiosity, children's meeting of the world (Linn, 2008; Nelson, 2012).

Children's Meeting with the Environment

Drawing on Ingold (2015), place is constituted by the lines of movement, by walking, sensing and exploring a place. Children's meeting with the world, the ground, through performing Land Art allows them to directly sense, interact with and know "the world of materials" (Ingold, 2010, p. 124). Materials flow, and they are a part of the world. They have properties and characteristics that influence creative action as the person who creates "is in a dialogue with the materials" (Waterhouse, 2013, p. 35). Children's interactions *are between and correspond in-between* with the natural materials (Ingold, 1993). Performing tasks in landscapes is not related to what people look at in a landscape but rather a way of finding meaning in and understanding of the surrounding world (Ingold, 1993). Therefore, the exploration of the surrounding world "is about vigilance and communication with regard to natural environments, local natural cultures and the art that at any time is created in interaction with such environments and cultures" (Sørenstuen, 2011, p. 71). Thus, natural materials offer opportunities for differentiation of attention as they reveal the diversity of the environment and the different relationships between people and nature. Active interaction with nature develops a different kind of attention than traditional learning activities and helps children discover new perspectives and ways of looking at the world (Fredriksen, 2019; Ingold, 2015).

Documentation is an experience of meaning-making in which children and teachers operate together and recognize the value of the process. Making-meaning and developing stories to explain the world are important for children to understand reality and their relation to it. Photography has been used as a visual method of meaning-making and involves the use of cameras to document research participants' lives and experiences (Clark & Moss, 2011; Johnson et al., 2012). According to Clark (2010, p. 200) "experiencing physical spaces differently can also be achieved through engagement with documentation which is

produced by children”[sic]. Likewise, it is remarkable to investigate further “the rich textures and depth of subjective accounts of people’s experiences with the arts and then try to capture how they feel about that” (Walmsley, 2018, p. 287). In addition, documentation gives opportunities for reflective discussions among children and teachers with the result that children’s participation is increased and they become actors in forming their everyday life in kindergarten.

Method

The research is a small-scale study and focuses on a group of twelve children, aged four and five years, and their visits to a shoreline within walking distance of their kindergarten several times during a period of one year. The shoreline is used as a destination for play and free activities. Participatory observations were completed (Andersson et al., 2005; Groundwater-Smith et al., 2015). Data consists of photographs, voice recordings, video, children’s drawings and narratives in order to explore the ways children interact and make meaning of place through their own documentation with photographs, engagement with Land Art and drawing. More specifically, data included around ten hours of video recording, around two hundred photographs taken by children and researchers and forty-eight drawings created by children.

Through participatory photography, children have opportunities to decide the subject of their photographs, and they can form the context and point out their own interests (Holm et al., 2018). In this paper, we will use children’s photographs of the local place, performance of Land Art, drawings completed back in the kindergarten and video recordings of the drawing process. The use of digital cameras placed the data collection in the hands of the children and therefore allowed them to be actively involved. The same shoreline was visited eight times during a period of eight months. Each trip lasted around two to three hours.

The Context of the Study: Outdoor Space – The Environment

The outdoor space and the environment provide a generous opportunity for exploration for young children. The space and the shipwreck were chosen by the researchers due to the access to varied natural materials for making Land Art. The seasons and weather conditions are essential factors in this context as they set the premise for and affect children’s interaction with creative activities. Throughout the winter, children’s clothing can create certain obstacles; for instance, mittens make it more difficult to pick up small shells and similar items. At the same time, the temperature limits how long children can manage to be without mittens. What the outdoor space and natural material offer can influence a child’s expression in creative activity and curiosity in the surroundings. As in the direct contact with natural materials in Land Art, the children experience a new dimension to process creative development. Through Land Art, the children are able to create an awareness of the nature’s characteristic forms, rhythms and movements and be in a dialogue with the place (Moe & Øien, 2014).

Ethical Considerations

The research methodology followed the ethical principles of anonymity and strict confidence. Participation was voluntary for all children, and parents were given the opportunity to withdraw their children from the study at any point. Children were asked each time if they wanted to participate in the trip, and there was an instance when one child wanted to participate in only three of the eight trips. This was respected by the researchers, and the study followed the United Nations International Children’s Emergency Fund (UNICEF, 2019) statement that any research must be based on child participation wherever possible. From a praxeological principle as a paradigm within ECEC (Lyndon, 2023) and our intentions to address to children as the protagonists of the study, we considered their active participation was an important perspective, we respected the children’s free participation or the fact that they did not engage in some aspects of the study. Pseudonyms have been used for the settings and their respective educators and children. Children had various opportunities to be listened to and influence the process of the study. In each trip we have a gathering in the form of circle time with the children to discuss the weather conditions at that day, the materials that they could collect and the opportunities to form their own Land

Art expressions. We listened to the children's ideas and reminded them that the cameras were available for them to be used at any time they wanted. The children sometimes asked if they could use the cameras before it was mentioned from us. We also observed that children were interested to look at the photographs they had taken during the trip. In the end of our research project, we visited the kindergarten and had a presentation of the photographs the children took during the various trips. The children showed enthusiasm to look back at these photographs and many of them recognized even some of the photographs they had taken.

Results

For the purpose of this paper, data from the eight trips to the shoreline/beach close to the kindergarten and the documentation from the children and their drawings were analysed.

A thematic analysis (Braun & Clarke, 2021) was conducted based on the theoretical background, the research questions and the content of the data. The analysis was implemented by the researchers, where we went through audio recording, photographs and drawings of the participant children. The fact that we have been two researchers during the whole process of the study, has contributed that we have had discussions and reflections between us in the different stages of the study. The analysis identified three different categories: the perception of the shipwreck through the camera lenses, the perception of the shipwreck through the performance of Land Art and the perception of the shipwreck through drawing. These categories will be discussed as part of the children's participation in the documentation of their experiences on the different trips. An important element in the analysis was the shipwreck, which is a Russian transport ship that burned only some meters from the shoreline around one hundred years ago. The ship was transporting coal and some immigrants from Russia to Norway. The local authorities have decided not to remove it since it does not affect the local environment.

The Perception of the Shipwreck Through the Camera Lenses

According to the analysis, the children's photographs and performance of Land Art were inspired by the shipwreck close to the shoreline. During the second trip, the teachers told the story of the shipwreck to the children. The children were first asked to guess what the thing was that was so close to the shoreline. Many different ideas were expressed:

Child 1: I think it is a dead whale.

Child 2: No, it is a fish.

Child 3: I know, my mother told me, it is a ship.

Child 4: A whole ship, don't you see, there, where the board is inside and wall outside there again.

Child 5: One of our school groups has said that the teacher has told the story.

Child 4: Is it fish, dinosaur or ship?

The discussion about what was in the sea was included in the subsequent trips by the teachers. Children during the subsequent trips repeated the story of the shipwreck themselves. On all the trips, digital cameras were given to the children, and they were asked to take pictures of anything they liked. Getting the cameras was quite exciting for the children, and the researchers noticed that children asked from the start of each trip when they would get the cameras. Children explored the place each time, taking close and distant photographs. The shipwreck was found very often in children's documentation from different trips and during different seasons. It was there every time, and every time it was documented by the children as *a natural* part of the place.

The children's participation in the documentation captures what children *see* and *mark* as important from their own point of view of the place, and the shipwreck was a part of that (Figure 1). The camera lenses give insight into meanings constructed in the context of interactions while children interacted, individually or with other children, with the environment and the materials at the specific time (Kondo & Sjöberg, 2012).



Figure 1. Photo of the shipwreck taken by a participant child

The Perception of the Shipwreck Through Performing Land Art

On most of the trips, the children were asked to gather stones, shells or any other materials they could find on the shoreline and to make *anything* they wanted with them. Other times they were asked by the researchers or their teachers to gather ten specific stones or shells to give them a frame of the natural materials. The digital cameras were again given to the children to document what they had created. Through engaging in Land Art at the place with the natural materials, children interact with those materials and form *their* space at the place.

During the fourth trip, children started to gather elements that were on the shoreline. Participant Child 5 found a part of a chain. One of the researchers asked him the following questions:

Researcher 1: What is this you have found?

Child 1: It is a chain. It is of course from the ship.

Researcher 1: What are you going to use it for?

Child 1: That will work to make a ship in the sand.

The child associated the chain with the shipwreck as a natural element from it and used the chain to visualize the ship in the sand (Figure 2). As children are the agents of documenting these interactions at the place with their photographs, they participate with their own perspective of their experience (Figure 3). Thus, materials 'flow' together with the children in the world as both the Land Art and the drawings can be described as substances that are constantly changing and transforming in an everlasting material flow (Ingold, 2007). Children making lines through their performance in Land Art and drawing can be viewed as a way of documenting their own interpretation and expression of the place and surroundings (Ingold, 2015). Those lines are in the movement, in the place and at the kindergarten. Children's direct interactions with the landscape are an arena for a variety of experiences that involve the use of body and movement (Fjørtoft, 2013). The involvement of the senses and the body was part of a gradual development of a relationship among the children, the natural materials – that varied from season to season – and the shoreline.



Figure 2. Performing forms of the shipwreck with a chain found at the shoreline



Figure 3. Performing forms of the shipwreck with natural materials found at the shoreline



Figure 4. Performing Land Art with ten selected stones at the shoreline



Figure 5. A continuous performing of Land Art from Child 2 by adding sand at the ten selected stones

A child showed Researcher 2 what they had made (Figure 4) and drew a line in the middle.

Researcher 2: So, you picked 10 stones, and what did you do?

Child 2: One boat, two boats, because it is the boat that burned (points to the boat to the right with their foot, then points to the other boat with a foot) it's the boat that sank.

Researcher 2: Can you say a little about what it is?

Child 2: Chimney?

Researcher 2: Chimney, yes.

Child 2: Both.

Researcher 2: 10 stones, so you have made two boats, super.

Child 2: A line in between.

Researcher 2: Why that?

Child 2: So that they should not be together.

The teacher left, and the child continued to change his/her expression. As seen in Figure 5, the child later added a new natural element, the sand, to his/her ship on top of the stones (Figure 5). Finally, Figure 6 show the documentation of one of the participating children's expression with shells, first taken from the child's perspective. Figure 7 shows the same moment where the child is documenting the collection of the natural materials but from the researcher's perspective. By addressing the two different perspectives all voices are important for our study. The engagement of all the participants is valuable for inclusive practices as both children and researchers are equal protagonists of their common experiences.



Figure 6. Children's documentation of their own performance of Land Art



Figure 7. Collecting natural elements for Land Art: the researchers' perspective

The Perception of the Shipwreck Through Drawing

Back in kindergarten the children's expressions moved forward through their drawings and became a bridge between their experiences at the place and of the place. The kindergarten teachers chose to provide the children with different drawing materials, such as pencils, markers and coal. Children's drawings are used to access children's views and experiences (Einarsdottir et al., 2009). As drawings bring 'a deep sense of embodiment and connection to our experience of the world' (Anderson, 2019, p. 22), they contribute to

focused attention to the surroundings, the environment and the materials in a dynamic form of engagement with movements, landscapes and places. Based on chorotopos as a perspective, children's aesthetic activity and performances provide awareness of the local environment. These performances are discussed as a way of meaning making of the shoreline as a place. The children's photographs and drawings are seen as opportunities for the children to reflect on their experiences of their trips to the shoreline (Figure 8 that shows the shipwreck drawn by participant Child 2 and Figure 9 that shows the shipwreck drawn by participant Child 5). Both children in these drawings used coal as a drawing material which also can be connected with the history behind the ship carrying coal.



Figure 8. The shipwreck drawn by participant Child 2 with coal



Figure 9. The shipwreck, drawn by participant Child 5 with coal

Our video recordings of the drawing process were included in the analysis. During the conversation at the start of the process, the following dialogue between the kindergarten teacher and a child was recorded:

Teacher 1: I can see that there many straight lines and lines in the middle, is it the shipwreck?

Child 3: Yes.

Teacher 1: What is this under here, under the shipwreck? [Pointing at the drawing]

Child 3: The sea, it stands in the sea.

Another element in the children's drawings are the lines that characterize the shipwreck. These lines reflect a memory, a meaningful connection that is drawn between the trip to the shoreline and the child's perspective, where the visual experiences from the trip provide content for the drawings. In the drawings, the shipwreck from the story is told again based on each the child's own visual interpretation. Drawing involves the interaction of several processes, an interactive dynamic motoric and visual component. We draw to see in a broad sense, including exploring, discovering, studying, experiencing, confirming, telling, fabricating, identifying, recording, documenting, thinking, creating and expressing (Frisch, 2008).

Discussion

The present study aimed to explore children's experiences in a local space and interrogate how children perform Land Art with the use of natural materials of the environment during their trip in a shoreline. One of our research questions was to investigate how children's participation in the Land Art activities and their processes of documentation these experiences (through photographs and drawing) support democratic and inclusive practices. From a praxeological perspective, we acknowledged the complexity to balance praxis, ethics and power in a participatory research approach as ours (Lyndon, 2023). The study reveals that children's photographs and drawings are a way to communicate more deeply with their experiences, a way to engage with, pay attention to, and visualize their perspectives. These findings demonstrate that the context and location of images are important for children, with the presence of images in the form of photographs and artifacts enabling familiarity with a place. Experiences of participation

through documentation processes give opportunities for a rights-based approach through the involvement of all children in the daily life of the kindergarten.

Children's investigations of the shoreline, looking for elements that connect with the story of the shipwreck, show children's interest in associations and connections. The participant children's performance of Land Art enhances their direct dialogue and communication with the natural environment (Brady, 2007; Sørenstuen, 2011). Children's photographs taken at the shoreline and their drawings followed by their narratives connected to their trips document children's participation in *sharing* their experiences and acquired local knowledge.

A comparison of children's documentation with photographs and drawing as visual methods that children's involvement in these situations indicates that the shoreline and the shipwreck drew their attention. The data reveal that this attention moves as children represented their experiences on the shoreline itself and back in the kindergarten in the form of drawings. This transition of the experience indicates that children are active participants of their meaning-making through their direct participation in play and activities in an outdoor space. Children's interest is revealed in their photographs, the performance of Land Art with different materials (natural and not natural) and drawings that enable children's participation. Interactions with natural environments such as the shoreline are important for children's experiences and place these experiences in the *chorotopos*, which encompasses a close relationship with materials and place (Trimis & Savva, 2009). Children's participation in expressing themselves through the visualization of what they had seen, felt, smelt and sensed in the place (such as the air, the smell of the sea, the water, the sand, birds' voices, etc.) sets them as actors of the process, actors *of* the moment and *in* the moment. Indeed, this in-between mode of communication with the place and the materials affects children's focus, interests, interactions and relationships among themselves and with the environment (Ingold, 2015). In order to support inclusive and democratic practice in early childhood settings, it is vital to invest in and make visible to all participants all the different relationships, interactions and ways to express how the world is perceived.

The children's perception takes place *here and now* as they experience the space with all their senses, and this perception comes to light in the visualization of the experiences the children had on the shoreline with the gathering of materials and the Land Art activities. Finally, all these experiences are gathered again in their aesthetic expression through drawings. Children are 'collectors' of natural materials and 'collectors' of experiences at an individual and at a group or community level. Land Art as a form of expression and as a creative activity can be a framework that forms the basis for community and aesthetic experiences in order to familiarise oneself with, experience and appreciate the local physical environment.

Conclusion

To conclude, evaluation and documentation are key pedagogical elements in ECE and contribute to the development of children's learning and experiences. The findings from this study indicate the role of children as active participants in exploring and interacting with local spaces through different forms of visual documentation such as performance of Land Art and drawings. ECE educators might often experience that there is a gap in implementing policy documents' guidance (e.g. the Framework Plan for the content and tasks of kindergartens) and with everyday practices. The importance of listening to children's perspectives is underlined in order to acknowledge children as partners in the activities and aim for a holistic pedagogical approach of inclusion through child-centered experiences. Children's voices can be expressed in different ways, and inclusive practices can be performed in various ways. Outdoor spaces provide opportunities for a variety of practices, exploration and development of various interactions and relationships. We acknowledge that this is a small-scale study, but at the same time, the data indicate that it is necessary for ECE to develop practices that provide children with various modes of expression during their everyday life to promote children's rights as active participants.

Declarations

Authors' Declarations

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Outdoor activities promoting mental and physical health and well-being in Sámi Early Childhood Education and Care institutions

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Abstract: This article explores the current situation of outdoor play for children in Sámi Early Childhood Education and Care institutions (ECECs) in Norway. The main objective is to discover how Sámi ECEC practices contribute to outdoor play and learning in early childhood education and community contexts by addressing the following research questions: How do Sámi ECEC staff emphasize outdoor activities and play in their daily practice, and how can these activities be regarded as a way of promoting mental and physical health and well-being? The sample comprises practitioners from seven Sámi ECEC institutions (ECECs) participating in focus-group and individual interviews. The main focus of the interviews was on Sámi ECECs as health-promoting arenas, and outdoor activities appeared to be important in this context. Stepwise-Deductive Induction was used as a qualitative research strategy in the analysis. The staff underline the importance of letting children attempt to be autonomous when it comes to physical and practical activities. They point to the importance of knowing the children and encouraging autonomous achievements. Traditionally, Sámi upbringing places emphasis on doing handicraft and daily work together with the children. The staff describe doing such daily outdoor activities as harvesting, handicraft, and food preparation together with the children as a way of maintaining Sámi culture. The main conclusion is that outdoor activities are important for promoting, experiencing, and contributing to Sámi pedagogy and children's well-being in the Sámi ECECs.

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Introduction

This study explores how a sample of Sámi Early Childhood Education and Care institutions (ECECs) in Norway emphasize outdoor activities and play to promote mental and physical health and well-being. Our study, from seven South-, Lule- and North-Sámi ECECs in Norway, concentrates on children aged 4–6. Early childhood education and care refers to integrated services for children from 0–6 years of age. In Norway in 2022, ECECs were attended by 93.4 percent of children aged 1–5 years at some point before school start at the age of six (Statistics Norway, 2023). ECECs run by the public authorities constitute the most common institutional type of ECEC in Norway, but there are also quite a few private institutions. The local authorities in Norway are obliged to make ECEC places available to all children regardless of parental employment status. The local authorities can either provide the services themselves or may use private sector ECECs.

In recent years the number of Sámi ECECs has increased so that in 2019 there were 53 institutions that were either Sámi ECECs or had a special Sámi department (Storvik, 2021). The main aim of this article is to discuss how Sámi ECEC practices can contribute to outdoor play and learning in early childhood education and community contexts by addressing the following research question:

- How do Sámi ECEC staff emphasize outdoor activities and play in their daily practice, and how can these activities be regarded as a way of promoting mental and physical health and well-being?

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ECEC is an important aspect of children's early development and has been shown to have significant long-term effects on their health and well-being (e.g., outdoor play is favourably associated with preschool children's social skills, Hinkley et al., 2018, p.1).

Well-being; Definition, Research and Sámi context

Well-being for children can be defined in a number of ways, and the definitions are slightly different than for adults. We use this definition:

Children's well-being is a dynamic state in a certain environment, which can be expressed by joy, and risk factors are kept to a minimum. This state of well-being is dynamic, because it is dependent on the fulfilment of the child's physical, social and emotional needs, which is influenced by protective and risk factors within the nature of the child and the different environments wherein the child participates (Van Trijp & Lekhal 2018, p. 45).

Outdoor activities and play with access to green space can be regarded as part of promoting mental and physical health and well-being (McCormick, 2017, p. 3). Being out in nature has been shown to have numerous physical health benefits, such as boosting the immune system, improving overall mental health, and reducing stress, anxiety, and depression (Jackson et al., 2021; McCormick, 2017; Piccininni et al., 2018, Sudimac et al., 2022, p. 4446). Outdoor play also promotes social and emotional development. Children learn to interact with others and manage their emotions in a natural setting (Bjørger & Moe, 2021; Brussoni et al., 2015; Hinkley et al., 2018; McCormick, 2017). A systematic review concluded that even more benefits can be achieved by giving children access to nature, for example improved mental well-being, overall health and cognitive development, attention restoration, memory improvement, competence-raising, supportive social groups, self-discipline, less stress, improved behaviour, less symptoms of ADHD and higher standardized test scores (McCormick, 2017, p. 3).

A study by Sudimac et al. (2022, p. 4446) concluded that going for a one hour walk in nature could have salutogenic effects on stress-related brain regions, and could be a preventive measure against mental strain and potential disease. Sandseter et al. (2023) found that children's involvement in risky play matures their competence and helps them master more complex psychosocial settings. Risky play, often outside, increases the child's psychosocial competence here-and-now and in adulthood.

We will now very briefly position the Sámi upbringing practices compared to practices in other cultural contexts. Balto (2023, p. 117) interprets from her research review that the main essence of Sámi education is to raise children to be Sámi, to be good people, to act responsibly, to support good health, to see the consequences of one's actions, and to live in peace with other people, the environment, the local community, nature and all living things.

The Sámi culture and way of life are linked to a "presence in nature and traditional use of natural resources". One study showed that Sámi young people had a close relationship with nature and the value of using nature had been passed on from their parents. This was important for the well-being of Sámi people of all ages (Hansen & Skaar, 2021). According to Balto (2023, p. 129), the Sámi have an eco-philosophical worldview: Humans are seen as dependent on nature and all living things. This worldview is present in fairy tales, stories, proverbs, research, joike (traditional song), art, and poetry. Gratani (et al. 2016) found that Indigenous people's values are often built on five principles: (1) connection between past and present, (2) traditions that give them respect for nature, (3) connection to nature, (4) an understanding that health and well-being are based on their environment, and (5) knowledge of how the environment supplies food. In line with this, Ness and Munkejord (2021) concluded that Sámi informants connected well-being to: a) connection to nature; b) connection to reindeer; and c) connection to family. At the same time they also point out that research on the well-being of Sámi people should always consider the individual's life story and what constitutes well-being for them personally (Ness & Munkejord, 2021, p. 1).

These positive effects of activity and play outdoors might be particularly important for Sámi children as part of an Indigenous population that more often than the majority population in Norway experiences additional stressors and mental health problems related to discrimination and marginalization (Eriksen et al. 2018; Hansen & Skaar, 2021). Quantitative research on Indigenous children's mental health

internationally has largely focused on negative outcomes:

Indigenous children living in high income countries share many of the same risk and protective factors associated with mental health. The evidence linking children's familial environment, psychological traits, substance use and experiences of discrimination with mental health outcomes highlights key targets for more concerted efforts to develop initiatives to improve the mental health of Indigenous children (Young et al., 2017, p. 1).

According to a study by Laiti et al. (2022, p. 794), Sámi culture is founded on such traditional values as "respect for nature, and the activities constructed based on these values are implemented in Sámi early childhood education". Nature is "considered to provide the framework for a good life". Laiti et al. (2022) also found that ECEC educators acted as agents for imparting Sámi culture by teaching children "to adopt the values, the world view, and practices of the Sámi culture". ECEC staff "modified their activities according to Sámi culture and were flexible in their use of space and time in a way that allowed them to teach nature-related knowledge and respect it in a culturally sustainable way. Sustainable education influences individuals' learning, awakening, behavior, and choices."

Pedagogical research into Norwegian majority contexts, on the other hand, has mainly concentrated on what happens within the school and ECECs as institutions, and has been less concerned with contextual conditions (Birkeland, 2009).

The Sámi ECEC

Norway is founded on territory belonging to Norwegians and the Sámi. The Sámi people are a minority population and an Indigenous group traditionally living in the Arctic (Norway, Finland, Sweden) and Russia. Sámi culture and language are in a vulnerable position, and ECECs are of value as they can contribute to the preservation and strengthening of Sámi culture (Laiti et al., 2022, p. 783). That children in the Norwegian part of Sápmi (Norway, Sweden, Finland and Russia) have the right to attend ECECs with Sámi language is the result of long processes, changes in the law, and human rights regulations. ECECs for Indigenous people are relatively unique globally. In Norway, Sweden and Finland, the Indigenous status of the Sámi is protected in the constitution, but the Sámi have different rights and formal status in each of the countries (Nutti, 2023). In this article we will only describe the Norwegian tradition and policy for Sámi ECECs.

The current understanding of Sámi ECECs in the Norwegian context is that Norway is committed through national law and such international declarations as ILO-169 and the UN Declaration on the Rights of Indigenous Peoples (UNDRIP) to give Indigenous people like the Sámi recognition of and education adapted to their culture (Olsen & Andreassen, 2017, p. 257). Sámi culture and rights are more visible in the 2017 Framework Plan for Kindergarten in Norway (Ministry of Education and Research [MoER], 2017) than in the older framework plans. The Norwegian state today has a policy that acknowledges the Sámi culture, perspectives, and history more than has been the case historically (Olsen & Andreassen, 2017). Even so, according to the National Audit Office "Riksrevisjonen" (2019), the lack of Sámi teachers and teaching materials is a persistent problem in Sámi education on all levels, from ECECs to the universities. It is difficult to recruit ECEC teachers who have competence in Sámi language and culture. Moreover, there are too few teachers who can provide language teaching in the Lule-Sámi and South-Sámi languages (Angell et al., 2022). This means that cultural knowledge on Sámi culture and relationship to outdoor life might vary from one Sámi ECEC to the next in Norway.

The Norwegian Framework Plan for Kindergartens (Ministry of Education and Research 2018, p. 24-25) lays down that the Sámi ECECs shall:

promote the children's Sámi language skills, strengthen their Sámi identity and promote Sámi values, culture and traditions. [...] Sámi kindergartens shall help preserve and develop Sámi cultural heritage and promote modern-day Sámi language, culture, ways of life and values. Kindergartens shall enable the children to discover the diversity of their own culture and those of others and to develop respect for and solidarity with the diversity that exists in Sámi culture. Sámi kindergartens shall adopt traditional learning and working methods on the children's terms and in a present-day perspective. Kindergartens shall allow the children to actively participate in traditional activities in which staff offer guidance and thus help the children become independent. Kindergartens shall build on a Sámi understanding of nature to help ensure that the children can live in harmony with nature, make use of and reap the

land and develop respect for natural phenomena. Sámi history and cultural expressions such as duodji, joik and storytelling shall form part of the kindergarten content, adapted to reflect the children's age and stage of development.

The ECEC curriculum, practice, and discipline need to be both critically analysed and contextualized if they are to contribute to challenging colonial practices and the history of the Norwegianization of the Sámi people (eg. Gandolfi & Rushton, 2023).

Theoretical Framework

This article takes a socio-cultural perspective on children's development of psychosocial skills through outdoor activities and play in ECEC. Learning is perceived as "making experiences in environments where physical and intellectual tools are made available in a way that is appropriate for the individual, and where they are used as part of concrete activities". In this way, the child experiences things that open for the acquisition of conceptual systems and skills (SäljØ, 2017, p. 246, our translation).

An ecocultural perspective also focuses on cultural continuity as essentially constructed from the activities undertaken by the adults with the children and the routines the adults introduce in the operational environment (Laiti & Määttä, 2022, p. 64). The content and form of daily routines depends on the early childhood educators' interpretations of what they regard as culturally appropriate and meaningful aims and goals. The adults who work with the children define how and why their daily routines are the way they are, but they might base the implementation of early childhood education on different values (Laiti & Määttä, 2022).

We also base our discussion on Antonovsky's theoretical concept of salutogenesis. According to this concept, health and well-being are achieved, for example, through SOC (Sense of Coherence) (Lindström & Eriksson, 2015, p. 30). SOC is "a global orientation that expresses the extent to which one has a pervasive, enduring though dynamic feeling of confidence that (a) the stimuli deriving from one's internal and external environments in the course of living are structured, predictable and explicable; (b) the resources are available to one to meet the demands posed by these stimuli; and (c) these demands are challenges, worthy of investment and engagement" (Antonovsky, 1987). The salutogenesis concept seeks to explain why some people manage their life well and cope despite risk, and why some develop in a healthy way rather than developing an illness (Antonovsky, 2012, p. 27). SOC makes life comprehensible, manageable, and meaningful. It requires meaningful activities, existential reflection, contact with inner feelings, and social relationships (Lindström & Eriksson, 2015, p. 30). A salutogenic approach focuses on resources, conditions, and factors that promote well-being (Lindström & Eriksson, 2015, pp. 18–23). A key factor in promoting Sámi children's life-coping skills is that the ECECs include Sámi culture in a way so the children experience a connection between the institution's pedagogy and upbringing in the home (Bjerklund & Åmot, 2020). To accomplish this, ECEC needs to have a critical and reflective attitude towards creating such a connection. We also argue that ECEC is responsible for creating environments that strengthen the life-coping skills of Sámi children – it is not the individual child's responsibility.

Method

Our overall epistemological position uses a hermeneutic approach. We conducted a qualitative study to explore the participants' experience of Sámi ECEC as a health-promoting arena. A key theme introduced by the informants in the interviews was the significant role of outdoor activities. This led us to the focus of this article.

The sample comprises practitioners from Sámi ECECs participating in the project Sámi ECECs as a health-promoting arena. We contacted Sámi ECECs in the 18 municipalities that received support from the Sámi Parliament in Norway to establish Sámi ECEC. We received a positive response from eight, but due to circumstances related to the COVID-19 pandemic, the number was reduced to seven. We included South-, Lule- and North-Sámi ECECs in different regions in Norway. The sample includes Sámi communities in regions in Norway from the northernmost parts of Norway, to central Norway, and to southern Norway. We had 16 informants, three of whom were men. All the ECECs had Sámi-speaking staff; some had learned Sámi as adults, and not all had a Sámi background. In all the institutions we

interviewed ECEC teachers and also some assistants. All directors who agreed to let ECEC staff participate in our sample received an invitation letter from us, approved by the local authority. The letter was distributed to the staff by the directors. The ECEC personnel were anonymous to the researchers until they had consented to participate. Our selection includes both Sámi and Norwegian ECEC staff. It is common in Sámi ECECs in Norway that it is not possible to employ exclusively Sámi and Sámi-speaking staff because there are too few trained Sámi ECEC teachers and it is difficult to recruit teachers who have competence in Sámi language and culture (Angell et al., 2022; Riksrevisjonen, 2019). The sample in our study thus reflects the common situation for staff in Sámi ECECs. In all the ECECs, however, we have interviewed mostly Sámi staff.

Our study, from seven South-, Lule- and North-Sámi ECECs, concentrates on children aged 4–6. The study was undertaken during and right after the coronavirus pandemic/lockdown had put restrictions on the operation of ECECs in Norway. We conducted four focus-group and three individual interviews with staff working in seven Sámi ECECs. Due to the pandemic, some of the interviews were conducted online and we were not able to visit all ECECs to undertake observations.

The ECECs, spread around different regions in Norway, offered varying research contexts. Some were in local Sámi communities in the north, and some were ECECs in more populated areas; three were urban (> 20 000 inhabitants) and three rural (< 5000 inhabitants). The study proposal was approved by the Norwegian Centre for Research Data (NSD) and the project complied with the ethical guidelines established by the National Committee for Research Ethics in the Social Sciences and the Humanities (NESH) (2018). Participation in the study was voluntary. A reference group of Sami representatives contributed to our project during the entire period. Through websites and articles in popular magazines the findings have been published for both the Norwegian and Sami populations. We have published in Norwegian, English, North Sami and South Sami to make our findings transparent for the Sami community.

The focus of the interviews was on Sámi ECECs as health-promoting arenas and our informants appeared to find outdoor activities to be an important arena for promoting well-being among the children. The interviews lasted between 60–90 minutes, and the number of participants varied from three to six in the three focus-group interviews. Due to the pandemic situation, the four remaining interviews were conducted online, three individual interviews and one focus-group interview. The participants have been given fictitious names in the article.

Stepwise-Deductive Induction (SDI) was used as a qualitative research strategy in the analysis. The aim of SDI qualitative research is to develop “concepts, models, or theories on the basis of a paradigm that gradually reduces complexity” (Tjora, 2018). The SDI is a schematic model for qualitative research. The basic principle is an inductive development from empirical evidence to concepts or theories, with deductive step-by-step feedback. This method enables the development of concepts inductively while at the same time quality assuring them (stepwise deductive) (Tjora, 2021, p. 296). Based on research on Sámi culture that finds the outdoors to be an important cultural contributor to well-being, health, and inclusion (Balto, 2023, Ness & Munkejord, 2021), we asked our participants how the ECECs’ physical environment contributed to this. We used an interview guide where, for example, we asked the informants to: “Describe elements in Sámi culture that strengthen children’s mental and physical health. In what way do you introduce these elements in the work in your ECEC?” The participants choose then to describe the use of the outdoors in Sámi ECEC as important for psychosocial and physical health. Based on the empirical evidence, we used concepts and theories to analyse how these activities could be regarded as part of promoting mental and physical health and well-being.

The material has been analysed in stages from raw data to concepts, both upward and inductively from data to theory, and through downward feedback where the theoretical concept is checked against the empirical data (deductive) (Tjora, 2018, p. 18). Thus our analysis started from raw data that we used to move towards concepts and theories in incremental deductive feedback loops. From this we developed two categories that contextualized how ECEC staff use outdoor activities and play in their daily practice,

and how these activities can be regarded as part of fostering positive psychosocial development and healthy behaviour: 1) Outdoor activities that promote mental and physical health and well-being; 2) Outdoor activities and play that promote Sami culture and belonging.

Findings

The staff in the Sámi ECECs emphasize two main subjects when it comes to outdoor activities:

1. *Outdoor activities that promote mental and physical health and well-being* (for example hiking to a nearby area where they can make a bonfire).
2. *Outdoor activities and play that promote Sami culture and belonging* (for example strengthening the children's autonomy in outdoor activities and letting them engage in work activities that can lead to play).

We will present those two categories before discussing the overall theme in more detail.

Outdoor Activities and Play that Promote Mental and Physical Health and Well-Being

The Sámi ECEC staff in our study find many benefits from being outdoors in nature that are good for children's physical, mental, and emotional health:

We took a lot of walks. And there was a forest that we went to regularly. We would take out knives and start whittling there. The children can be inspired by many other things too, for them the natural thing to play when on walks is to play lighting a bonfire in the lavvo [Sámi tent], they don't do this alone of course, for real, but they probably have another way of playing, I think (Lásse).

"Bonfire", mentioned 37 times by our participants, was then quite a common topic.

The fact that children between the ages of three and six were allowed to use knives and matches during outdoor activities appeared repeatedly in our material. The children were supervised by the adults, but they were definitely allowed to try the tools under guidance. Walking up and down steep slopes outdoors that the children *almost* did not manage to navigate was also perceived as positive for their development and well-being:

I'm thinking about this feeling of mastering, particularly when it comes to the youngest ones. For them mastering something can be to get up from the ground without falling over, and [getting] down the hill without falling over. And we have quite bumpy terrain here. And we have a small tree up the hill a ways, and it's in the woods. So there's also mastering when they practice walking up there. It's walking uphill all the way; there's no road. For a one-year-old, getting there without falling over more than ten times can be a sense of mastering (Sára).

Walks usually lead to a familiar place that serves as a base for the group's activities, and lighting a bonfire there represents an important cultural signal of settlement and gathering.

The staff underline the importance of letting children attempt to be autonomous when it comes to physical and practical activities. They point out the importance of knowing the children and encouraging their autonomous achievements and participation:

While we have made plans for the week and the month, we have also made sure that they are not so densely packed. There must be room for the children to contribute ideas. What they actually would like to do. And the spontaneous ideas that may come up. There must be room to make changes. And to follow the children's ideas. So today we up and went to the football field because that's what they wanted to do there and then, when we were going on a walk. We make sure that everything isn't set in stone. In this way we make sure that we can do what the children really want to do (Maija).

This is a way of underlining the importance of children's participation and autonomy. At the same time, the staff said that outdoor activities and play improved their well-being:

After the corona lockdown we had almost ten weeks of kindergarten outdoors. We did not physically go inside the kindergarten building at all. [...] Then we had a lavvo, a lean-to, and a cabin available. If you think about enjoyment and the psychosocial aspect, then I think it was fantastic to see how the children changed by being outdoors so much. And that gave us very strong motivation to be much more outdoors now (Maija).

The informants found that the outdoor activities helped the children to form relations and

friendships in other ways. The period when they had to adapt to Covid restrictions made it clear that more outdoor activities made children more independent and offered new possibilities than earlier:

It wasn't so important; you're not sitting waiting for your friend. They had a totally different way of playing. Like they were playing outside their usual routines. It was good to see. They were in fact making friendships with more children than they were accustomed to. Normally everyone plays together across normal lines in the course of the day, but it was in a different way when they were outside, they found joy in tiny insects or one thing or another (Maija).

Spending so much time outdoors made these children more aware of nature and the wonders of life. It seems as if the outdoor activities offer other possibilities for interaction with children and nature than the standard time schedule the children were used to.

Outdoor Activities and Play that Promote Sami Culture and Belonging

In some ways outdoor activities and play were linked to promoting Sami culture and belonging. In our material we see that such cultural activities as fishing and berry picking were used to help children develop understanding of Sami culture and a sense of belonging to their community:

Then we have these fixed activities that are typical for us, such as cutting sedge grass, and being outdoors and picking berries. And stacking firewood, our children do that a lot, and we often light bonfires on our hikes. And there has been a lot of focus on skiing, which is not a typical Sámi thing to do, but we do ski a lot (Lásse).

Maija and Biret in other ECECs also talked about sedge grass, and the seasons for picking it.

The above interview extract describes what is special about Sámi cultural activities and is also an example of how the ECEC institution adopts the Nordic cross-country skiing tradition during the winter. For the ECEC institution close to the sea, one of the staff explained:

We spent a lot of time on the sea. We were outdoors a lot and did many cultural things (Inga).

In Lule-Sámi culture the sea is an important cultural marker, but it was complicated to play out this aspect of the culture:

We spend a lot of time along the shore and in the skerries. And when we're there, we light a bonfire, look for crabs and all sorts of small creatures. We have also fished. We have fishing rods and life jackets. We were offered a toy boat for our outdoor area. We chose the one that looked most like a fishing boat. We have placed it so that the children see the sea when they are playing in it. So they can play that they're out at sea. Sadly, we don't have our own fishing boat, but we have been considering this. There are so awfully many [safety] requirements [from the authorities] when it comes to taking children out on the sea (Inga).

One challenge for a Sámi ECEC assistant was that the ECEC lacked Sámi staff, and this assistant felt it was difficult being the only one promoting Sámi culture in the outdoor activities:

We would like to be more out on the sea and to take more trips. I could have brought some Norwegian-speaking staff, but it wouldn't be quite the same dynamics then. It just wouldn't be quite the same (Inga).

In this extract the assistant underlines the importance of being a team that knows the cultural codes and the language within the codes. The staff also tried to adapt the ECEC institution's own outdoor area to be more in compliance with Sámi culture, in cooperation with parents:

We try to improve our outdoor area, and to add more Sámi elements so we can use more of the outdoor environment for something like a fairy-tale forest. When you enter a Sámi kindergarten you should be able to see that it is a Sámi kindergarten. So we have established a group of parents and staff to do some planning. We intend to improve our outdoor area using parents and staff, and work (volunteer-work) in the evenings together. I really feel that we have good collaboration with the parents. For example, we ask them to put up the lavvo and help us with things like that (Lásse).

In another urban ECEC the staff had to create a lavvo (Sámi tent) and other effects in the outdoor area that were not present in the surrounding environment to give children outdoor experiences they considered to be particularly Sámi. One of the rural ECECs also wanted to get a boat to go out on the sea, but due to regulations this was hard to arrange. Such factors limited the outdoors activities and encouraged the staff to make creative moves.

Risky play was commonly allowed in the Sámi ECECs in our sample:

Weike: There have been hikes where we have had to get children down from high up in trees [laughs].

Ingvild (researcher): Because this happens?

Weike: It has happened.

Ingvild: How do you solve this?

Weike: Well, you know, we simply have to climb up and guide them down.

Ingvild: Okay. And nobody has fallen down?

Weike: No. [...] Well, but rather than standing there and either yelling at them or climbing up and bringing them down, I will usually climb up and tell them like put your foot here, and perhaps put it on a branch right below there, and then they manage to get down. And then they have learnt that perhaps they shouldn't climb so high, or they have learnt to climb down.

This is a way of exploring the environment, testing limits, and letting the children test their own capabilities. To do this, it is necessary to act in cooperation with the parents:

The first thing I tell the parents at the meeting we have with them in the autumn is that "You must expect that your child will hurt themselves. We'll call you". We have them playing with some risk, doing this and that. [...] But we have less injuries here than any other kindergarten, because we [...] know the children, we know that this child aged two can climb in that tree, while that child aged four can't climb that tree in the same way. We are so close to them in our relationship that it is our way of doing risk assessment, that we are close to them, really know them. I find that this is very typical in Sámi educational thinking, that you allow the children to try things for themselves, and of course there mustn't be a worse injury than for example that they fall down and get a bump or bruise or get a scratch, to put it that way. That's okay. The children will cope with that. Perhaps a slightly different mentality [...] than packing the children in bubble wrap (Lásse).

The main conclusion is that outdoor activities are important for promoting, experiencing, and contributing to Sámi pedagogy. Outdoor activities and play promote mental and physical health and well-being, as well as an understanding of Sami culture and belonging.

Discussion and Conclusion

We have illustrated above how Sámi ECEC staff emphasize outdoor activities and play in their daily practices. Thus, the first part of our research question has been answered by the informants, as it is an empirically-driven subject in our research. Below we will discuss the benefits of outdoor activities for the mental and physical health of the children in the ECECs in this study, supported by our theoretical framework. How can these activities be regarded as part of promoting mental and physical health and well-being?

Our informants point out that spending time in nature can help Sámi children to connect with their cultural heritage and traditions. They make many pedagogical moves to help the children experience the outdoors in a way that at the same time promotes Sámi culture.

The participants in our study give Sámi children the possibility to have experiences in environments where physical and intellectual tools, like an outdoor area including elements of the Sámi culture, participating in cutting sedge grass, and picking berries, are made available to them. In this way, the children can learn conceptual systems and skills from Sámi culture, what Säljøl (2017, p. 246) defines as a socio-cultural approach. Participating in socio-cultural society is a form of inclusion that supports well-being. From an ecocultural perspective, in the Sámi ECECs in our sample, the children are participating in adult outdoor activities that introduce them to their environment (Laiti & Määttä 2022, p. 64) and culture. This aligns with Balto (2023), and what she states are the core values in Sámi upbringing.

Sámi people have a deep connection to their environment and traditional ways of life (Laiti et al. 2022, p. 794), which is reflected in their approach to early childhood education and care. The Sámi ECEC staff in our sample often emphasize outdoor activities and play as part of their daily practice.

This is done in a way that is somewhat different than in the Norwegian culture, as more room is given for children's participation, impulsive activities, myths and narration from olden times, Sámi cultural guidance on how to use (and not misuse) nature, and so on (Åmot & Bjerklund, 2023). Sámi ECECs also seem to be more open to risky play in nature (in our material climbing in trees, using knives and matches, cutting grass, walking on slippery ground) than mainstream Norwegian ECECs traditionally are, even though more recently risky play has also been given more positive attention in Norwegian ECEC pedagogy

(Sandseter et al., 2023). Our informants talked positively about risky play and informed the parents that it was something they encouraged. They made sure the children did not hurt themselves seriously but were not afraid of them getting bumps and bruises. This type of play and outdoor activity may help children to develop a sense of mastery and develop motor skills than if risky play was avoided to some extent, according to Brussonii et al. (2015). In this way Sámi ECECs have a unique approach that emphasizes outdoor activity and play as psychosocial support for children's well-being. But Sámi ECECs are also part of the same tradition as other ECECs in Norway in some ways. The special aspect of the Sámi ECECs in our sample is the focus on the deep connection to the environment and the traditional ways of Indigenous life, which is reflected in their approach to ECEC pedagogical practices.

Sudimac et al. (2022, p. 4446) concluded that walking in nature could have "salutogenic effects on stress-related brain regions, and prevent mental strain and potential disease. In our sample the Sámi ECECs let children walk in nature, and also to be challenged by hills and slippery surfaces. Even though this is hard for young children, it can make them more psychologically robust.

The current understanding of Sámi ECECs in a Norwegian context is that children have the right to find their own cultural heritage reflected in the educational section, and to find support for this in ECEC (Olsen & Andreassen 2017; The Norwegian Framework Plan for Kindergartens 2018, p. 24-15). This is something we find the ECECs in our sample strive to accomplish through their use of the outdoors in a traditional Sámi way. By creating a sense of coherence from the children's heritage and culture and from relating the ECECs' pedagogy to the outdoors, their psychosocial health will be supported, according to Antonovsky (2012, p. 27) and Bjerklund & Åmot (2020).

The Sámi people traditionally have a history of living off the land, and taking part in activities connected to this is an important part of their cultural heritage. By engaging in these activities, children can learn about their cultural heritage and develop a sense of understanding of their past and present. When the children stacked firewood, they participated in daily tasks that were part of the adult tasks in the ECEC. In this way the ECEC teachers act as agents for the Sámi culture by teaching the children worldviews, values, and activities from Sámi culture (Laiti et al. 2014). The informants portrayed this as one of the values in Sámi culture, where children are allowed to participate almost "on the same line" with the adults in the ECEC on tasks that also have to be done at home on a daily basis. Sometimes this also included parents' reindeer husbandry (for the few families in our material that had this occupation). This might also be seen as health promoting as it creates a sense of coherence in the children's lives in accordance with the traditional family life and cultural heritage (Antonovsky, 2012, p. 27; Bjerklund & Åmot 2020)

Traditionally, according to our informants, Sámi upbringing places emphasis on doing handicrafts and daily work together with the children (Åmot & Bjerklund, accepted for publication). The staff in our present study describe such daily outdoor activities as harvesting, handicrafts, and food preparation together with the children as a way of maintaining Sámi culture. They have a focus on how the activities with the staff can lead to children's own play and creativity. This is in line with how Laiti et al. (2022, p. 794) point out that Sámi culture is founded on such traditional values as respect for nature, and that the activities constructed according to these values are implemented in Sámi early childhood education. Additionally, cultural activities like the ones our informants used in ECEC institutions, such as fishing and berry picking, may help children to develop a sense of belonging to their Sámi community – and hence a sense of coherence. The ECEC educators act as agents promoting the Sámi culture by teaching the children to adopt the values, the worldview, and practices of the Sámi culture in daily outdoor activities.

Within this, outdoor play also promotes social and emotional development. The children learn to interact with others and manage their emotions in a natural setting (Bjørger & Moe, 2021; Brussoni et al., 2015; Hinkley et al., 2018; Jackson et al., 2021; McCormick, 2017; Piccininni et al., 2018).

To promote outdoor activities and play, the Sámi ECEC staff in our study planned such activities as fishing, going on nature walks, berry picking, and looking for crabs and all sorts of small creatures. These activities not only provide opportunities for physical exercise and to get fresh air, they also allow the children to connect with the natural world and learn about their environment. According to Sudimac et al.

(2022, p. 446), there are “causal effects of acute exposure to a natural vs. urban environment on stress-related brain regions, disentangling positive effects of nature from negative effects of the city”. This then indicates that the practices our informants undertake in their ECEC institutions are beneficial for children’s stress levels.

The Sámi ECEC staff in our study also used outdoor play to teach children traditional skills, such as how to start a fire, how to row a boat and fish, how to play safely on the local beach on the water’s edge, and how to use a knife safely in nature. These activities are both important cultural practices that promote Sami culture and more common activities in both the Norwegian and Sami context. This means that sometimes it is impossible to separate majority practices on how to act outdoors from Indigenous practices, and some practices might be more local than Sámi. But there might also be small differences that are only visible to the trained Sámi eye and not to members of the majority population. One informant said she could not take Norwegian staff with her out on a boat because it was just not the same when it came to passing on Sámi culture. Her thinking here might be based on virtually invisible differences that only a Sámi can detect.

Spending time outdoors can help children to develop a sense of environmental awareness and responsibility, such as sustainable fishing practices, knowledge and use of plants, and traditional ecological knowledge. This can foster a sense of connection to and responsibility for the land and natural resources. This is important to Sámi culture and livelihoods (Gratani et al., 2016; Hansen & Skaar, 2021). In our material the ECEC staff tried to talk to the children about environmental awareness in several ways. Moreover, outdoor activities and play are a part of promoting mental and physical health and well-being in a holistic way. Being in nature has been shown to have numerous physical health benefits, such as reducing stress, anxiety, and depression, improving sleep, boosting the immune system, and improving overall mental health (Jackson et al., 2021; McCormick, 2017; Piccininni et al. 2018).

All in all, the emphasis on outdoor activity and play in the Sámi ECEC institutions in our sample promotes a holistic approach to health and well-being that incorporates physical, mental, emotional, and cultural aspects. The children are not only engaging in outdoor activities, they are also learning about Sámi culture. By engaging in these activities the children can develop important life skills, foster a connection to nature, and learn about their Sámi cultural heritage, all while promoting their overall health and well-being. This was done differently in urban and rural settings and in different parts of Norway because Sámi traditions vary and it is not possible to have the same outdoor activities in an urban city in central or southern Norway as in the northern parts of the country. In some parts of Norway, the staff, in collaboration with the parents, had to create a Sámi outdoor space themselves because the ECEC was located in an urban context that lacked natural access to open spaces, the sea, and mountains in the immediate vicinity. They created an outdoor area that they experienced as more Sámi than the traditional outdoor areas in the Norwegian majority population’s ECEC institutions. This points out the different types of access to nature in a Norwegian context, even though Norway is a land with large and expansive nature areas.

The Sámi ECEC institutions in our study emphasize outdoor activities and play in their daily practice in a holistic way. This can promote health and well-being for children by providing opportunities for participating in cultural practices, getting physical exercise, forming relationships with peers, and connecting to nature. The ECECs also promote social and emotional development and understanding of Sami culture by using the outdoors in a culturally adopted manner, as this is a way of creating a sense of coherence from the children’s culture to ECEC pedagogy (e.g. Antonovsky, 2012). By emphasizing outdoor activity and play in a culturally adapted and contextualized way (as in the Lule-Sámi context and when creating a Sámi environment outside where it is not present, or when using the nature present in the ECEC institutions’ surrounding areas to perform traditional Sámi activities), the Sámi ECEC institutions appear to promote a psychosocial and cultural approach to health prevention.

Spending time in nature in the way the ECEC institutions in our sample are doing can promote physical health through such activities as hiking, fishing, and skiing. These activities can help children to

develop coordination, strength, and a healthy life. Moreover, the informants in our study teach children cultural practices outdoors. Hence our informants stimulate the children physically, cognitively, socially, and emotionally – but also culturally – through their pedagogy. In sum, the informants use nature and the outdoors in a way that can nurture the well-being of Sámi children by providing opportunities for cultural connection, and can promote physical and mental health, environmental awareness, and cultural knowledge. It is therefore important to ensure that Sámi children have access to culturally appropriate outdoor spaces and activities regardless of where in Norway the ECEC institution is situated, and that children are supported in developing a culturally-based connection to the natural environment.

ECEC must always consider the children's life story and what constitutes well-being for them personally (Ness & Munkejord, 2021, p. 1).

One shortcoming of our study is that children and parents are not included. Another is that we had to hold back information on each participant in the study because the Sami society and population is so small. We were therefore unable to specify what characterizes our informants, what Sami language they speak, and which town their ECEC institution is situated in. This means that in order to avoid indirect identification of our participants, less information was provided about the informants than in other studies with larger populations.

The implications of our findings are that Sámi ECECs need outdoor areas that are adapted to Sámi culture if they are to fulfill the framework plan's requirements for Sámi ECEC pedagogy. Further research on how Sami ECECs' outdoor areas can align with Sami culture and pedagogical thinking would be fruitful. It would also be interesting to study Norwegian and Sami outdoor pedagogy in a comparative perspective. Another possible implication of the UN sustainability goals is that the majority of ECECs can also benefit from focusing more on outdoor activities in their pedagogy, and from having a more holistic view of these activities. An innovative research project where Sami and non-Sami ECECs share their pedagogical knowledge on the use of outdoor areas and develop it together in line with the sustainability goals can be a useful approach. Outdoor activities can promote health, strengthen learning, improve mental health, and increase awareness of a sustainable lifestyle. Here, Indigenous pedagogy can be a useful addition to the field.

Declarations

Authors' Declarations

Authors' contributions: First author Monica Bjerklund and second author Ingvild Åmot have both contributed to the data collection and analysis of the material. The first author has made a slightly higher contribution to the writing of the article and to the discussion.

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

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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

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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.




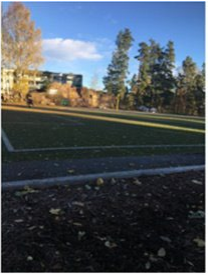


Results

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>





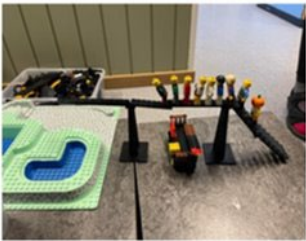


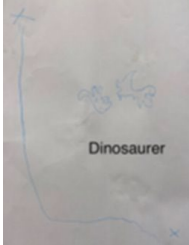

The guided tours with the children, combined with the use of photos and the children's descriptions of the various locations, offered us insights into the children's perceptions of the qualities of the natural areas and playgrounds in the vicinity of the ECEC centres.

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

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

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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Parenting styles and the connection with nature: A look into a nature program

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Abstract: Currently, there seems to be a decline in direct experiences of nature, with a consequent decrease in connection with nature, which could unavoidably result in negative consequences, especially in what concerns children. With the goal of narrowing this ever-growing gap, as well as raising awareness for the importance of outdoor spaces/nature as promoters of development and learning, the Invisible Limits Project (IL) was founded. Thus, the present investigation aimed to better understand the enrollment motives, sociodemographic variables, parenting styles and Nature Relatedness (NR) of parents who enrolled their children in IL, as well as to analyze these same variables and identify parent profiles based on NR and frequency of nature contact, while additionally attempting to ascertain the role of contact with nature as a predictor of NR, all in an effort to rethink and improve existing educational offers. The investigation follows a comparative typology, counting 286 total participants, divided into an experimental group (n=135) - comprised of those who enrolled their children in IL - and a control group (n=151), to which the previous criterion did not apply. For the statistical analysis of the collected data, IBM SPSS Statistics v25, jamovi v1.6, JASP 0.16.1.0 and MaxQDA v2020.4 were used. In what pertains to the results, the main reason for parents to enrol their children in an educational experience in nature was the promotion of contact with nature. Additionally, there were no observable differences between groups, regarding both parenting styles and NR. Concomitantly, frequent contact with nature (both during childhood and throughout life) was determined to be a predictor of a higher NR. In view of the results and in view of the current climate changes, as well as life's sustainability on the planet, further studies are required, in order to better understand one's connection with nature.

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Introduction

For generations now, Scandinavian countries have advocated for the importance of nature and outdoor spaces in children's and young people's education (Bentsen et al., 2009). Due to the socioeconomic, historical and cultural conditions, Wood or Nature Kindergarten emerged in Scandinavia in the 1950's (*Forest Schools* in England). Its pedagogical practices were based upon several theorists such as Rousseau, Pestalozzi, Froebel, Dewey, Montessori, Piaget, Vigotsky, Goleman, Gardner e Csikszentmihalyi, which contributed to its seven principles: [1] a holistic approach to child development and learning; [2] each child is unique and competent; [3] children are naturally active and interactive learners; [4] they need real life and to experience it for themselves; [5] children develop and learn in child-centered contexts; [6] children need time to experiment and develop independent thinking and [7] learning comes from social interaction (Williams-Siegfredsen, 2012).

Inspired by the Nature Kindergartens, the Invisible Limits Project (IL) emerged in Portugal, in February 2016 as a partnership between the Department of Education and Psychology of the University of Aveiro (DEP-UA), the Higher School of Education from the Polytechnic Institute of Coimbra (ESEC-IPC)

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and a private social solidarity institution, Centro de Apoio Social de Pais e Amigos da Escola nº 10 (CASPAE-10), with the support of the Nature and Forests Conservation Institute (ICNF). IL aims to raise awareness and motivate children, families and educative communities to the importance of nature and outdoor spaces as enabling contexts of children and young people's well-being, learning and development. Also, IL advocates a pedagogical approach centered on emergent planning, which is based on the free initiative, interests and abilities of children, who by playing and exploring their environment in their own time and at their own pace attribute meaning and create representations of the surrounding world, thus allowing them a better understanding of it and consequent respect and care (Coelho et al., 2015; Figueiredo et al., 2021).

IL includes three axes of action: 1) Educational Intervention, 2) Research/Monitoring, 3) Contextual training/Consultant. The first axis consists of nature education programs, namely Programa Casa da Mata [PCM] and Summer Camps- Campos de Férias [CF]. PCM is developed in complementarity to the childhood education offer, held during the school period, in articulation with preschools and aimed at children from 3 to 6 years old, with their participation being their parents' decision. CF is a non-formal offer intended for children between 6 and 12 years old, held during non-school periods and whose participation is also of parental responsibility. Both offers take place in Mata Nacional do Choupal, in Coimbra. This space has an area of 79 hectares, follows the Mondego river for a length of 2 km and is rich in fauna and flora, consequently being considered a protected area. The predominant flora includes plane trees, beeches, laurels and eucalyptus, as well as some species planted during the 19th century (Figueiredo et al., 2021).

Nature assumes an essential role in IL offers, thus making it imperative to clarify this concept, as well as to define and classify the possible types of nature experiences that can occur.

Nature and Types of Nature Experiences

According to the American Psychological Association (APA, 2020), nature integrates the phenomena of the natural world, including plants, non-human animals and physical aspects, as opposed to humans and their creations. Kellert (2002) argues the existence of three types of nature experiences, namely: 1) direct experiences; 2) indirect experiences; and 3) vicarious or symbolic experiences.

Direct experiences (1) include physical contact with nature and non-human living species and their respective habitats that mostly function without human intervention and control and are not formally planned, i.e., specific activities or programs. Therefore, children's play in spaces such as forests, streams, backyards, open fields or even community parks can be considered direct experiences of nature.

Regarding indirect experiences (2), these also involve physical contact, but with more restricted contexts, planned by Man. Indirect experiences with non-human living beings and their habitats are the result of human manipulation. This type of experience include contexts such as zoos, museums, aquariums, or even botanical gardens. Contact with animals and/or contexts that are considered an integral part of the child's family life and/or home, such as contact with domestic animals (e.g., cats, dogs, birds and horses) or plants, can also be defined as an indirect experience of nature. In addition to the aforementioned, being in contact with cultivated land, flowers, orchards and farm animals, as well as with all other animals and habitats that inherently depend on human intervention to subsist, may also fall into this category (Kellert, 2002).

Lastly, vicarious or symbolic experiences (3) take place in the total absence of physical contact with nature. What the child experiences are representations or figures from nature, which are usually presented in a realistic way but may be highly stylized or metaphorical illustrations, depending on the context. Thus, these images are disseminated through the main communication channels, such as television, cinema or digital media (Kellert, 2002).

Indirect and vicarious experiences have assumed relevance in children's lives to the detriment of direct experiences, with indoor spaces being the most common in their daily lives, thus reducing opportunities for contact and action with outdoor spaces and nature (Skar et al., 2016; Soga & Gaston, 2016).

Still according to these authors, one of the reasons for this phenomenon is parents' anxiety about their children being exposed to risks that they cannot control. However, this decline in contact with nature may have fewer positive consequences for the child's development and connection with nature (Chawla, 2020). Scientific evidence points to how dependent human beings are from nature. Martin et al. (2020) restates that an individual's health, well-being and their predisposition to act in a protective way towards the planet's health is positively related to maintaining contact with nature.

In the same sense, the studies by Kuo et al. (2019) and Whitburn et al. (2019) indicate that direct experiences in a more regular and intense form foster nature connectedness and improve environmental outcomes (van de Wetering et al., 2022).

Lastly, and regardless of the type of nature experiences provided, it is undeniable that those same contacts will serve as the building blocks of one's perception of – and interaction with – nature, ergo, one's Nature Relatedness (NR), providing, as such, direct consequences in its growth and shaping.

Nature Relatedness

In order to gain a better understanding of these consequences, it is imperative to develop the concept of NR, referring to the individual levels of nature connection, entailing the appreciation and understanding of the interconnectivity between all forms of life on planet Earth. It is important to mention that this construct goes beyond the appreciation of the so-called "pleasant" aspects of nature (e.g., sunset or a calming landscape) and also includes an understanding of the importance of all aspects of nature, including those considered as being less appealing by many (e.g., snakes, spiders, natural catastrophes, among others). Furthermore, NR is relatively stable over time and in situational contexts, however, it is not completely fixed (Nisbet et al., 2009). NR is not only associated with the emotional and cognitive aspects of nature contact but also with the physical aspect, viewed by Chawla (2015) as being essential in promoting the feeling of connection with nature.

Following the aforementioned and adopting an evolutionary perspective, Humanity has spent most of its history in natural spaces, having only moved to urban environments comparatively recently (Capaldi et al., 2014). Thus, NR is based on the hypothesis of biophilia (Kellert & Calabrese, 2015), in which human beings depended on nature in order to guarantee their survival and prosper in the environmental circumstances they were in. This connection was intrinsically linked to their everyday lives, through the satisfaction of basic needs (e.g., nutrition and safety); the monitoring of time and spatial location and also the attention dedicated to the observation of clues and signs in nature, in order to guarantee protection against possible predators (Capaldi et al., 2014).

In view of the above, the lack or decrease in contact with nature during childhood may lead to a decrease in the child-nature connection. Likewise, the degree of parents' nature connection and promotion of their children's nature contact, may condition the child's biophilia (Ahmetoglu, 2017), their direct experiences (Soga et al., 2018), as well as the time spent on other activities that include contact with nature (McFarland et al., 2014).

As stated above, many children's exposure to certain types of nature experiences – and, therefore, their concept of NR – can be associated with certain behaviours (e.g., anxiety, fear, etc.) from their parents, which consequently suggests that a parent's outlook on how to educate their child (parenting style) could directly influence their biophilia, their type (and amount) of nature experiences, and, in essence, their NR.

Parenting Styles

Given the relevant role of parents in decisions regarding their children, it seems pertinent to properly frame the concept of father/mother. Thus, a father/mother is considered the one responsible for making decisions for and socializing their children, fostering adaptation to the social rules and standards considered appropriate in a given community (Baumrind et al., 2010). As such, the exercise of parental authority aims primarily at maintaining family order and guiding children from infancy to adulthood, which is when individuals become as self-determined, self-regulated and have emotional competences that

allow them to achieve their goals and enable their interaction with other elements of society in an adaptive way (Baumrind et al., 2010). Moreover, in order to better understand the processes through which parents influence the development of their children, it is essential to deepen the knowledge about parenting styles, which are defined through three classifications and based on different levels of control, namely: authoritative, authoritarian and permissive, according to the work developed by Baumrind (1971).

The authoritative parenting style is characterized by rational guidance of the children's activities and behavior, with an openness to dialogue and exchange of opinions, where parents try to explain their reasoning when a certain behavior or decision is made. These parents appreciate autonomy, disciplined compliance and also value their children's qualities, stipulating patterns to be adopted in future situations. In addition, these parents try to understand their children's interests, wishes and idiosyncrasies, without making a decision based on them, instead taking a firm stance in situations of disagreement with their children, but expressing their perspective without restricting or neglecting their well-being (Baumrind, 1971).

With regards to authoritarian parenting style, it can be defined by the modeling, evaluation and control of the child's behavior, based on rigid, traditional and socially established rules of conduct. Parents who adopt this parenting style place a high importance on obedience, respect for authority, work and maintaining order, using punitive strategies to deal with situations in which the child's behavior or attitude conflicts with what the parents consider to be appropriate (Baumrind, 1971).

Finally, regarding the permissive parenting style, the author stands out the adoption of non-punitive strategies and the acceptance of children's impulses, desires and behaviors (Baumrind, 1971). Parents with a predominantly permissive parenting style present themselves as a means for the fulfillment of their children's wishes, avoiding the responsibility of shaping or directing their children's behaviors. This parenting style is also characterized by joint deliberation between parents and children regarding family rules and by allowing the child to regulate his or her activities as much as possible, without the parents having to control them.

Method

The present research followed the comparative typology, with the main objectives being: 1) to characterize the sample according to sociodemographic variables; 2) to identify the enrollment motives regarding nature experiences; 3) to characterize parents' contact with nature throughout life and during childhood; 4) to identify enrolling parents' parenting styles, as well as their NR, and 5) to identify parent profiles based on the NR, frequency of nature contact throughout life (pre-pandemic context), and frequency of nature contact during childhood variables. Thus, the main reasons given by parents for enrolling their children in the IL offers (PCM and CF) will also be analyzed. Finally, the present study will attempt to substantiate whether a greater frequency of nature contact (during childhood and throughout life) is a predictor of a greater NR.

Participants

This study comprised a sample of 286 participants, distributed into two groups: the Experimental Group (EG; N= 135) and the Control Group (CG; N=151). The inclusion criteria for the EG and CG were being over 18 years old and having children aged between 3 and 10 years old. In addition to these criteria, the EG included parents whose children participated in at least one of the IL nature childhood educational offers (PCM and/or CF), while the CG participants had never enrolled their children in any IL offers specifically, albeit with enrollment in other types of offers (non-formal and informal). Typically, a delayed Control group, wherein the same experience would be provided after the study's conclusion, would be implemented. However, CG participants were not offered the same type of nature experiences, as most of its population was spread out over national territory (Portuguese mainland and island autonomous regions), which made IL offers impractical and implausible in this case. For the purposes of sample

characterization, a descriptive statistical analysis of the gathered data was carried out through the use of the IBM SPSS Statistics v25 software.

As far as age is concerned, the EG participants were aged between 28 and 56 years ($M=41.87$; $SD=4.00$) and the CG participants were aged between 20 and 65 years ($M=38.58$; $SD=6.61$). In regards to gender, both EG and CG are mostly women (85.9% and 84.8%, respectively), as well as married (62.2% and 66.9%, respectively). Moreover, and regarding educational level, 93.4% of EG parents have some degree of higher education, whereas in the CG distribution was essentially centered around high school (35.8%) and higher education (55%) levels. Additionally, in what concerns EG parents' gross annual income 71% earned over 15358.35€, while 23,2% of CG parents earn over 9215.01€ and up to 15358.35€, with another 36,4% earning over 15358.35€ (Table 1).

Table 1. Demographic characteristics of the sample

Variable	EG		CG	
	n	%	n	%
Gender				
Female	116	85.9	128	84.8
Male	19	14.1	23	15.2
Marital Status				
Married	84	62.2	101	66.9
Common-law marriage	32	23.7	23	15.2
Divorced	9	6.7	12	7.9
Single	4	3	7	4.6
Separated	6	4.4	7	4.6
Widowed	0	0	1	.7
Educational Level				
1 ^o cycle of Elementary (Year 1 - 4)	1	.7	2	1.3
2 ^o cycle of Elementary (Year 5 - 6)	0	0	2	1.3
3 ^o cycle of Elementary (Year 7 - 9)	0	0	10	6.6
Secondary Education (Year 10 - 12)	8	5.9	54	35.8
1 ^o , 2 ^o e 3 ^o cycles of Higher Education	126	93.4	83	55
Gross Annual Income				
Up to 3071.67€	11	8.1	22	14.6
Over 3071.67€ up to 6143.34€	4	3	12	7.9
Over 6143.34€ up to 9215.01€	4	3	27	17.9
Over 9215.01€ up to 15358.35€	19	14.1	35	23.2
Over 15358.35€	97	71.8	55	36.4

n= Sample(count)

Instruments

Data was collected through a survey package that included a sociodemographic and nature contact information form, the PAQ-P and the *Nature Relatedness Scale* (NR-21).

Sociodemographic and nature contact information form

In order to characterize the sample, a sociodemographic and nature contact questionnaire was designed, consisting of four sections: 1) role in the family nucleus (e.g., father, mother, grandmother), nationality, age, marital status, educational background, job duties (e.g., full-time employee, part-time employee), number of children and economic status of the household; 2) housing environment of the household (e.g., rural, urban, or peri-urban), accessibility to nature/nature elements and frequency of nature contact throughout life (pre-pandemic context); 3) educational experiences in nature, reasons for enrollment and unanimity among parents at the time of enrollment, and 4) parents' experiences of contact with nature as children, namely the activities they practiced, how often they had contact with nature and the main figures present at that time (e.g., parents, friends, grandparents, or cousins).

Parenting Styles Questionnaire for Parents (PAQ-P)

The Parenting Styles Questionnaire for Parents (PAQ-P), a Portuguese adaptation of Burri's Parental Authority Questionnaire (1991), is based on the model of parenting styles proposed by Baumrind (1971)

and measures three dimensions: the authoritarian (items 2, 3, 7, 9, 12, 16, 18, 25, 26, 29), the permissive (items 1, 6, 10, 13, 14, 17, 19, 21, 24, 28) and the authoritative styles (items 4, 5, 8, 11, 15, 20, 22, 23, 27, 30). This instrument was developed to assess the types of parenting styles and socialization patterns between parents and children. The PAQ-P is composed of 30 items, with 10 items corresponding to each parenting style, thus following the structure of the original instrument. The answer is given on a 5-point Likert scale ranging from Strongly Disagree (1), Disagree (2), Neither Agree Nor Disagree (3), Agree (4) and Strongly Agree (Pires et al., 2011).

As far as internal consistency is concerned, the PAQ-P shows good values, namely an $\alpha=.83$ regarding the authoritative parenting style, $\alpha=.77$ regarding the authoritarian parenting style and $\alpha=.75$ for the permissive parenting style. In regard to the rating, the results vary between a minimum of 10 and a maximum of 50 points per factor and the higher the sum of the answers in each parenting style, the greater its preponderance (Pires et al., 2011).

Nature Relatedness Scale (NR-21)

The Nature Relatedness Scale (NR-21), by Nisbet et al. (2009) was translated and adapted to the Brazilian reality by Pessoa (2011) and aims to evaluate the nature connection of the population under study, divided into three factors for this purpose: 1) NR-Self - aims at the identification of the individual with nature, reflecting his own feelings and thoughts towards it; 2) NR-Perspective - investigates the existence of an individual external and nature-related worldview, as well as a sense of duty to take action, regarding one's individual actions and impact on all living things, and 3) NR-Experience - reflects the physical familiarity with nature, as well as the comfort and desire to get in contact with it (Nisbet et al., 2009). The instrument is composed of 21 items, using a 5-point Likert response scale ranging from Strongly Disagree (1), Disagree (2), Neither Agree Nor Disagree (3), Agree (4) and Strongly Agree (5). The constituent factors of the instrument also show good internal consistency, with an $\alpha=.84$ for the NR-Self factor, an $\alpha=.66$ for the NR-Perspective factor and also an $\alpha=.80$ for the NR-Experience. In the version validated for the Brazilian population, however, values of $\alpha=.77$, $\alpha=.57$ and $\alpha=.44$ are presented for the NR-Self, NR-Perspective and NR-Experience factors, respectively. As for the rating, the higher the values associated with the three factors, the stronger the connection with nature.

Data Collection Procedures

After obtaining ethical approval and permission from the General Data Protection Regulation (GDPR) and the Ethics Committee (EC), we got authorization from the respective authors to use the PAQ-P and the Nature Relatedness Scale (NR-21)- Brazilian version-, developed the sociodemographic questionnaire and made it available on the FormsUA platform (forms.ua.pt), from June 21 to October 4, 2021. We also obtained authorization from IL to access their contact database of EG's guardians, ensuring all ethical and confidentiality concerns.

The CG was based on geometric spread sampling (snowball), in which individuals who met the inclusion criteria were selected and subsequently the individuals of interest contacted others who fit the aforementioned characteristics, increasing the sample geometrically (Marôco, 2018).

First, participants got informed consent, which included all the information required by the GDPR and EC: the person responsible for the project, the aims, the duration of participation, procedures, risks and benefits associated with participation, the confidentiality and anonymization process, the voluntary nature of participation and the rights to the personal data. It also included the contact number of the main investigator for additional clarification. The second phase consisted of answering the sociodemographic questions, followed by the PAQ-P and, finally, the NR-21.

Data Analysis

In order to access the participants' answers in a more detailed way, a mixed methodology was chosen, which conciliates quantitative and qualitative methods. For the statistical analysis, we used IBM SPSS Statistics v25, Jamovi v1.6 and JASP 0.16.1.0, and for the qualitative analysis, we used MaxQDA

v2020.4. For the sociodemographic characterization of the EG and CG groups, we performed descriptive statistics (mean and standard deviation) using the IBM SPSS Statistics program. Frequencies and percentages of the following variables were also analyzed: gender, marital status, education, socioeconomic status, parenting style, enrollment of children in an educational experience in nature, contact with nature and its frequency during childhood and throughout life (pre-pandemic context), figures present at the time of contact with nature, household location (rural, urban or peri-urban) and access to nature in the area of residence. Concomitantly, with Jamovi, we assessed NR variable normality using a Shapiro-Wilk test (Shapiro et al., 1968). Considering that the NR variable did not obey a normal distribution, the comparison between groups was assessed through a Wilcoxon W test (Rey & Neuhäuser, 2011). Additionally, a general linear model was applied, to verify whether a more frequent contact with nature during childhood and throughout life (pre-pandemic context) could be a predictor of a greater NR (Lee, 2020). Finally, with JASP, a cluster analysis with the K-means method and optimization of the BIC value (Naeem & Wumaier, 2018) was conducted, allowing for the verification of fluctuation profiles between the NR variables, contact with nature during childhood and contact with nature throughout life (pre-pandemic context). Regarding content analysis, we analyzed the reasons for enrollment (EG and CG) and non-enrollment (CG) in educational experiences in nature and the activities in nature performed by parents as children. To this end, we used an open categorization method (Amado, 2014), which consists of creating a system of categories inferred from answer analysis. In order to assess and ensure the study's internal consistency, we performed the inter-coder agreement test. This test consisted of content analysis, first by coder 1 and then by coder 2 and, in a final phase, we made a comparison between the codifications assigned by the two coders, to each of the excerpts (Lima, 2013), namely: 1) EG parents' motives for enrolling their children in IL offers, extracting an agreement of 87.93% and a Cohen's Kappa of .87; 2) CG parents' motives for enrolling their children in educational experiences in nature, obtaining an agreement and Cohen's Kappa coefficient of .83; 3) reasons why CG parents did not enroll their children in educational experiences in nature reached an agreement of 86.79%, additionally determining a Cohen's Kappa coefficient of .85; 4) and, finally, we took into account the main activities developed by parents, as children, in moments of contact with nature and, with regards to the EG, we obtained an agreement of 98.51% and a Cohen's Kappa coefficient of .98 and the CG revealed an agreement of 96.59%, accompanied by a Cohen's Kappa coefficient of .96.

Results

All EG participants enrolled their children in an IL educational experience in nature, with 60.7% (n=82) of the total (N=135) participating in PCM and 39.3% (n=53) in CF. Regarding the CG participants (N=151), only 13.9% (n=21) said they had enrolled their children in an educational experience in nature, being that the most reported activities were scouts and summer camps, noting a preponderance of non-formal educational offerings.

As for the reasons listed for the enrollment in PCM and CF offers, the following stand out: "the importance of promoting contact with nature" (n=44; 32.9%), "appealing and innovative offer" (n=25; 18.4%) and "promotion of socio-emotional development" (n=23; 16.6%).

With regard to CG, the main reasons for enrollment include: "contact with nature" (n=59; 38.8%), "nature exploration" (n=30; 16.5%) and "socioemotional development" (n=18; 11.8%) of the child. The main reasons for not enrolling their children were "not provided" (n=33; 22%); "age factor" (n=34; 22.6%), "too young to be part of these programs" and "family alternatives" (n=28; 18.6%), where parents provide activities in nature.

With regard to the existence of contact with nature in EG parents' childhood, 131 (97%) parents indicated having had such. As for the CG, 143 (94.7%) participants reported having had access to nature throughout their childhood. In terms of frequency of nature contact during childhood (Table 2), the answers "every day" (n=55; 40.7%), "between 1 and 2 times a week" (n=33; 24.4%) and "between 3 and 4 times a week" (n=31; 23%) stand out in the EG and the "every day" (n=67; 44.4%) and "between 1 and 2 times a week" answers (n=37; 24.5%) in the CG.

Table 2. Frequency of nature contact during childhood (weekly)

Contact with nature during childhood (weekly)	EG		CG	
	<i>n</i>	%	<i>n</i>	%
Never	2	1.5	3	2
Between 1 and 2 times a week	33	24.4	37	24.5
Between 3 and 4 times a week	31	23	28	18.5
Between 5 and 6 times a week	14	10.4	15	9.9
Everyday	55	40.7	67	44.4
Omitted	0	0	1	.7
Total	135	100	151	100

n= Sample(count)

We also tried to find out the frequency of participants' contact with nature throughout their lives (pre-pandemic context). In the EG, 66.7% (*n*=90) of participants mentioned contact with nature "between 1 and 2 times a week" and, in the CG, 43% (*n*=65) of participants answered "between 1 and 2 times a week" and 32.5% (*n*=49) "every day" (Table 3).

Table 3. Frequency of nature contact throughout life (weekly)

Contact with nature throughout life (weekly)	EG		CG	
	<i>n</i>	%	<i>n</i>	%
between 1 and 2 times a week	90	66.7	65	43
between 3 and 4 times a week	29	21.5	27	17.9
between 5 and 6 times a week	6	4.4	10	6.6
Everyday	10	7.4	49	32.5
Total	135	100	151	100

n= Sample(count)

For a more effective understanding of the contact with nature throughout life, the participants were asked about their living environment and access to nature. 83% of the EG participants (*n*=112) reported an urban housing context and in the CG the most mentioned were urban (*n*= 70; 46.4%) and rural (*n*= 47; 31.1%). Regarding access to nature near their area of residence, 89.6% of the EG participants (*n*=121) and 87.4% of the CG (*n*=132) indicated that it was available (Table 4).

Table 4. Housing environment of the household and access to nature

Housing environment characteristics	EG		CG	
	<i>n</i>	%	<i>n</i>	%
Environment				
Rural	8	5.9	47	31.1
Urban	112	83	70	46.4
Periurban	15	11.1	34	22.5
Access to nature				
Yes	121	89.6	132	87.4
No	14	10.4	19	12.6

n= Sample(count)

One of this study's aims was to characterize the parenting style of EG and CG participants. Drawing from the results, it is possible to see that the predominant parenting style in both groups is the authoritative one - 97.8% (*n*=132) and 96.7% (*n*=146) for the EG and the CG, respectively (Table 5).

Table 5. Predominant parenting style

Parenting style	EG		CG	
	<i>n</i>	%	<i>n</i>	%
Authoritarian	2	1.5	2	1.3
Authoritative	132	97.8	146	96.7
Permissive	1	.7	3	2
Total	135	100	151	100

n= Sample(count)

We then proceeded to the analysis of the NR variable which did not obey a normal distribution, thus the comparison between groups was made through a non-parametric analysis. Figure 1 shows the violin plots with the distribution, the boxplot and the mean by group. By looking at figure 1, we can see that the

distribution is very similar between the two groups. However, it is interesting to note that the mean NR is slightly higher in the EG ($M=3.01$, $SD=.30$) than in the CG ($M=2.91$; $SD=.34$). Yet, the median is slightly higher in the CG.

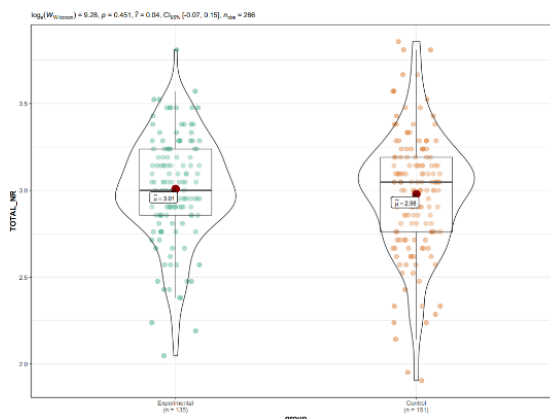


Figure 1. NR variable distribution both in EG and CG

In order to understand whether contact with nature during childhood and contact with nature throughout life (pre-pandemic context) were significant predictors of NR, the general linear model was applied. Considering that the variable NR did not follow a normal distribution and that the present model requires this assumption, it was modified through a squared transformation. In addition to the predictors listed above, the group variable was also taken into account as a predictor. Although the group was already found to have no impact on NR, this variable was posed for the study of potential interaction effects with the other predictor variables. The results of this analysis showed a significant and main effect of contact with nature throughout life (pre-pandemic context) ($F(1,279)=5.953, p=.015, \eta^2p=0.045$) and contact with nature during childhood ($F(1,279)=5.030, p=.026, \eta^2p=0.021$), showing that the higher the contact in both variables, the higher the NR (figures 2 and 3).

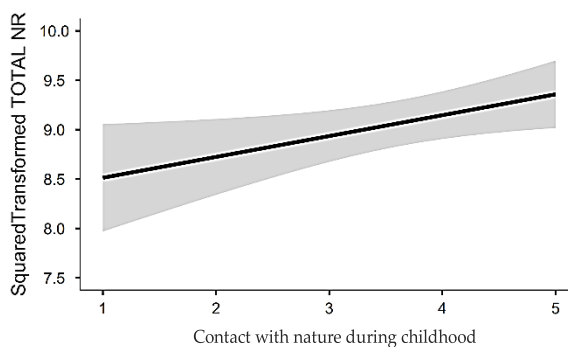


Figure 1. Contact with nature during childhood as a predictor of NR



Figure 2. Contact with nature throughout life (pre-pandemic context) as predictor of NR

The partial eta square, which gives us the effect size, shows us that lifelong nature contact (pre-pandemic context) has a greater influence on NR than contact with nature during childhood. However, the following interaction effects were not detected: contact with nature throughout life (pre-pandemic context) * group ($F(1,279)=0.0516, p=.820, \eta^2p=0.000$) and contact with nature during childhood * group ($F(1,279)=0.4340, p=.511, \eta^2p=0.002$).

The goal of categorizing and grouping parents according to their nature contact and their NR, as well as the lack of results per group, together with some intra-group variability, led us to perform a cluster analysis, from a purely exploratory standpoint, in what concerns the variables in the study. For this analysis, in addition to the NR variable, we equated the frequencies of contact with nature during childhood and throughout life (pre-pandemic context). The result of clustering with the K-means method and with BIC value optimization returned 8 clusters that together explain 84.4% of the variance and a BIC of 293.970.

Clusters were then sorted into different named profiles, which were established inferentially, given each cluster's distribution, which was based on the interaction between the NR, frequency of nature contact throughout life (pre-pandemic context), and frequency of nature contact during childhood variables. Figure 4 shows the 8 clusters and its relations with the aforementioned variables.

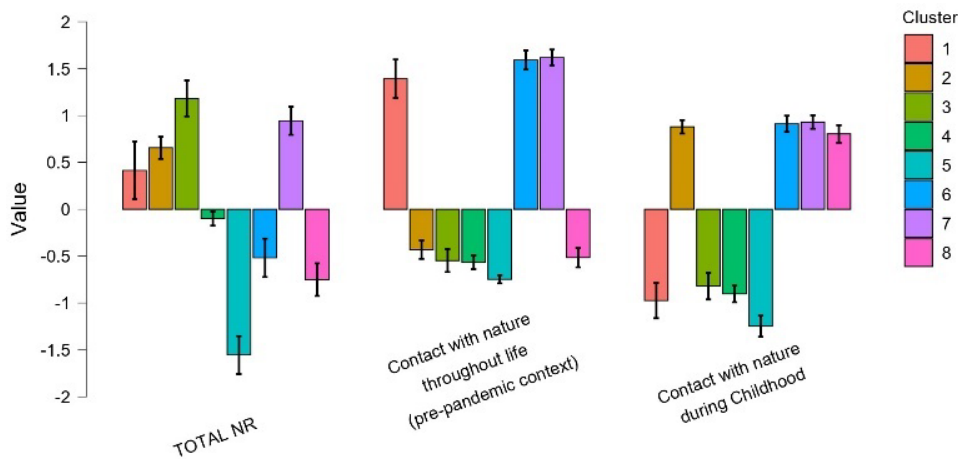


Figure 4. Cluster analysis considering NR and contact with nature during childhood and throughout life

As we can see, the 8 clusters have distinct fluctuation profiles among the 3 variables, so after its analysis and interpretation, we proceeded to name and describe these profiles (Table 6).

Table 6. Clusters' description considering NR, contact with nature during childhood and throughout life as variables

Cluster's name	Description
1. Active nature lovers with one contact after childhood	Individuals who have a high NR and had one significant contact with nature after childhood.
2. Active nature lovers with childhood contact	Individuals who have a high NR and have had significant contact with nature during childhood only.
3. Passive nature lovers	Individuals who have an extremely high NR, but have not had significant contact with nature neither during childhood nor throughout their lives.
4. Disconnected from nature without contact	Individuals who have a low NR and have not had significant contact with nature during childhood and throughout their lives.
5. Indifferent to contact with nature	Individuals with an extremely low/inexistent NR, who have not had significant contact with nature, neither during childhood nor throughout their lives.
6. Disconnected from nature, but with frequent contact during childhood and throughout life	Individuals with a low NR and who have had significant contact with nature both during childhood and throughout their lives.
7. Active nature lovers with frequent contact during childhood and throughout life	Individuals with an extremely high NR, who have had significant contact with nature during childhood and throughout their lives.

8. Disconnected from nature, but with childhood contact	Individuals with a low NR, who have had significant contact with nature during childhood only.
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Following this, we checked the proportion of individuals in each cluster, in order to understand the variations depending on the group (EG or CG). The results of this analysis can be seen in Table 7. Since the parents of the EG had the initiative to place their children in a formal educational experience in nature, we sought to understand which cluster profiles were more frequent in the group in question. Inferentially, a significant association was recorded between clusters and the EG, $\chi^2(7)=35.9$, $p < .001$. Descriptively, the results show a superiority of the EG, regarding the percentage of individuals "disconnected from nature with no contact" (4), "active nature lovers with childhood contact" (2) and "disconnected from nature, but with childhood contact" (8).

Table 7. Clusters' absolute frequencies, per group

Cluster	EG		CG	
	<i>n</i>	%	<i>n</i>	%
1. Active nature lovers with one contact after childhood	3	2.2	9	6
2. Active nature lovers with childhood contact	30	22.2	19	12.7
3. Passive nature lovers	18	13.3	8	5.3
4. Disconnected from nature without contact	33	24.4	32	21.3
5. Indifferent to contact with nature	12	9	20	13.3
6. Disconnected from nature, but with frequent contact during childhood and throughout life	6	4.4	22	14.7
7. Active nature lovers with frequent contact during childhood and throughout life	7	5.2	27	18
8. Disconnected from nature, but with childhood contact	26	19.3	13	8.7
Total	135	100	150	100

n= Sample(count)

Conclusion and Discussion

The study carried out and presented here aimed at better understanding the enrollment motives, sociodemographic variables, parenting styles and NR of parents who enrolled their children in IL, as well as analyzing these same variables and identifying parent profiles based on NR and frequency of nature contact, while additionally attempting to ascertain the role of contact with nature as a predictor of NR, all in an effort to rethink and improve existing educational offers.

According to the obtained results, EG participants were aged between 28 and 56 years, with CG participants aged between 20 and 65 years. Regarding gender, both EG and CG participants are, in the majority, married (62.2% a 66.9%, respectively) women (85,9% and 84,8%, respectively).

As far as academic qualifications are concerned, EG parents indicate "1st, 2nd and 3rd cycles of Higher Education" as their level of education (93,4%), while CG parents indicate "1st, 2nd and 3rd cycles of Higher Education" (35,8%) and "Secondary Education" (55%). According to Schoeppe et al. (2015), parents with a lower level of education have a lower predisposition for their children's access to outdoor spaces/nature. Once again, the present study/research makes this information verifiable due to the fact that EG parents have high educational qualifications and, concomitantly, enroll their children in educational offers in nature. However, more research is needed to objectively ascertain whether or not socioeconomic status and education are predictors of greater contact with nature since the available information only mentions contact with outdoor spaces as a predicting factor.

Related to the annual income, it is possible to ascertain that EG parents have a higher gross annual income, with particular emphasis on "over 15358.35€". As for the CG parents, unlike the previous ones, these reveal an income with greater dispersion, with "over 15358.35€", "over 9215.01€ up to 15358.35€" and "over 6143.34€ up to 9215.01€" standing out.

Building on the work of Ghimire et al. (2015), individuals with a higher socioeconomic income tend to have fewer constraints and restrictions to contact with outdoor spaces/nature. These data are in line with

the work developed here, thus being possible to establish that parents with a higher socioeconomic level have high contact with nature throughout their lives (pre-pandemic context) and enroll their children in educational offers in nature.

Following on from the above, and regarding the state of the art and current literature, it is essential to mention that Wood or Nature Kindergartens (Forest Schools in England) are of Scandinavian origin, which makes the reasons why educational offers are appealing to parents, its benefits and effects and the characteristics of parents who opt for these offers, are more reported, recognized and detailed in the underlying cultures of these countries. In contrast, up until 2013, this was not the case for Portugal, given the scarcity of this type of offer (Figueiredo et al., 2013). Nonetheless, nowadays the educational offers are diversified, although many are non-formal.

In this sense, regarding the reasons given for enrolling children in educational experiences in nature, "contact with nature" is consensual among EG and CG, which confirms the studies of Silva (2019) and Costa (2021). Another prominent reason is the development of social and emotional skills, which besides being consensual between both groups, is also corroborated by the work developed by Costa (2021). Similarly, the study developed by Silva (2019) points to social and emotional skills development as the second reason for enrolling children in educational experiences in nature. However, Silva (2019) created a single category for development, encompassing the motor, cognitive and socio-emotional dimensions, which makes it difficult to compare the results.

According to the answers obtained by EG parents, and in addition to the previous reasons, the innovative and appealing aspect of educational offers in nature is related to the fact that they are an alternative to kindergartens/schools and play spaces. This takes into account the work of Silva (2019), where parents also indicated the experience of different activities from those performed at kindergarten as one of the reasons for enrolling their children. In fact, in Portugal, playing and learning spaces, in addition to being not very diversified (in terms of materials and stimuli), are mainly limited to indoor spaces, which may lead to negative consequences for the child's development, since the existence of experiences that promote exploration, challenge and adventure are of paramount importance in childhood, according to Figueiredo et al. (2013). It is important to bear in mind that these experiences of exploration, challenge and adventure are not exclusively associated with nature, as they can be accessed in other contexts.

Concomitantly with the aforementioned experiences, nature allows children to develop awareness of their attitudes and behaviors' effect on nature, thus leading to the increase of their connection with nature and environmental concerns, as well as the sedimentation of the understanding of their place in it (Gill, 2014). In this sense, the studies developed by Silva (2019) and Costa (2021) corroborate what was previously mentioned, since they point to an increase in children's environmental awareness when they participate in PCM, according to their parents' perception. Nevertheless, and given that parents are inherently involved in choosing and making decisions regarding their children's educational offers, it is pertinent to take a critical look at the parenting styles of parents who chose to enroll their children in educational experiences in nature.

Through the results obtained, we can affirm that these parents present a predominantly authoritative style. However, current literature has little information regarding the influence of parenting styles on parents' choices about educational offerings in nature. Therefore, through the analysis of the principles that govern Wood/Nature Kindergartens or Forest Schools (which served as inspiration for the IL), it's possible to see that, in general, these favor the development of competences such as resilience, autonomy, confidence and creativity, which is similar to parents with an authoritative parenting style, so we can hypothesize these parents may prefer educational offerings such as IL. However, this needs further research.

Since parents play a key role in decision-making regarding the most different aspects of the child's life, it becomes important to discuss the influence they play in children's nature contact and, consequently, their NR. Based on the results obtained in this study, we were able to confirm that contact with nature during childhood and throughout life (pre-pandemic context) is a predictor of a greater NR, a conclusion

that is in line with what is proposed and postulated by the current investigation (Soga et al., 2016). The results are also consistent with the work of Wood and Smyth (2019), who indicated that greater exposure to and participation in physical activity in nature during childhood was associated with a greater nature connection.

Finally, and following this line of thought, according to the work of Sugiyama et al. (2021) and Passmore et al. (2021), a greater interest in nature and a greater NR in adulthood on the part of parents/caregivers may then lead to a greater willingness to provide contact with nature to their children, which, inferentially, will also translate into a greater NR on the children's part. Therefore, parents' pursuit for increasing their children's contact experiences with nature coincides with the main reason mentioned when enrolling them in IL, since they find that they experienced and appreciated the contact they had with nature as children, thus awakening an expressed need for their children to experience something similar. This observation is supported by the fact that there is an inevitably growing tendency in the general population to choose indirect and especially vicarious experiences over traditional direct experiences (Skar et al., 2016). To support this, it is pertinent to recall the results of the clusters with a more evident expression in the EG and with particular emphasis on "active nature lovers with childhood contact" (2) and "disconnected from nature, but with childhood contact" (8). In these two clusters, despite the differences in NR (with cluster 2 individuals showing a high NR and cluster 8 individuals a low NR), it can be seen that contact with nature during childhood was quite frequent, which seems to have had an impact on EG parents, since they enrolled their children in an educational experience in nature.

There is also a third cluster of high expression in the EG, which corresponds to the "passive nature lovers" (3) who demonstrated a high NR, but did not have frequent contact with nature, neither during childhood nor throughout life (pre-pandemic context). This cluster allows us to reflect, again, on parents' motivations for enrolling their children in IL. Since there was no contact with nature during childhood and EG parents were not able to maintain this contact with nature throughout life, it is possible to equate that parents may have found in IL a way to make up for the absence of their own contact with nature, as well as a way to promote the benefits of contact and connection with nature in their children. As for CG parents, the clusters with the most expression were "disconnected from nature without contact" (4), "active nature lovers with frequent contact during childhood and throughout life" (7) and "disconnected from nature, but with frequent contact during childhood and throughout life" (6), which corroborates the results obtained regarding the frequency in nature contact during childhood and throughout life (pre-pandemic context) and the enrollment of children (or lack thereof) in educational offers in nature. To build on these results, we call forth the main reason found for not enrolling children in this type of offer, which according to these parents is the fact that there are alternatives that can be provided as a family. Also, regarding CG parents who chose to enroll their children in educational experiences in nature, non-formal educational options are denoted as the main choice (scouts and summer camps).

Hence, it is important to consider that nature programs like IL may present themselves as a viable and advantageous choice in offering direct or indirect nature contact experiences to a wider target audience, as it provides nature contact experiences in both formal and non-formal settings.

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How an early learning and child care program embraced outdoor play: A case study

Brenna Richard¹, Joan Turner², Michelle R. Stone³, Jessie-Lee D. McIsaac⁴

Abstract: Research indicates outdoor play influences children's physical, cognitive and social-emotional well-being, but there are barriers to implementation in early learning settings. This study explores an early learning and child care (ELCC) program achieving success with outdoor play to identify strategies that may help overcome barriers and support outdoor play in similar contexts. Focus groups and interviews were conducted with ELCC program Early Childhood Educators (ECEs) and facilitators, school teachers and principal, and government staff. Data also included relevant documentation and photographs of the outdoor play spaces. Thematic analysis of all data was completed, resulting in a description of the ELCC program's outdoor play space and practices and factors that may be influencing these identified practices. Six themes or influencing factors were identified: 1) outdoor play, including loose parts and risky play, is valued; 2) outdoor play is promoted and engaged in by others; 3) space and resources are available; 4) communication and engagement happens; 5) leaders are integral; and 6) partnerships and collaboration are essential. Using Bronfenbrenner's ecological systems model, this research identifies outdoor play implementation strategies that may provide guidance to ELCC stakeholders such as ECEs and policymakers. To overcome outdoor play challenges, considerations should be made to purposefully target and engage multiple subsystems and stakeholders as described in this study for greatest impact.

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Outdoor play; Case study; Ecological systems; Risky play; Loose parts

Introduction

Early childhood (birth to eight years old) represents a highly sensitive time in human development as children's early experiences and opportunities are critical determinants of their future health, behaviour, and learning (Irwin et al., 2007; McCain et al., 2011). The importance of play for optimizing child development is well established (Ginsburg, 2007), with play being recognized by the United Nations High Commission for Human Rights as a right of every child (International Play Association, 2012). Play has been shown to positively influence children's physical, cognitive, and social-emotional development (Ginsburg, 2007; Parrott & Cohen, 2020; Pellegrini & Smith, 1998). Although both indoor and outdoor environments provide valuable play experiences, the outdoor environment is associated with unique play opportunities and benefits (Gray et al., 2015; Kemple et al., 2016; Tremblay et al., 2015). In 2015, a Position Statement on Active Outdoor Play was published (Tremblay et al., 2015), recommending that children's opportunities for self-directed play outdoors, with its risks, be prioritized in all settings – at home, at school, in child care, in the community and in nature. Although outdoor play with its risks is recognized as beneficial, and even crucial, for children's optimal development, there continues to be challenges with ensuring that children have these opportunities in the spaces and places where they spend their early years, such as early learning and child care (ELCC) programs. A substantial amount of research has been done to understand the various perceptions and barriers of outdoor play (Jayasuriya et al., 2016; MacQuarrie et al., 2022; Spencer et al., 2019, 2021). The purpose of this study was to offer a new focus on identifying the factors

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that contribute to success by exploring the implementation of outdoor play in an ELCC program that has managed to move beyond the commonly reported challenges.

Literature Review

Much of the benefits of outdoor play can be attributed to the greater opportunities for risky and loose parts play afforded by the natural environment (Sandseter, 2007; Stephenson, 2003). Risky play is commonly defined as “a form of play that is thrilling and exciting, which involves uncertainty, unpredictability and varying degrees of risk-taking” (Lee et al., 2022) and comprises eight categories (playing at great heights, at great speed, with dangerous tools, near dangerous elements (water, fire), rough and tumble play, independent exploration, with impact, and vicarious play) (Sandseter & Kleppe, 2019). Encountering risks gives children the opportunity to assess situations and problem-solve (risk management), and to fail and try again, which helps to develop resilience (Farmer et al., 2017; Rooijen & Newstead, 2016; Sandseter & Sando, 2016); through risky play, children also become more self-confident (Brussoni et al., 2012, 2015; Spencer et al., 2021). Risky play is also associated with increased physical activity (Sando et al., 2021) and is, therefore, a catalyst for the multitude of known benefits of physical activity including enhanced fine and gross motor skills (Fjørtoft, 2001; Johnson et al., 2005), executive functioning (Becker et al., 2014; Scudder et al., 2016), sleep quality (Taylor & Kuo, 2011), cardiovascular endurance and obesity prevention (Johnson et al., 2005).

Loose parts are a recognized facilitator of risky play (Flannigan & Dietze, 2017; Spencer et al., 2019, 2021), and there is growing research on the benefits of loose parts play to children’s physical, cognitive and socio-emotional development (Branje et al., 2022; Gibson et al., 2017; Spencer et al., 2019). The term “loose parts”, developed by Nicholson (1971), is used to describe non-fixed materials (natural or manufactured, such as sticks or rope) that can be manipulated, transformed, and created through child-led play. More recently, a scoping review of terms related to play, learning and teaching outdoors (Lee et al., 2022), updated this definition, noting that loose parts are, “natural or manufactured materials with no specific set of directions that can be used alone or combined with other materials, moved, carried, combined, redesigned, lined up, and taken apart and put back together in multiple ways and used for play” (Lee et al., 2022, p. 12). Loose parts and the fluctuating outdoor environment create affordances for children, the possibilities that an environmental feature or object provides to an individual (Gibson, 1977; Sando & Sandseter, 2020). Research by Flannigan and Dietze (2017) notes that loose parts can offer children a variety of opportunities for play, social interaction, language, and risk-taking, and inclusivity of gender and age. Play with loose parts enables opportunities for problem-solving, cultivating independence and confidence, and building relationships and leadership (Bundy et al., 2009; Farmer et al., 2017; Spencer et al., 2019). Loose parts also offer opportunities for movement and therefore increased levels of physical activity (Branje et al., 2022; Gibson et al., 2017; Spencer et al., 2019). Some of these benefits of risky and loose parts play, including increased physical activity, resilience and confidence, contribute to children’s physical literacy, a term used to describe an individual’s confidence, motivation, competence and individual value in pursuing physical skills and activities (Edwards et al., 2017). In addition to the benefits highlighted from risky and loose parts play, playing outdoors in green space has been shown to reduce stress and improve attention (McCormick, 2017; Taylor & Kuo, 2011; Wells, 2000).

Despite these benefits, there is evidence that children’s engagement in outdoor play has decreased in recent years. A Canadian non-profit organization, ParticipACTION, has been releasing yearly Report Cards synthesizing evidence from multiple sources to determine how well Canadian children are achieving healthy, active lifestyles. The ParticipACTION Report Card (2020) indicated that Canadian five- to six-year-old children are spending an average of between 1.8 hours (when cared for at home) to 2.1 hours (when cared for in a non-school, childcare setting) per day outdoors, prompting a recommendation for promoting and supporting more outdoor play opportunities. Not enough time outdoors is a concern being raised beyond Canada. The majority of mothers from one study in the United States shared the feeling that their children were spending less time playing outside than children from even a few years earlier, and that they recalled engaging in more outdoor play as a child than their children do (Clements, 2004). In a nationally

representative survey conducted in the United States, just half of the sample of preschool children were reported to have at least one outdoor play opportunity per day (Tandon et al., 2012). And in Australian childcare settings, children aged one- to five-years-old have been found to spend as much as 80% of their time sedentary (Ellis et al., 2016). The barriers to outdoor play in ELCC settings are complex (Sandseter et al., 2020) and require a comprehensive theoretical approach, such as a socio-ecological model, to better understand the factors impacting outdoor play and how they interact (MacQuarrie et al., 2022).

Barriers of outdoor play in ELCC settings can be explored using Bronfenbrenner's (1994) ecological systems model, which includes five subsystems (microsystem, mesosystem, exosystem, macrosystem, chronosystem) that are interrelated and interact to influence, in this case, children's outdoor play behavior (MacQuarrie et al., 2022). Positive parental attitudes and support for outdoor play have been identified as correlates for outdoor play (Lee et al., 2021). Although research indicates parents and ECEs (*microsystem*) generally value and understand the benefits of outdoor play (MacQuarrie et al., 2022; McFarland & Laird, 2018; Spencer et al., 2019, 2021), these positive attitudes can be hindered by a variety of culturally-fluctuating factors including school readiness pressures (Kane, 2016; Lin & Yawkey, 2013; O'Gorman & Ailwood, 2012), perceptions of risky play (Spencer et al., 2019, 2021), and safety concerns (e.g., environmental hazards, potential for injury) (Lee et al., 2021; MacQuarrie et al., 2022; Spencer et al., 2019, 2021). These safety concerns are heightened when there is little communication between ECEs and parents around risky play and outdoor play practices (*mesosystem*) (Sandseter et al., 2017; Spencer et al., 2021). Policies and regulations also influence outdoor play (*exosystem*), such as when an ELCC program is located in a school setting and the rest of the school follows a different curriculum or structure, thereby presenting possible tension. Other barriers to outdoor play at the exosystem level are environmental factors, such as lack of play space, and urban/suburban (rather than rural) environments (Lee et al., 2021; MacQuarrie et al., 2022; Sandseter et al., 2020), and concerns around the durability, quantities, and storage of loose parts (Spencer et al., 2019). At the macrosystem and chronosystem levels, ECEs may feel the need to prevent even minor injuries to children at all costs ('surplus safety framework', Spencer et al., 2019, 2021; Wyver et al., 2010) due to perceptions around regulations and administrative reporting of injuries (Spencer et al., 2021) and a perceived rise in litigious culture (Little et al., 2012; Sandseter et al., 2020; Sandseter & Sando, 2016). The cold season and weather conditions have also been shown to reduce time spent outdoors (Lee et al., 2021; MacQuarrie et al., 2022; Sandseter et al., 2020).

Bronfenbrenner's ecological systems model has previously been used in early childhood research, including seeking to understand the perceptions and barriers (as utilized above) of outdoor play and physical activity (Graham et al., 2022; MacQuarrie et al., 2022; Martinez-Andrés et al., 2020). Given the perceptions and barriers of outdoor play have been well documented already, this study instead seeks to use Bronfenbrenner's ecological systems model to purposefully explore facilitators of positive outdoor play practices and experiences. Notwithstanding the reports of decreased time outdoors and the barriers, there are ELCC settings where outdoor play continues to be an integral part of daily programming and includes opportunities for risky and loose parts play. The following case study will explore the implementation of outdoor play in an ELCC program achieving such success. The objectives of this research are to explore what outdoor play practices are being implemented at the ELCC program and determine what factors enabled the identified outdoor play practices to occur at the ELCC program. Using Bronfenbrenner's ecological systems model, key factors to overcoming barriers and supporting outdoor play in ELCC programs and similar contexts will be identified across subsystems, offering possible areas of focus and action for both ECEs and policymakers.

Method

Research Design

This research study followed a qualitative, exploratory, embedded, single-case study design (Yin, 2018) to acquire an in-depth understanding of outdoor play in one ELCC program. This research design reflects an interpretive research paradigm, believing there to be multiple realities and focusing on uncovering participants' perspectives (Wahyuni, 2012).

Research Sample

Following research ethics board approval from Mount Saint Vincent University (#2018-076), one ELCC program in Nova Scotia, Canada was chosen using a purposive sampling method. To uncover how barriers to outdoor play can be overcome, the ELCC program was selected on the basis of their successful implementation of outdoor play according to Nova Scotia's Early Learning Curriculum Framework (Province of Nova Scotia, 2018) following recommendations from Government of Nova Scotia staff and other relevant professionals. Prior to data collection, consent was obtained from the school in which the ELCC program was situated and the relevant regional school authorities.

Data Collection Tools

Following a case study approach (Yin, 2018), a variety of methods were used to collect data between December 2018 and February 2019 including 30- to 60-minute focus groups and interviews, photographs, and documentation. The focus groups and interviews were conducted using semi-structured guides that included questions focused on the participants' values and perceptions of outdoor play and the ELCC program's outdoor play practices.

Case Site and Participants

The ELCC program selected was based in an elementary school serving approximately 150 students from Pre-primary to Grade Six (ages approximately 4-11 years) in a small, rural community in Nova Scotia. Nova Scotia is located in south-eastern Canada, experiencing a range of cold and hot temperatures and precipitation (snow, rain) across seasons. This ELCC program operates from September to June, experiencing temperatures typically ranging between -15 to 5 degrees Celsius in the winter months (mid-December to mid-March) and 0 to 20 degrees Celsius in the Fall and Spring months (mid-September to mid-December; mid-March to mid-June) (Tourism Nova Scotia, 2021). The ELCC program included two ECEs and 19 children between 4 to 5 years of age.

Through focus groups and interviews, photographs, and relevant documents, information was provided about the outdoor play practices engaged in by the ELCC program and the factors that could have contributed to the ability to engage in the identified practices. The first focus group was with the two ELCC program Early Childhood Educators (ECEs). During the focus group, the ECEs used documentation, such as learning stories, to support the discussion around the ELCC program's outdoor play spaces and practices. Scans of these documents were later emailed to the lead researcher to be included in analysis. Immediately following the focus group, both ECEs provided a tour of the designated outdoor play spaces (even those used occasionally). Photographs were taken by the lead researcher (without children visible).

The second focus group was with two elementary school teachers. A total of six interviews were completed, with two ELCC program facilitators, one school principal, and three government staff. Similar to the ECEs, these other participants were also asked to share any relevant documents that may speak to the outdoor play practices and spaces at this ELCC program, such as links to external outdoor play resources used by the school.

Throughout the results, participants are referred to by participant type (ELCC, school, government) to preserve their anonymity. See Table 1 for a description of the participant types.

Table 1. Description of participant types

Participant Type	Included Participants	Description
ELCC participants	Two ELCC program ECEs and two ELCC program facilitators	<p>Participants who are employed by the Nova Scotia Department of Education and Early Childhood Development and work directly in/with the ELCC program on a regular basis.</p> <p>ELCC program ECEs: Responsible for children's daily programming and care in the program.</p> <p>ELCC program facilitators: Support ECEs within the region with ELCC programming.</p>
School participants	One school principal and two elementary school teachers.	<p>Participants who work on-site for the school, but not for the ELCC program specifically.</p> <p>One teacher teaches Grade One. One teacher teaches Grade Two.</p>
Government participants	One development specialist, one regional manager, and one physical activity consultant	<p>Participants who are employed by different Government of Nova Scotia departments and do not work directly with the ELCC program on a regular basis.</p> <p>Development specialist: Employed by the Nova Scotia Department of Education and Early Childhood Development. Primarily responsible for ordering and delivering ELCC program equipment and materials, and supporting inclusion.</p> <p>Physical activity consultant and regional manager: Employed by the Department of Communities, Culture, Tourism and Heritage. Focused on supporting sport and recreation within their region, often through collaborating with community organizations and programs.</p>

Analysis of Data

Focus group and interview audio-recordings were transcribed verbatim using Express Scribe Transcription NCH Software. Transcripts were de-identified to remove any identifying information. All transcripts, photographs, documents, and field notes were managed and analysed with assistance from the NVivo software program. Thematic analysis followed the six steps outlined by Braun and Clarke (2006) and followed an inductive analytic strategy by working with the data 'from the ground up' (Yin, 2018, p. 169). The six steps included: 1) Reviewing and becoming familiar with the data; 2) generating an initial set of codes to begin meaningfully grouping the data; 3) exploring relationships between initial codes to identify which ones may combine to form broader themes; 4) reviewing and refining the themes; 5) defining and naming the themes (Braun & Clarke, 2006). A separate researcher supported the lead researcher by reviewing and discussing initial codes, patterns and relationships between codes, and the eventual defining of themes. This process did not always remain linear, with the lead researcher at times going back and forth between steps.

Findings

Outdoor Play Practices

A general map of the ELCC program and school's property and outdoor play spaces can be seen in Figure 1. The children and ECEs use all the on-site outdoor play spaces with the exception of the manufactured equipment zones. The most actively used outdoor play space for both the ELCC program children and the school students is the wooded area.



Figure 1. Map of ELCC program and school's property.

Throughout the wooded area is a gravel trail (see Figure 2), a slackline, tree logs of varying lengths, tires, tree stumps, and old Christmas trees donated by members of the community. The brook and bridge along the property line are considered off-limits to the children. See Figures 3 and 4 for a photograph showing some of these items.



Figure 2. Beginning of the gravel trail in the wooded area. December 13, 2018.



Figure 3. Tires, logs, stumps and sticks in the wooded area. December 13, 2018.



Figure 4. Brook and bridge along the property line of the wooded area. December 13, 2018.

The ECEs and children typically spend about an hour outdoors morning and afternoon unless the weather conditions are particularly cold and/or wet. During Nova Scotia's warmer months (approximately April through October), the ECEs and children will spend the majority of their day outdoors. The children and ECEs engage in weather-related activities including sledding, playing in the puddles, and looking for worms and salamanders. For the most part, the children are in the woods exploring and playing with loose parts. The children also engage in risky play including tree climbing, freely exploring the wooded area, hiding among shrubs, and building with real tools (e.g., saws, hammers). The ECEs lead some organized activities, including guided walks and examining natural elements (e.g., bark, fungi). Many of the activities either bring elements of the outdoors indoors (e.g., collecting natural loose parts for art projects) or bring typically indoor activities outdoors (e.g., making salt dough to use as faces on trees).

Factors Influencing Outdoor Play

The collected data from participants, photographs and documents also provided implicit referencing to identify factors that would have influenced the identified activities: (1) outdoor play, including loose parts and risky play, is valued; (2) outdoor play is promoted and engaged in by others; (3) space and resources are available; (4) communication happens; (5) leaders are integral; and (6) partnerships and collaboration are essential.

Outdoor Play, Including Loose Parts and Risky Play, is Valued

Outdoor play. Participants described the outdoors as being 'a second classroom' with outdoor play being the opportunity for children to engage in internally motivated activities and explore in, or near, nature with exposure to fresh air and access to space to move.

Participants explained that outdoor play affords learning opportunities and benefits to children's overall development, including increased physical activity and opportunities for gross motor skill and physical literacy development. Many participants shared their own positive experiences growing up playing outdoors and indicated their on-going desire to provide similar experiences to today's children.

I think of how I played like I literally got up every day and went to my friends' we knocked on the door... we went in the woods we built tree forts we cut up worms we dug in the dirt we ran we rode our bikes... I think we have to just go back to the basics and teach children how to enjoy the environment around them. (ELCC participant)

When asked more specifically, participants responded that loose parts and risky play are components of outdoor play that offer unique benefits for children.

Loose parts. Participants described loose parts as manufactured or natural manipulable objects that offer multiple functions, with examples including tires, sticks, rocks, and drainage pipes. Participants added that loose parts are 'tools for learning' that provide endless opportunities for children to use their creativity and imagination, more so than typical manufactured playground structures. Participants explained that, through loose parts play, children interact with their peers more, practicing and improving their language and social skills (e.g., sharing, negotiating).

We often think of having single-focused or minimal-focused materials outside such as large climbers... but what the research will actually support is that having more open-ended materials that they can interact with as they see

appropriate is more—is better for them developmentally and allows them greater opportunities to develop all their skills in all areas of development. (Government participant)

Risky play. Participants described risky play as engaging in activities that may cause children feelings of fear but provide them with challenges to test their personal boundaries, physically and/or emotionally (e.g., climbing trees, playing with real tools). Participants indicated that risky play helps children to learn how to move their bodies, make decisions, problem-solve, self-regulate, develop confidence, and take risks safely. A few participants pointed out that what is risky for one child may not be for another.

...for one child risky play could be climbing up on a stump that they've never climbed up on before and then jumping down because to them there's some risk involved it's something that they've never done they're learning new skills...but for another child it could be climbing to the second branch of a tree. (Government participant)

...there's so much to learn outside! You know? Like climbing a tree isn't just climbing a tree it's 'where do I put my foot? Am I touching in three places at all times? ... 'Are my friends being respectful of the space around me?'... 'Do I need help? If I can't do it myself do I get to do it?'... So it's not just that physical experience but it's all those other pieces that come with it that you don't get inside. (ELCC participant)

Participants compared the concepts of 'risk' and 'hazard' by explaining that hazards are dangerous and need to be avoided/removed from the play environment. This differs from opportunities or challenges offered through risky play. For this reason, some ELCC and government participants noted they prefer to call risky play 'adventurous play' to avoid the stigma of negative or harmful outcomes.

... risk is the butterflies in your belly that little bit of excitement that little bit of fear, but you still conquer it, and hazard is like actual dangerous things around right? Broken glass, concrete chunks... (ELCC participant)

Children appear to value outdoor play. Participants offered insight on their perspective of how the children and their guardians feel about the ongoing outdoor play practices at the program. Some of the ELCC and school participants noted that the children do not complain about being bored and rather appear to be enjoying the available loose parts and variety of play opportunities, even children who were initially less comfortable with playing outside.

...they were ecstatic to be in this big puddle and it was just fun to watch them you know it was only about four—four or five inches deep but, you'd think they were up to their necks in water and just playing and splashing. (School participant)

I think our kids thrive and there are kids that—that weren't comfortable with it probably at the beginning of the year and they were getting more comfortable with it because it's not often that we're inside. (ELCC participant)

Guardians appear to value outdoor play. According to ELCC and school participants, the children's guardians similarly appear to be enjoying the presented outdoor play opportunities, including the loose parts and risky play, despite occasional accidents (i.e., scrapes, bruises) or children's clothes becoming dirty from play. ELCC participants have even heard some guardians considering integrating loose parts into their own backyards.

Outdoor Play is Promoted and Engaged in by Others

Participants indicated that different aspects of the ELCC program's outdoor play practices are being practiced and promoted by the rest of the school as well as off-site in the community itself. One ELCC participant suggested that the outdoor play practices have overall been accepted and easy to engage in because of how similar they are to the rest of the school and what the school had already been implementing before the introduction of the ELCC program. ELCC and school participants explained that the entire school tries to go outside in a variety of weather conditions, spends the majority of their time in the wooded area using loose parts when outdoors, and tries to bring academic and physical education activities outdoors when possible.

Beyond the school and ELCC program, other organizations in the community are also working to promote, sustain and/or engage in similar outdoor play practices. Government participants shared how part of their role has been to support a community organization dedicated to encouraging children's physical activity and outdoor play through initiatives such as after-school programs and community and

professional learning opportunities. According to these participants, municipalities from all over this region have introduced more natural play spaces in their communities that include more loose parts and less manufactured playground structures.

Many of the municipal units in the [region name] are developing natural play spaces and parks and green spaces and playgrounds which often have—or more so these days have loose parts incorporated, taking advantage of the natural play space and less building of structures, or purchasing plastic kind of structures. So we see that happening in communities all around the region. (Government participant)

A few participants suggested that the rural aspect of the community has also set the children up for outdoor play success in that they are more likely to have been provided opportunities to engage in risky play and/or have parents who grew up playing outdoors.

These are rural kids too, their parents I think probably grew up in—playing in the woods and stuff so it's not so far removed whereas maybe in an inner-city or a town school it may be a bit different but the kids that I've seen the outdoor play be really successful are rural—are smaller rural schools that allow the kids—I don't know maybe to take more risks within a more regulated area. (School participant)

Space and Resources are Available

Both ELCC and school participants commented on how fortunate this ELCC program is in terms of the outdoor spaces they have access to, especially the wooded area which simultaneously provides space, risky play opportunities and natural loose parts. Some participants noted that this amount and type of natural outdoor space is not a feature for all ELCC programs, which they indicated would be challenging for outdoor play implementation.

In addition to the wooded area's natural loose parts, ELCC and school participants indicated manufactured and natural loose parts continue to be collected, including community-donated old Christmas trees and tires. There is even a shed to store some of their smaller loose parts (e.g., pots, pans). Beyond space and loose parts, ELCC and school participants identified other resources they have had access to such as rain suits that prevent children's clothes from becoming dirty in wet weather.

...so the children all have access to—to something that protects their clothing when they're outside because that's a huge factor especially in our rural community. I'm sure it would be urban as well honestly but, you know trying to mitigate how much wet and dirt is going home because that's not the parents' job if we put them through that play it's our job to make sure that they're not going home and—and adding too much to the plate of—of the family. (ELCC participant)

Communication Happens

The ELCC participants indicated they believe their outdoor play practices have been well-received by guardians because of the ECEs' communication with guardians about expectations for outdoor play at the program. They indicated that the ECEs share outdoor play knowledge and learning stories, photographs and experiences of the children engaging in outdoor play with guardians, typically during pick-up. Because pick-up occurs outdoors, guardians are also able to see for themselves the outdoor play practices in action.

We've set ourselves up for success though, cause in all of our communication in the beginning one of the things that we said was 'we—we encourage outdoor messy play. Your child is going to get dirty. Their clothes are going to get dirty'. (ELCC participant)

The ECEs' communication also extends to other ECEs. One of the ECEs explained that allowing children to engage in loose parts and risky play initially required a 'mental shift' for them. They indicated having the other ECE's knowledge and experience in outdoor play and their mentorship helped them to overcome this challenge over three to four months.

So she's taught me a lot about basically how—really, how—how the program is. Cause it is very new this program. So I feel, coming into the program had it not been for someone with some experience would have way more challenges. I just feel that I just think, you know, you need somewhat of a guidance. (ELCC participant)

The ECEs also communicate about outdoor play with the children, detailing outdoor play expectations and guidelines (e.g., off-limit areas for play) and guiding the children through learning new

skills (e.g., tree climbing, using real tools). Participants indicated this communication with the children is key to allowing the children to engage in risky play while still promoting safety.

If you want to climb on that pile of wood look at it. Are they all rickety and mis-matched is it gonna move a bunch when you step on it? Is it wet? Is it slippery?... but it's talking them through because they have to learn to make those decisions. (ELCC participant)

Leaders are Integral

Within this ELCC program, school, and surrounding community exists various leaders that have contributed to enabling the identified outdoor play practices to occur. ELCC and school participants indicated there were key school staff who opened the wooded area to outdoor play and shared guidelines with school staff and students around increasingly independent outdoor play practices built around more natural elements. These participants indicated that school staff continue to take initiative in collecting outdoor play materials and demonstrating overall support for the ELCC program.

Leadership is additionally provided by the participants who work with the ELCC program from an off-site position. The ELCC participants indicated that the ELCC program facilitator provides them with guidance around outdoor play and checks in with the ECEs to provide support and ensure they have the tools they need to continue playing outdoors. It was also indicated that the facilitator helps to educate others in the community about outdoor play practices.

Partnerships and Collaboration are Essential

Participants indicated that a government-supported community organization had a positive impact on outdoor play in the community, particularly through the development of outdoor play-focused professional development (PD) training modules. Government participants discussed these modules and provided some description of what they involved.

...we developed five modules that were designed to help Early Childhood Educators integrate outdoor play within their practice so moving what they're doing inside the classroom outside the classroom, as well as going over the benefits so how — facilitating a conversation with them to draw out the benefits that the kids are getting and then we move into sort of the adult role and how they can interact in the outdoor environment with the children that they're working with as well as developing an outdoor play philosophy... (Government participant)

A couple of the ELCC participants attended the testing trial of these modules, and one of these participants indicated they believe it was this training that enhanced their skills to educate and communicate with others about outdoor play.

Collaboration was also brought up by participants, specifically between the ELCC program and the rest of the school. ELCC and school participants indicated the ECEs and children are encouraged to use available school resources and attend school activities. ELCC participants indicated the ECEs even arrange opportunities for the children and other school students to play outdoors together.

Conclusion and Discussion

The purpose of this research study was to explore the implementation of outdoor play in an ELCC program that has successfully supported and implemented outdoor play, in the hopes of offering potential strategies for other ELCC programs and similar contexts that may be facing some of the commonly cited barriers to outdoor play implementation. To achieve this purpose, this study focused on the objectives of exploring what outdoor play practices are implemented by the ECEs and children and what factors enabled the identified outdoor play practices to occur.

Outdoor play implementation at this ELCC program involves the use of many outdoor play spaces in a variety of weather conditions, but mostly a wooded area that involves natural loose parts play, risk-taking opportunities, and some ECE-led group activities. Participants also implicitly referred to factors that would have influenced these outdoor play practices. An adapted visual of Bronfenbrenner's ecological systems model (see Figure 5) considers where these influencing factors fit within the five subsystems and how they interact to influence the children's outdoor play behaviours.

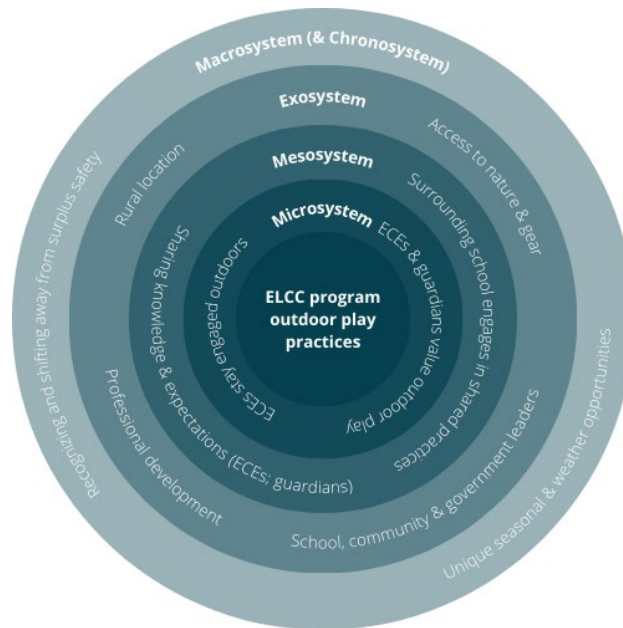


Figure 5. Adapted visual of Bronfenbrenner's ecological systems model with factors that support outdoor play implementation based on the findings of this study.

Research indicates that engaging multiple systems and stakeholders results in more effective implementation of change for both school and ELCC settings (Messing et al., 2019). The findings of this study further supports that notion and provides a descriptive case study of how this ELCC program overcame barriers to outdoor play through involvement of various subsystems and stakeholders (e.g., parents, ECES, school staff, community organizations, government).

At the microsystem level, this research identified that both the children's guardians and ECES appear to value outdoor play. Although there is evidence that guardians and ECES typically value outdoor play (MacQuarrie et al., 2022; McFarland & Laird, 2018; Spencer et al., 2019, 2021), research shows that guardians may still be hesitant due to perceived school readiness pressures (Kane, 2016; Lin & Yawkey, 2013; O'Gorman & Ailwood, 2012) and safety concerns (Lee et al., 2021; MacQuarrie et al., 2022; Spencer et al., 2019, 2021). These pressures and concerns may be reduced at this site due to ECES' communication with guardians (mesosystem).

The results further demonstrate that the ECES engage with the children outdoors, rather than resort to a supervisory-role due to safety concerns (Bundy et al., 2009; McClintic & Petty, 2015; Spencer et al., 2019, 2021). The ECES' ability to remain engaged and promote risky play may be attributed to prioritizing communication with the children (e.g., outdoor play expectations, guidelines), ECES' communication with guardians (mesosystem), leadership (exosystem) and the professional development (PD) opportunity (exosystem).

Mesosystem influencing factors brought up by participants included communication and the integration of the ELCC program with the rest of the school. ELCC participants indicated communication between the ECES and guardians about outdoor play has maintained guardians' support and comfort with their outdoor play practices, confirming previous research that shows ECE-guardian communication improves guardians' support for outdoor play (Jayasuriya et al., 2016), risky play (Spencer et al., 2021) and play-based learning as a whole (Breathnach et al., 2016). Additionally, ECES sharing their outdoor play knowledge and experience with each other was integral to a smooth transition to outdoor play. This is aligned with how ECES in Spencer et al.'s (2021) study shared that communication around risky play expectations and comfort levels was required whenever there were staff changes. Finally, participants indicated the ELCC program's outdoor play is supported by the school staff. This may have allowed the ECES to feel at ease to implement their desired outdoor play practices.

This research shows there are policies, regulations, external supports and environmental factors

(exosystem) influencing the children's outdoor play. This ELCC program is situated within a school and near community organizations that are both promoting and engaging in similar outdoor play practices. The school's principal and physical education teacher also served as leaders by increasing access to outdoor play space and resources. This is notable as outdoor play culture as demonstrated at this ELCC program does ultimately influence outdoor play progress (Lawson Foundation, 2019) and school-level leadership tends to have a large influence on school improvement efforts (Gurr & Drysdale, 2018). These ECEs also had access to outdoor play PD, which had a positive influence on the ECEs' knowledge, value, and implementation of outdoor play (microsystem) as well as their ability to communicate about outdoor play with others (mesosystem). The importance of PD to support communication around outdoor play and risky play with others is consistent with previous literature (Spencer et al., 2021).

Considering environmental factors to this ELCC program's success with outdoor play, a few participants referenced the rural aspect of this community as a benefit. These participants described that living in a rural community meant the children had more opportunities for risky play outdoors, which is supported by current literature (Lee et al., 2021; MacQuarrie et al., 2022). Participants' perceptions included that being in a rural community also meant the children's parents would likely have grown up playing outdoors and would therefore have more positive attitudes and support for outdoor play. Another benefit of being in a rural location was the ELCC program's access to plenty of natural outdoor play space. Both ELCC and school participants recognized that this type of outdoor play space is not available at all ELCC programs, and that outdoor play would be challenging without it (Lee et al., 2021; Sandseter et al., 2020).

At the macrosystem (and chronosystem) level, participants discussed changing societal beliefs/ideologies and approaches to the different seasons and weather that have been influencing children's outdoor play. Participants shared their personal perceptions that children are not provided the freedom to experience the same play opportunities they themselves had experienced growing up (Little, 2015; Spencer et al., 2021) for reasons such as adults' increasing pre-occupation with injury-prevention and the assumption that risky play ultimately leads to injury. These comments by participants support the surplus safety framework (Bundy et al., 2009; Little et al., 2012; Sandseter & Sando, 2016) and the perceived litigious culture in Canada (Brussoni et al., 2015). ELCC participants also indicated that some of the children began the program lacking basic play skills and being hesitant about the outdoors, which they attributed to less time outdoors and playing with other children at home due to increased technology use. Current literature would support this concern (ParticipACTION, 2020; Slutsky & DeShetler, 2017), but also offer that this reported hesitancy outdoors could instead or also be due to children requiring time to adjust to loose parts (Spencer et al., 2019). Finally, cold seasons and weather conditions are also commonly cited barriers for outdoor play (Lee et al., 2021; MacQuarrie et al., 2022; Sandseter et al., 2020). Although ELCC participants did note they spend more time outdoors during warmer seasons, they still overcame much of this barrier through their value of engaging in the unique play opportunities that come with changing seasons and weather (e.g., finding salamanders, puddle jumping) and having the right gear (e.g., rain suits).

Strengths and Limitations

Although much research already exists on barriers to outdoor play, this study addresses a gap in research by identifying what factors may be critical in overcoming such barriers. By exploring these factors using Bronfenbrenner's ecological systems model, this study supports and promotes the importance of a multi-component approach to overcoming barriers to outdoor play implementation in an ELCC context. This research provides perspective to multiple realities relevant to this ELCC program through a range of data collection. The interaction between participants in the focus groups led to unique and valuable data, which could have been further increased with a larger number of recruited participants per focus group. Future research should also include input from the children and their guardians, as well as teachers from other grades who may hold a different perspective on outdoor play. Additionally, a multi-case research design could allow for an exploration of how outdoor play is being implemented at various ELCC programs across Nova Scotia, providing robust cross-case information (Yin, 2018).

Conclusion

This research provides an understanding of what outdoor play implementation looks like at one ELCC program in Nova Scotia, and the factors that have influenced current outdoor play practices. The children are provided outdoor play opportunities that enhance their overall development through experiences that encourage them to take risks and be creative, educate them about the natural world and foster the development of new skills. Participants identified several factors that translate to actionable items for both ECEs and policymakers that contribute to the delivery of successful outdoor play, and using Bronfenbrenner's ecological systems model, this research provides insight as to how these factors interact across subsystems. For example, an actionable item for ECEs would be to focus on sharing outdoor play knowledge and expectations with each other, guardians and children. However, this is more likely to be possible and have a positive impact if the ECEs have the support of the surrounding school. Policymakers must ensure outdoor play policies, leadership and professional development extend to the surrounding school and broader community, not just the ELCC program, in order for ECEs to have the appropriate climate and opportunity to share their outdoor play knowledge and expectations. As such, supporting outdoor play in ELCC settings should not be narrowly targeted. Although perhaps a common strategy when trying to support outdoor play, focusing solely on the ELCC environment (e.g., equipment, outdoor space) and/or ECE practices (e.g., sharing outdoor play knowledge and expectations) involves only one to two subsystems and one stakeholder group. Future efforts should ideally extend to also include the broader community, addressing multiple subsystems and stakeholders that influence ELCC programs for more effective impact. Considering the influence of the surrounding school and community on this ELCC program's outdoor play practices, policymakers supporting ELCC programs should consider exploring ECE, school and interdepartmental collaboration when addressing outdoor play challenges.

Declarations

Authors' Declarations

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Playing outdoors: What do children do, where and with whom?

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Abstract: There is an increasing interest in outdoor play, both in research and in policy. However, in (re)designing, planning and managing the public space, there is still limited attention for children's actual playing behavior. A lot of urban planning decisions are based on adults' perceptions of children's playing behavior and focus on formal play spaces, rather than on their actual behavior and on other, more informal, play places children might also use. Therefore, the purpose of this study was to explore where children play outdoors, with whom and what kind of activities they are performing there. Between February 2022 and March 2023 1,127 – mainly primary school - children were systematically observed after school in three post-war residential districts in three cities in The Netherlands. The majority of the children were between 5-8 years old (50%). Above the age of 8 years, substantially more boys (70%) than girls (30%) were playing outdoors. Most of the children (79%) were playing with other children, 8% were playing alone. The playground was the most popular play space (36% of the observed children were playing there), followed by public sports fields (14%) and sidewalks (13%). With respect to the type of activities, relaxing (21%) was the most common activity, followed by ball sports (14%), climbing or hanging (11%), swinging (10%), and riding on wheels (9%). This study showed differences in play behavior by gender, age, district and play space and stress the need for a broader definition of play, and for focusing on formal as well as informal play spaces.

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Introduction

In 1978 Colin Ward wrote the book 'The Child in the City'. This book still has its value today. In his book, Ward examines the everyday spaces of children's lives. Through play, appropriation and imagination, children can counter adult-based intentions and interpretations of the built environment, negotiate and re-articulate the various environments they inhabit. The public space gives children freedom of choice: they can follow their own interests, set their own goals and create their own play environment (location, play form, playmates). At the same time the public space can be seen as a laboratory where children learn in multiple ways, acquire social skills and develop skills such as wayfinding. This has been confirmed in more recent research (see for an overview De Vries & Van Veenendaal, 2012; Helleman, 2018; Lester & Russell, 2008). Outdoor play has an important influence on for example the personal development of children: while playing, they can learn different motor, social, and cognitive skills (Cole-Hamilton et al., 2002). In addition, outdoor play has a positive effect on their health (Gray et al., 2015). This is partly because children are much more active outside than inside and because they get into contact with sunlight and nature. Research in fifteen European countries has also shown the positive effect of outdoor play on mental health: children who play outside every day feel happier than children who play outside less often (Gromada et al., 2020). Last but not least, playing outside is an important recreational activity. Although

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outdoor play can be educational and improve certain skills, it is also - or even more important - fun to do.

Where and Who

Children play in different places: in private environments (indoors, gardens), in organized environments (school, childcare, sports clubs) and in public environments (in freely accessible spaces). This article focuses on the latter category and specifically on outdoor play after school in their own living environment. We focus on child-led play, play that is initiated by children themselves with an open, unpredictable, and unstructured character (Gray, 2013; Zosh et al., 2018). This distinguishes it from guided activities and from, for example, training at a sports club where a group of children tries to improve a number of controlled movement skills every week at set times under the supervision of an adult.

When playing outside, children look - within their possibilities and wishes at that moment - for a place where they can have the most fun. For this, they can use many diverse types of play spaces. On the one hand, there are formal play areas, such as a playground, schoolyard or sports field. These are often enclosed areas that are specifically designed for certain target groups and that often also function as a meeting place. On the other hand, there are informal play areas, such as the sidewalk, shrubs, bushes, lawns and residual spaces. These unprescribed spaces are not designed as such, but are made their own by the children. Also referred to as 'shaped affordances', play areas created by children themselves (Kyttä, 2002) and identified by many children of different ages as important play areas (Brussoni et al., 2020; De Vries et al., 2010; Meire, 2020).

The extent to which children play freely in their own living environment depends on many factors, the most studied are gender and age. In general girls play outside less than boys, as research in Belgium (Meire, 2020) and the United States (Larson et al., 2011) shows. Age also plays a role in outdoor play behavior. In the years before primary school (0-4 years), parents are still physically present when the child plays outside to play with them or to supervise. In general, from primary school, children are slowly given more space to play outside alone. Initially in a very small area near or around the home and from about eight years of age, children are often allowed to play unaccompanied in their own living environment (Bouwmeester, 2006; O'Brien et al., 2000; Shaw et al., 2015). At that age most of the time they are not allowed to go further into (or leave) their district, which means that they are most dependent on their immediate living environment to play outside.

Research on Outdoor Play

In line with the United Nations Convention on the Rights of the Child (United Nations, 1989) and the reported benefits of outdoor play, in the last few decades, more attention is being paid to outdoor play in both policy and research. However, there is still much to gain. Most of the time cities are not planned and managed with children in mind (Churchman, 2003). Many studies on outdoor play and child-friendly cities are still based on what parents report in questionnaires about their children's outdoor play behavior. Children are also seldomly involved in the (re)design of public spaces and playgrounds (Cele & Van der Burgt, 2015; Corkery & Bishop, 2020; Skelton, 2022). And when children are involved in policy-making or research it is often difficult for children to share their experiences because they do not always have all the necessary communication skills, especially when traditional participation methods are used such as questionnaires and interviews (Derr et al., 2018; Young & Barrett, 2001). In addition, children are often asked about their behavior from the past. The question is whether children can remember this well (*recall bias*) and whether they do not give a selective answer by naming special occasions and not their regular and actual behavior (*selection bias*). These problems can be circumvented by using observations. However, most observational studies have focused on specific formal play spaces such as schoolyards or playgrounds, rather than on the entire neighbourhood, including several formal and informal play spaces (Helleman & De Visscher, 2022; Loebach et al., 2020). Informal play spaces, such as sidewalks and courtyards, or areas that are located 'in-between' seldomly find their way into research, although they can be very meaningful for children during play (Luchs, 2017). In other words, much research, policies and design in the field of outdoor play can still be characterized as adult-centric and place-led, rather than child-centric and child-led.

As a result, there is still little knowledge about the actual play behavior of children in their own neighbourhood or district. Therefore, the purpose of this study was to gain insight into children's outdoor play, defined here as: playing, exploring, and discovering by children in the outdoor environment in their free time. With this research the following questions will be answered: where do children play in residential districts? With whom do children play? What kind of activities do they employ when they are outside? And what differences are there in outdoor play behavior by gender and age? We expect informal play spaces to be as important as formal play spaces. In addition, in line with previous research we expect boys to play more outdoors than girls. We also expect to see differences in the type of activities they are employing.

Method

To increase our understanding of children's play behavior, three districts in the Netherlands were each visited four times in the afternoon between February 2022 and March 2023, to observe children playing in (semi-)public spaces in the open air. Playing in organized and protected environments (school, childcare, sports clubs) was not included in the observations. Neither was playing in backyards (private) or indoor malls (interior).

A combination of observation tools have been used: (1) *counting*: how many and which children use a certain place (headcount); (2) *time sampling*: determine which play activity occurs on a particular short period of behavior; and (3) *mapping*: document where children play on a plan of the neighborhood (also known as behavioral mapping). These methods have been used in the past by urban sociologists, environmental psychologists, design researchers, and public life study pioneers, such as Kevin Lynch (1977), Roger Hart (1979), William H. Whyte (1980), and Jan Gehl (Gehl & Svarre, 2013).

We choose for: (1) direct observation on the spot; (2) non-participating, inconspicuously and concealed observation from an appropriate distance (a few meters); and (3) structured observation using predefined observation categories (Eelderink, 2021). The distinctive observation categories for the potential play locations and play activities were based on previous (inter)national research, pilot-tested for clarity and reliability and adjusted before the start of the data collection.

Study Areas

The observations of children's play behavior were carried out in three districts in the Netherlands: Kolenkitbuurt / Overtoomse Veld (Amsterdam), Morgenstond (The Hague) and Tanthof (Delft) (Table 1). These districts have been selected on the basis of their similarities as postwar residential districts outside the city center, but also on their differences in layout and density in order to analyze whether the built environment plays a significant role in outdoor play behavior. In addition, the cities (Amsterdam, The Hague, and Delft) were chosen because they all have to deal with a densification task in order to meet the increasing demand for housing.

Kolenkitbuurt / Overtoomse Veld (Amsterdam) – This early post-war district is in the western part of Amsterdam, between the ring road and the embankment of the subway. In the 1950s and 1960s housing associations built many four-storey apartment blocks with communal outdoor spaces. From the moment of completion, these were child-rich parts of the city. From the 1980s, the composition of the population changed rapidly due to the arrival of residents with a migration background. The district came to symbolize the increasing social problems in the post-war city. This was one of the reasons for radically renewing the district by means of demolition-new construction and renovation. In the past twenty years, the district has become highly densified with both apartments and single-family homes. The increase in owner-occupied homes and more expensive rental homes has created a more mixed group of residents by social class. Nowadays, it is a diverse area with many different cultures. Approximately 20,000 inhabitants live in the district, 18% of whom are between zero and fifteen years old.

Morgenstond (The Hague) - This district was built in the fifties of the last century and now has approximately 20,300 inhabitants, 19% of whom are between zero and fifteen years old. The district is characterized by a grid of motorized traffic roads. Along these roads mainly elongated, four-story

apartment blocks of housing associations can be found. Between these building blocks, there are communal outdoor spaces. Over time, the area has changed considerably, both in terms of housing stock and population composition. Nowadays, it is a diverse neighborhood with many different cultures and lifestyles. There is a large stock of cheaper homes occupied by people with a modest income. In recent years, several single-family homes have been added to the housing stock, which is mainly occupied by middle-class families. These are owner-occupied homes, with private gardens and shielded parking spaces.

Tanthof (Delft) - With approximately 14,000 inhabitants and 7,000 homes, the Tanthof district is one of the largest districts in the city of Delft. It has the largest share of single-family homes and the lowest percentage of flats. One part mainly consists of houses from the late 1970s and early 1980s with gabled roofs, a winding street pattern, car-free streets and the so-called 'woonerven' (living streets). Another part of the district has a more rectilinear street pattern with more housing with flat roofs from the late eighties. It has a suburban appearance due to the many green areas, the ditches, the terraced houses/low-rise buildings, the front and back gardens, and the cars parked near the front door. Residents - mainly of Dutch descent - mainly live there for the peace, space and greenery. Due to the aging population, the number of children living in the neighborhood has decreased over the years: 13% of all residents are between zero and fifteen years old. However, they are often joined by children who stay with their grandparents after school until they are picked up by their parents who live elsewhere in the city.

Table 1. A number of demographic and built environment characteristics of the three districts studied

	Kolenkitbuurt / Overtoomse Veld (Amsterdam)	Morgenstond (The Hague)	Tanthof (Delft)
Inhabitants	20,070	20,300	14,000
0-15 years old	18%	19%	13%
Households with children	31%	31%	29%
Surface (in hectare)	125 ha.	169 ha.	233 ha.
Population density	160 inhabitants/ha	120 inhabitants/ha	60 inhabitants/ha
Building period	1950s-1960s / 2000-2022	1980s / 1990s	1950s / 1994-2017
Single-family house	5%	11%	58%
Multi-family house	95%	89%	42%

Source: Centraal Bureau voor de Statistiek, 2022

Fieldwork Protocol

Each district was observed systematically. Due to its size, each district was divided into multiple neighborhoods that are more or less equal in terms of distance. Based on an initial exploration, a fixed walking route that takes about an hour and a half through the neighborhood was determined and drawn on a map. This fixed route prevents certain places from being visited more often than others, which could create a skewed image. The observer varied the starting point and the walking direction (left or right). In this way, places on the route are visited at different times of the afternoon. The route included all possible streets, (back) trails, sidewalks, squares, parks, schoolyards and play spaces. Each route was walked in good weather conditions four times on four different days, between 3:30 pm and 6:00 pm. Of the 72 observation rounds, ten were carried out over the weekend.

For this research, we used the GPS app 'ArcGIS Survey123', a customizable form-centric data-gathering application in which an observant can record the location of a playing child and fill in a simple questionnaire about the child and its play behavior. When the observer encountered a child, he or she stood at a suitable distance without being noticed and recorded the exact location using the GPS tool. Then the activities of the child were observed for a short period of time (approximately two minutes) and then one, two or three of the predefined and distinctive categories (Table 6) were registered in the app. Next, the observant also registered one of the predefined types of play location (Table 4), with whom the child was playing (alone or with other children or adults), and the absence or presence of adults (Table 3). In addition, the observers estimated the child's gender and age category (Table 2). Although a larger age range of

children was observed from zero to 18 years old, the main focus was on primary school children between the ages of four and twelve.

The fieldwork was mainly carried out by four researchers who observed individually supplemented with thirty students of the study Spatial Development (The Hague University of Applied Sciences) who worked in groups of two or three. By working with groups the reliability increased and any errors are minimized. A manual has been prepared for the observers. They also received extensive oral instruction in order to reduce the chance of interpretation differences.

Data Analysis

Observational data was exported from ArcGIS Online into both Microsoft Excel (for Microsoft 360) and IBM SPSS Statistics 28 for quantitative analysis. Excel was used to produce crosstabs comparing all categorical variables. In SPSS relationships between categorical variables and demographic groups (gender and age) were calculated using Pearson chi-square tests of independence and these figures were further interpreted using Cramer's V (asymmetrical matrices) to provide insights into the strength of the potential relationships.

To determine whether certain places in the neighborhood were used more or less by the children, the GPS data was projected on a map in ArcGIS, creating for example district heatmaps that show where children go. By combining it with a map showing all formal play spaces, conclusions can be drawn about the use of different play areas.

Results

Who is Playing Outdoors?

During the walks through the three districts, 1,127 children have been observed of which 33% were in Amsterdam, 38% in The Hague, and 29% in Delft. In the rest of this manuscript, the figures will only be specified per district when there are clear differences.

The vast majority of the 1,127 children were between five and eight years old (Table 2). We hardly encountered children aged thirteen or older at the times we observed. In Amsterdam there were slightly more children between five and eight years old and in Delft we saw slightly more children between nine and twelve years old. In total, we encountered more boys (59%) than girls (41%). If we combine these findings and look at both gender and age, an interesting picture emerges. In the younger age groups - from zero to eight years - the ratio between boys and girls is about equal. However, large differences arise with age. Girls aged nine or older seem to be playing less in public spaces than their male peers. The even distribution at a young age shifts to dominance of boys in the older age groups (Table 2). We found this distinction in all three districts. However, in the suburban Tanthof (Delft) we encountered relatively more girls between the ages of nine and twelve (49%) than in the urban district of Amsterdam (19%).

Table 2. Who plays outside according to gender and age (in percentages and numbers)?

	Girls % (n)	Boys % (n)	Total % (n)
0-4 years old	59 (106)	41 (74)	100 (180)
5-8 years old	42 (237)	58 (327)	100 (564)
9-12 years old	29 (90)	71 (216)	100 (306)
13 years or older	35 (27)	65 (50)	100 (77)
Total	41 (460)	59 (667)	100 (1,127)

With Whom are Children Playing Outdoors?

The children that were observed almost never played alone. In 79% of the cases, children were playing together with one or more children. 5% played with an adult and 7% played with an adult and other children. Of the children who played together, this was mainly with one (28%), two (21%) or three (13%) children. Only 8% played alone, girls slightly more often than boys.

Although a small percentage of children played with an adult, in 41% of the cases, an adult was physically nearby. This differs by age and gender (Table 3). A Cramer's V test indicated a moderate association between age and supervision (Cramer's V = 0.458; $p < 0.001$). Fewer adults were present with the older children than with the youngest. In addition, there were significant but low associations between gender and supervision (Cramer's V = 0.153; $p < 0.001$). Girls are more often supervised by an adult than boys, in all age categories. We saw less adults supervising kids in Delft (72% without adults) than in Amsterdam (52%) and The Hague (56%), especially in the age group five to twelve years.

Table 3. Supervision by an adult by gender and age (in percentages and numbers)

Adult present?	Girls % (n)		Boys % (n)		Total % (n)	
	Yes	No	Yes	No	Yes	No
0-4 years old	84 (89)	16 (17)	73 (54)	27 (20)	79 (143)	21 (37)
5-8 years old	50 (119)	50 (118)	44 (144)	56 (183)	47 (263)	53 (301)
9-12 years old	19 (17)	81 (73)	14 (31)	86 (158)	16 (48)	84 (258)
13 years or older	15 (4)	85 (23)	2 (1)	86 (49)	6 (5)	94 (72)
Total	52 (229)	48 (231)	38 (230)	62 (437)	41 (459)	59 (668)

Where are Children Playing Outdoors?

The vast majority of children we encountered played at a playground (Table 4). Followed by the public sports fields and sidewalk. Although the formal play spaces - that are specifically designed for children - were slightly more popular (57%), a high percentage of children played in informal play spaces, places that they themselves convert into a play space (42%). This concerns for example: sidewalks, lawns, the street, and neighborhood squares.

Table 4. What type of play spaces do children play in, according to gender and age? (in percentages and numbers)

		Total % (n)	Girls % (n)	Boys % (n)	0-4 years old % (n)	5-8 years old % (n)	9-12 years old % (n)	13 years or older % (n)
Formal play spaces (57%)	Playground	36 (407)	52 (213)	48 (194)	24 (97)	50 (203)	20 (81)	6 (26)
	Public sports field	14 (159)	25 (39)	75 (120)	1 (1)	45 (71)	43 (69)	11 (18)
	Schoolyard	6 (69)	48 (33)	52 (36)	13 (9)	71 (49)	13 (9)	3 (2)
	Skatepark	1 (5)	0 (0)	100 (5)	0 (0)	100 (5)	0 (0)	0 (0)
Informal play spaces (42%)	Sidewalk	13 (145)	41 (59)	59 (86)	20 (29)	50 (72)	24 (35)	6 (9)
	Lawn/grass space	7 (79)	28 (22)	72 (57)	14 (11)	49 (39)	29 (23)	8 (6)
	Street	5 (58)	33 (19)	67 (39)	12 (7)	26 (15)	59 (34)	3 (2)
	Neighborhood square	5 (53)	47 (25)	53 (28)	25 (13)	42 (22)	23 (12)	11 (6)
	Courtyard	4 (46)	24 (11)	76 (35)	9 (4)	61 (28)	30 (14)	0 (0)
	Parc	4 (41)	34 (14)	66 (27)	5 (2)	61 (25)	27 (11)	7 (3)
	Bushes, shrubs	2 (22)	32 (7)	68 (8)	5 (1)	59 (13)	32 (7)	5 (1)
	Front yard	1 (14)	50 (7)	50 (7)	21 (3)	50 (7)	29 (4)	0 (0)
	Ditch, canal (water)	1 (11)	36 (4)	64 (7)	0 (0)	55 (6)	45 (5)	0 (0)
Parking lot	1 (6)	67 (4)	33 (2)	17 (1)	17 (1)	33 (2)	33 (2)	
Other (1%)	Other	1 (12)	25 (3)	75 (9)	17 (2)	67 (8)	0 (0)	17 (2)
Total		100 (1,127)	41 (460)	59 (667)	16 (180)	50 (564)	27 (306)	7 (77)

There is a statistically significant - albeit weak - association between gender and play spaces (Cramer's V = 0.236; $p < 0.001$) and between age and play spaces (Cramer's V = 0.214; $p < 0.001$). At the schoolyards, playgrounds, and on the sidewalks we observed about as many girls as boys (Table 4). This cannot be said of the public sports fields and the grass spaces. Here boys were overrepresented in three-quarters of the cases. In this research sports fields are the smaller soccer and basketball courts in residential neighborhoods that are open to the public (not to be confused with larger sports club fields for members). Looking at age, half of the children in the playgrounds are five up to and including eight years old. And almost a quarter is between zero and four years old. This is relatively high compared to the other venues. On the public sports fields and streets we encountered relatively more older children.

Looking at which place is most popular by gender (Table 5), then it turns out that most girls play in a playground (46%). Playgrounds were also the most popular place for boys, but less clearly (29%). Boys were also often found on public sports fields (18%). The sidewalk was used in 13% of the cases by both genders. We also see differences by age. Half of the children from zero to four years old played at the playground and 16% on the sidewalk. In the age category of five to eight years, only one-third play in the playground and 13% on the sidewalk. And from nine to twelve years, this is 26% and 11%, respectively. At this phase, the public sports field becomes more important than at a younger age.

Table 5. The most visited play places by gender and age (in percentages and numbers)

	Total % (n)	Girls % (n)	Boys % (n)	0-4 years old % (n)	5-8 years old % (n)	9-12 years old % (n)	13 years or older % (n)
Playground	36 (407)	46 (213)	29 (194)	54 (97)	36 (203)	26 (81)	34 (26)
Public sports field	14 (159)	8 (39)	18 (120)	1 (1)	13 (71)	23 (69)	23 (18)
Schoolyard	6 (69)	7 (33)	5 (36)	5 (9)	9 (49)	3 (9)	3 (2)
Sidewalk	13 (145)	13 (59)	13 (86)	16 (29)	13 (72)	11 (35)	12 (9)
Lawn/grass space	7 (79)	5 (22)	9 (57)	6 (11)	7 (39)	8 (23)	8 (6)
Street	5 (58)	4 (19)	6 (39)	4 (7)	3 (15)	11 (34)	3 (2)
Other categories	19 (210)	17 (75)	20 (135)	14 (26)	19 (115)	18 (55)	17 (14)
Total	100 (1,127)	100 (460)	100 (667)	100 (180)	100 (564)	100 (306)	100 (77)

When we compare the three districts, we see some differences. In Kolenkitbuurt/Overtoomse Veld, Amsterdam the children play more spread out over the different types of play spaces, with also the most children in playgrounds (28%), but less than in the other districts. An above-average number of children were playing in public sports fields (19%) and schoolyards (11%) in Amsterdam. Especially the larger play spaces near schools, consisting of playgrounds and sports fields, are used by many children. In Morgenstond, The Hague we encountered most children at playgrounds (45%). The sidewalk is relatively often used as a play space (16%). Few children were playing on a public sports field (8%) in Morgenstond. Particularly striking in Tanthof, Delft is that relatively many children play on the street (9%). Here we also observed relatively many children on sports fields (17%).

Although children often find themselves in playgrounds, not all playgrounds are equally popular. By combining the GPS location of where children played and the locations of various formal playgrounds, we see, that one location is visited more often than the other. No children were observed for example on the playgrounds in the northeast of Morgenstond, The Hague, while three other playgrounds were used intensively (figure 1). We also saw many children - often with their parents - in a neighborhood park with different kinds of play spaces. This park is in the middle of the district and near a shopping center. In Tanthof, Delft and Kolenkitbuurt/Overtoomse Veld, Amsterdam we saw that a lot of children are playing in and around the schoolyards, in general places with different play elements and sufficient other children to play with. At other places we did not encounter any children, for example on a sports field in Tanthof at the edge of the district which you only can reach if you cross a busy road.

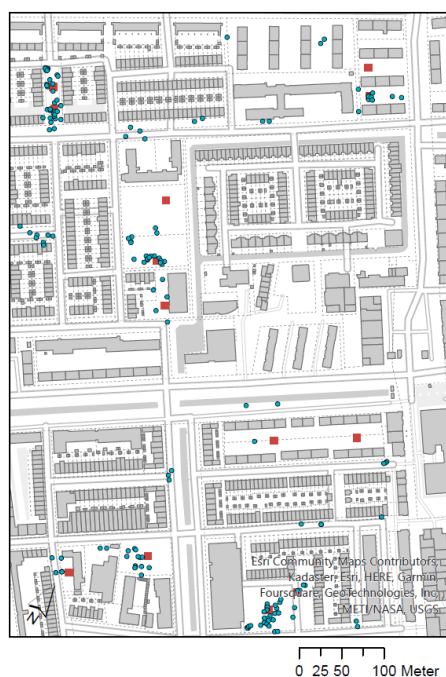


Figure 1. Formal play spaces (red square) and places where children play (blue dots) in a part of Morgenstond - The Hague (created using ArcGIS® software by Esri, ArcGIS® and ArcMap™, sources: Esri, DeLorme, HERE, MapmyIndia)

What are Children Doing While Playing Outdoors?

In most cases, the children were 'relaxing' (Table 6). So instead of actively playing, they were resting, socializing, hanging out, sitting, watching or talking to other children. For example, children sitting in a swing basket without swinging but just talking or observing, children who are resting after an intense game, children who are left out and watching from a distance, children who discuss what they are going to do, teenagers exchanging stories, watching their phone, and listening to music, etcetera. This type of activity was increasingly observed with age, but was as common among girls as among boys. In absolute terms, this behavior was most commonly encountered in the playgrounds and on the sidewalk. In almost all cases (92%), children were not relaxing alone, but together with other children.

In other types of activities, there were more differences by gender. Boys were mainly involved in ball sports (19%), such as soccer and basketball and in ball games (11%), such as curb ball, dodgeball, and throwing things. Girls, on the other hand, were mainly involved in swinging or hobbling (14%) on a swing, ropes, or spring-rider. Next 14% of the girls were climbing or hanging on for example a tumble bar, ropeway, climbing frame, fence or tree. Swinging (19%), climbing (15%) and riding (14%) with a stunt scooter, bike, or roller skates were most popular among the youngest age group, from zero to four years old. From nine to twelve years old, children were mainly relaxing (29%) and playing ball sports (23%).

The predetermined activities of building, role play, hiding, and jumping were seldomly recorded. A number of play activities (6%) could not be assigned to the predetermined activities and were included in the category 'other' (not included in Table 6). This concerned children who were playing for example with toys and other attributes, such as toy cars, bubble blowers, frisbees, water guns and bottles ('bottle flip' game).

Table 6. Activities of children (in percentages and numbers)

Activity	Description	Total % (n)	Girls % (n)	Boys % (n)
Relaxing	hanging around, sitting, watching, talking, socializing, etc.	21 (359)	20 (143)	22 (216)
Ball sport	soccer, hockey, tennis, basketball, table tennis	14 (231)	6 (40)	19 (191)
Climbing, hanging	tumble bar, ropeway, climbing frame, net, tree, fence, etc.	11 (183)	14 (101)	8 (82)
Swinging	swing, rope, spring-rider	10 (164)	14 (101)	6 (63)

Playing outdoors: what do children...

Riding, on wheels	skateboard, stunt scooter, roller skating, cycling	9 (148)	10 (69)	8 (79)
Running	from A to B, up and down hill, tag, etc.	8 (140)	9 (62)	8 (78)
Ball game	curb ball, dodgeball, fiddling, throwing	8 (140)	4 (28)	11 (112)
Balancing	balance beam, wobbly bridge, seesaw, hula hoops, gymnastics	5 (92)	6 (45)	5 (47)
Investigating	play panels, animals, plants, flowers, etc.	4 (66)	4 (26)	4 (40)
Sliding, rolling	slide, sliding pole, hang glider, roll down hill, etc.	3 (54)	5 (33)	2 (21)
Building, creating	building a hut/tent, playing sand, chalking, water pump, etc.	2 (42)	3 (21)	2 (21)
Role play	father-mother, bakery, shop, 'fight' with water pistols	2 (42)	3 (23)	2 (19)
Jumping	trampoline, hopscotch, jump rope	1 (17)	1 (6)	1 (11)
Hiding	hide and seek, hide in hut/tree house/bushes/playground	1 (15)	1 (9)	1 (6)
Total		100 (1,693)	100 (707)	100 (986)

Looking at the activities at specific play spaces, we see that one-fifth of the children at the playgrounds were climbing or hanging and 19% were swinging or hobbling. On the public sports fields, children were logically mainly engaged in ball sports (55%) and ball games (23%). Relaxing was mainly observed on the sidewalk (32%). In addition, in 27% of the cases, children were riding on the sidewalk or playing a ball game (12%).

Conclusion and Discussion

By systematically observing the outdoor play behavior of 1,127 children between 0-18 years after school, we increased our insight in children's actual outdoor play behavior and found out where they played, with whom and what they were doing in three post-war residential districts in The Netherlands. We found differences in play behavior by age, gender, district and play space. Based on our results, we propose that both future research and policy should be based on a broader definition of play and play spaces. We also zoom in a bit more on the gender differences we found and the differences between the districts.

Broader Approach of Play

One of the most important conclusions of this research is that many children who were outside were not actively engaged in play activities all the time. One-fifth of the children we observed were relaxing, resting, chilling, talking, or watching other children. These activities are also known as 'restorative play', based on nature's restorative qualities that help to relax and cope with everyday stress (Kaplan, 1995; Wesselius, 2020). Simply being outdoors can have a similar effect. Although the term 'restorative play' may suggest otherwise, it is not only about restoration after a more intensive period of play or a phase between play activities ('on-the-way'). In our observations it was also about watching other children to learn things ('copycat'), watching another child perform preparatory work, such as hanging a rope to jump rope later ('prelude') and exchanging experiences with each other ('socializing'). Most of the time it was just about being outside with friends sitting and talking before starting a new activity (or not). This is in line with previous research among children aged between eight and nine years old in Scotland showing that 'hanging about' with friends, 'having a laugh', and gossiping is a popular activity (Thomson & Philo, 2004). Other research shows that children go to places that provide opportunities to clear their mind, pour out troubles, relief from daily hassles, relax, and feel free (Korpela et al., 2002). In such a case, the play space acts more as a place to meet and socialize than as a space to play. This therefore requires play equipment or other elements that also facilitate these sedentary activities. Attributes, such as a bench, basket swing or hammock, where you can sit together face to face, hang out, and chat.

The results of this study also show that play is a broad concept and that children do many different things when they are outside. Communication, negotiation and observing activities might not always be considered as play although these acts are of great importance in children's development, in construction, exploration and role-playing (Luchs, 2017). Even if an activity cannot be linked to a certain type of play behavior, it still matters for children as part of children's development and of being outdoors. Outdoor

play can also be purposeless. Or as Thomson and Philo (2004, p.125) point out: "The word 'play' seems to suggest something organized, stimulating, tangible and wholesome [...] We would reply, however, that young people are quite often not *doing*, they are just being, simply *existing*". A broader definition of play is therefore desirable, one that also takes these sedentary and restorative activities into account. The study and elaboration of Loebach and Cox (2020) is very useful in this respect. They have expanded the traditional division of types of play from among others Joe Frost (1992), Bob Hughes (1996), and Kenneth Rubin (2001) into nine primary types with 32 sub-types. 'Restorative play' is one of the primary types including resting, retreat, reading and onlooking as sub-types. Social conversation between children is part of the primary type 'expressive play' and a non-playful movement from one space to another ('transition') is seen as 'non-play'. The latter is doubtful. When we saw children walking in their neighborhood, it was often not a formal and straightforward movement from A to B as adults know it. In most cases, their translocation also contained play elements and was accompanied by special movements, surprising walking routes, exploration and social interaction.

Broader Approach of Play Spaces

Seeing 'transition' as 'no play' is probably also because play observations have long been focused primarily on smaller predefined target areas, the so-called formal play spaces. As mentioned before, the informal areas that are located 'in-between' have not been studied much, while they do form an important part of the living environment of children. This is also evident from this research, i.e. 42% of all children were in the so-called informal play spaces, such as the sidewalk, courtyard, neighbourhood square, lawn, and street. A similar observational study in Belgium showed that 34% of the children played in places with multiple functions (Meire, 2020). It confirms what Colin Ward (1978, p.180) has stated before: "Children play anywhere and everywhere".

That's why it is important to look beyond standard play areas in future research and policy when we talk about children's play environments. For this, the distinction of Rasmussen (2004) between 'places for children' and 'children's places' can be helpful. The first one are institutionalized places for children, specifically designed by adults and dedicated for children consisting of the home arena, schools and recreational institutions. The second are undefined places where children have attributed special meaning and identity to it by their own actions. The first one display adults' ideas about what children *should* do, and the second display children's own ideas about what they *want* to do. The playgrounds, schoolyards and public sports fields - where 57% of the children were playing - can be accounted to the first category. However, our results also stress the importance of 'children's places'. Although these informal spaces aren't designed as such, children make it their own play spaces. For example, by playing on the curb, by chalking on the sidewalk or playing in the bushes. They reconfigure the public space into children's places.

Based on previous research (Gill, 2021; Karsten & Felder, 2016; Luchs, 2017) there may be two main reasons for the popularity of these informal play spaces. First of all, playgrounds with fixed play equipment and defined functions are often perceived less interesting after a while due to the limited playing possibilities. Children therefore look for entertainment elsewhere. Secondly, the sidewalk and courtyards are the place where - especially young - children can play freely and unaccompanied because it is close to home where parents can easily supervise. This is a finding that is in line with our own observations. In Tanthof and Morgenstond children mainly played on the sidewalk around single-family homes and front gardens from which parents can easily keep an eye on their offspring.

Gender Differences

We saw a difference between boys and girls when it comes to playing outside. In general fewer girls play outside than boys (41% girls vs. 59% boys), but this differed per age group. Above nine years old, the difference between girls and boys increases (29% vs. 71%), while they were quite evenly distributed among 5-8 years old children. This is consistent with previous observational studies in the Netherlands (Helleman, 2021; Vermeulen, 2017) and Belgium (Meire, 2020). In addition, our research shows that girls are more often accompanied by an adult. Several reasons may play a role here. Over the years, there is a rising concern among parents about the safety of their children. Due to various incidents and media attention, concern

among parents about children's vulnerability to harassment, (sexual) assault, abduction and murder in public space increased (Valentine, 1996), although a research in five different European countries (Greece, Portugal, Estonia, Croatia and Norway) shows that this varies by country (Sandseter et al., 2020). The public space increasingly became a place against which children must be warned and protected (De Visscher, 2008). Besides these so-called 'stranger dangers' parents became also increasingly concerned that their children would come into contact with a rough and aggressively street culture that in some places was accompanied with underage drinking, drugs, vandalism and (petty) crime. In addition, due to the volume and speed of cars, there was already a fear of traffic accidents (Valentine, 1996). A review of several studies shows that those concerns are even more pronounced for girls than for boys (Boxberger & Reimers, 2019). Two studies in the United Kingdom showed however that the parents - with eight to eleven year old children - perceived sons and daughters to be equally vulnerable in public space (Brown et al., 2008; Valentine, 1996). Girls and younger children however report more fears for their personal safety in public space than boys and older children concerning 'stranger danger' or 'fear of traffic' (Matthews, 2003; Valentine, 1996). In addition, girls also indicate in various studies that they are also left out because of rejection, bullying, and competitive behavior (De Visscher, 2008; Karsten, 2003; Lloyd et al., 2008). The barrier to play outside is increased even further when boys are taunting and shaming the girls.

There also appear to be some differences in the type of outdoor play behavior between girls and boys. Girls make less use of sports fields, and are more often swinging, hobbling, climbing and hanging than boys. Other research also shows that boys are more likely to engage in sports and active games, while girls are more likely to play with, at, or inside playground equipment (Karsten, 2003; Reimers et al., 2018). So the question is whether the girls' wishes and preferences match with the formal play spaces in residential areas. Especially for older children, often skate parks and public sports fields are constructed. Research in England and Australia found that skateparks were almost used entirely by males (Walker & Clark, 2020). And the paved areas are generally more suitable for and used by boys whose behavior is more wide-ranging and who tend to engage more in sport-based physical activities (Dyment & O'Connell, 2013; Snow et al., 2019). This is also apparent from this study: three-quarters of the children on the public sports fields are boys. Different studies also show that girls are more likely to be sedentary (Hyndman & Chancellor, 2015; Reimers et al., 2018). This is not the case in this study: boys and girls were 'relaxing' just as often (22% vs. 20%).

District Differences

Looking at where children play, all three districts show an even distribution between formal (range of 56%-58%) and informal (42%-44%) play spaces. However, there are differences in the supply and meaning of informal areas between the three districts. This is caused by variations in lay-out and density of the built environment. In Tanthof we expected - because of the green layout - more children playing in and around the shrubs and bushes. This was not the case (only 4%). On the other hand, we did see an influence of the traffic infrastructure - with a lot of local traffic, dead-end streets, speed bumps and living streets - on children's play behavior, as we saw more children playing on the street (9%) in comparison with the other two districts.

Informal play spaces nearby single-family homes and apartment blocks are of importance in each district. But not all informal public areas are equally meaningful as informal play area. This depends for example on accessibility, safeness and attractiveness. For example, in Morgenstond, there are more long, wide through roads for motorized traffic. These kinds of traffic structures hinder the range of action of children, because generally children are not allowed to cross wide and busier roads alone (Skår & Krogh, 2009). Here too, we saw that especially the car-free streets, closed courtyards (with some play elements here and there), and wide sidewalks attract more children. In the more dense district of Kolenkitbuurt/Overtoomse Veld children also played on sidewalks around the apartment blocks, in the semi-public courtyards and on newly designed car-free streets. In this way, urban design has an influence on playing behavior. That is also the case for formal play spaces: supply creates demand. As noted before, we mainly saw children playing in places that have been designed for them: schoolyards, playgrounds and

public sport fields. The route from school to home was often an important indicator of where we found children. That also has to do with the relatively high building density in the three districts and the Dutch culture where a lot of primary school children walk or cycle to school because most of the routes are safe and schools are nearby.

Finally, it is good to mention that the demand and use of informal and formal play spaces are not only influenced by density, road structures and other physical environmental aspects, but also by the social environment. For example the occupancy rate of the homes, demographics, the upbringing of parents and the social class of households (Karsten & Felder, 2016; Korpela et al., 2002; Parent et al., 2021; Sandseter et al., 2020). We will focus more on these factors in our follow-up research when we talk to children and parents.

Strengths and Limitations

This study has some strengths and limitations. We used the GPS app 'ArcGIS Survey123' to investigate some fundamental questions of outdoor play. With the app we were able to register who was playing, with whom they were playing, what they were doing in what type of play space and link that information to the exact geo-location. Another strength of our study was that we observed children's play behavior in an entire district (a child-led study), rather than focusing on a limited number of specific play spaces (location-led).

This study also has some limitations that should be taken into account when interpreting the results. First of all, because of the target group, observations were conducted after school. It is possible that the age group 0-4 years is underrepresented because they have already played outside before that time. Likewise, older children may be more likely to play outdoors after dinner. Secondly, we only observed in good weather conditions. In general, children play outside more and longer in good weather than in bad weather. This can give a skewed picture, because children may play in other places and engage in other play activities in good than in bad weather conditions. Thirdly, to demarcate the research area, the administrative boundaries of the three districts were used. These administrative boundaries may not be relevant to children's play behavior. Fourth, when observing, no contact was made with the children due to the possible influence on play behavior (the observer effect). Therefore, the observers had to make an estimate of gender and age. Fifth, the observations took place at an appropriate distance, so that the conversations between children could by no means always be heard, while they can provide information about whether the kids are just talking or role-playing. And lastly, since we wanted to document the playing behavior in an entire district, the observations were based on a few minutes. A child sitting quietly on the sidewalk will be registered as such. However, a few minutes later, the child may be doing something else (chalking, running, etc.). So, the snapshot we made, might not always do justice to the diversity of play through time.

Implications

The results of this study show that we need to pay more attention to a number of aspects in outdoor play both in research and in policy.

For example, personal factors, such as age and gender need to be taken into account when planning, (re)designing and maintaining outdoor play spaces. At a young age, we see many parents accompanying their children. Sufficient benches for the parents with a view of the children playing are therefore important. Fortunately, with regard to gender, there is an increasing awareness that planning and public space are mostly dominated by men and boys and often built for the 'default male' citizen (Walker & Clark, 2020). The answer to this problem is not to create separate places for boys and girls (*divide*). The philosophy of 'gender mainstreaming' is based on the idea that we should design inclusive public spaces that meet everyone's needs and where everybody is feeling welcome (*mix-up*). For example, by making play spaces big enough to facilitate different kinds of play (Miedema, 2020). Play spaces in which the terrain with play attributes (swings, slides, climbing objects) should be as large as the area for ball games (Karsten, 2003). It

also helps to think less in large, mono-functional play areas. Smaller places at one play space prevent girls from becoming marginalized as happens in big open spaces. So, we recommend differentiating and creating more defined places in a play space with different play types and play activities for all generations and for people with different skills.

Furthermore, a dichotomy between boys and girls is somewhat precarious (Helleman, 2022). Due to differences in for example age, competence, culture, education, personality, and position in the family there can be great differences between girls (and between boys). In follow-up research, it would therefore be interesting to look more at differences between characters and personality traits than just gender and to investigate to what extent the wishes and needs of children with different character and personality traits are met in public space.

In addition, more attention should be paid to the child-friendliness of the built environment since it plays an important role in the (im)possibilities to play outside (Hart, 1979; Kytä, 2002; Helleman & De Visscher, 2022; Ward, 1978;). The way municipalities design, arrange and manage our cities has an important influence on whether there are enough public spaces and play areas for children. The focus is often on the formal play spaces. Our research showed that children not only play in these places that are specially designed for them. A car-free street, a wide sidewalk or a bush with shrubs is also important for children to play outdoors. In addition, the design of formal play spaces is often aimed at active play. Our research shows that chilling, sitting and talking to other children are equally important. Therefore, in research, a broader definition of play should be taken into account and in policy and practice more attention should be paid to places and attributes where children can sit together face to face, hang out, socialize and chat. At the same time, municipalities should pay more attention to the accessibility of play spaces (Helleman, 2018). One can design a wonderful play space, but when it is hard or unsafe to reach nobody will use it. In other words: to realize a play-friendly environment, the focus must be shifted from the formal play spaces to pluriform play spaces that can easily be reached by children of different ages and capacities.

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Outdoor play and learning practices from a comparative case study perspective

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Abstract: Outdoor play and learning (OPL) is emphasised differently across countries, and cultural aspects influence these practices. There are ongoing debates around outdoor learning in early years, and the communication of the value, effectiveness, and applicability of OPL across schools has encountered obstacles due to various factors. The diversity of implementations within different cultures is obvious, and there are even some variations within the same country in terms of practices and understanding of the philosophy of OPL. The current case study contributes to the gap in mapping OPL practices using a comparative approach in two types of case schools in three countries: England, Greece, and Türkiye. This study offers insights from both teachers' and head teachers' perspectives in addition to considering observation notes. Several themes emerged from the analysis, including 'components of schools' daily life outdoors, forest trips and excursions, from break time to their time, and the question of training'. In conclusion, school culture and the selected educational philosophy appear to have a more significant impact on OPL practices than environmental features alone. However, the findings indicate that schools lack a strategic and systematic approach to the deployment of OPL into the school philosophy. In terms of focusing more on the outdoors, personal values play a significant role, as does the support of stakeholders. The practical similarities and differences highlighted in this study can support the development of OPL practices and inform stakeholders in the early years to reconsider their contexts and potentially introduce transformative changes.

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Introduction

Outdoor play and learning (OPL) has been a prominent approach in education recently because outdoor environments are key to supporting children's holistic development (Engdahl et al., 2006). OPL is considered essential for providing children with opportunities to manage their learning and development according to their needs. Children can move forward with child-initiated learning opportunities outdoors (Flannigan & Dietze, 2018). This opportunity is important for children's learning because they do not merely learn about their environment from someone else (Dowdell et al., 2011); instead, they directly experience and engage with their environment themselves. Providing a rich learning environment for children is a key role of teachers (Dowdell et al., 2011). This approach ensures that children face no restrictions regarding observing and listening, allowing them to pursue their curiosity while also offering hands-on opportunities such as touching, smelling, and tasting (Jansson & Lerstrup, 2021). When children have opportunities for outdoor play, they find a chance to extend their social interactions within both structured and unstructured learning areas, and they also connect with nature (Gemmel et al., 2022). Such spaces encourage children to initiate interaction with adults about their surroundings, which might interest them, excite them, and prompt them to seek answers to their questions (Waters & Maynard, 2010). In this way, children have a chance to interact with nature, enabling them to understand better themselves and their peers (Ozturk & Ozer, 2022).

In previous research, teachers were aware of the increasing importance of nature in children's lives,

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so they started revising their approach to teaching outdoors as well as improving school gardens (Askerlund et al., 2022). For this, most teachers have some outdoor activities such as free play activities, inspection of nature, storytelling, and math with natural materials (Ozturk & Ozer, 2022). Innovative approaches in the field of OPL pay attention to place and time in the form of place-responsive pedagogy (Mannion et al., 2013) and slow pedagogy (Payne & Wattchow, 2009), which require teachers to be flexible and creative and can recognize differences in ecological and social domains, respond to place and its entities through the facilitation of pupils' first-hand experiences. Teachers are encouraged to foster meaningful learning by encouraging learners to derive significance from embodied, timeless, sensory-perceptual, relational, and place-based experiences. Including such experiences for children raises the possibility of having risky issues to be handled by teachers, although precautions have been taken to ensure a safe environment (Sandseter & Kennair, 2011). Thus, the importance of adults becomes distinct during the practice of outdoor activities, although the role of policies assigns the frame of teachers' practices. The importance of adults becomes distinct during the practice of outdoor activities, although the role of policies assigns the frame of teachers' practices.

Furthermore, outdoor learning in early years policy varies considerably (Asfeldt, 2020; Josephidou et al., 2021; Skarstein & Ugelstad, 2020), and the praxis points out the diversity and evolving nature of outdoor learning that seeks to respond to the needs of each society (Potter & Dymont, 2016). Potter and Dymont (2016) refrain from attempting to establish a fixed and universally applicable definition of outdoor learning because of the ever-evolving nature of the field. Communicating the value, effectiveness, and applicability of OPL across all types of schools has faced various obstacles. These include the absence of national associations that can connect outdoor educators and provide curriculum guidance (Asfeldt et al., 2020), limited attention given to specific teaching and learning strategies (Evans, 2021), and insufficient focus on teacher education and training. Some studies (Asfeldt, 2020; Evans, 2021; Lund Fasting & Hoyem, 2022) highlight how diverse spatial contexts, such as location, physical space, and geography of outdoor learning, can impact the communication of its philosophy, values, and goals. It's also worth noting that many mainstream schools encounter challenges when trying to incorporate OPL practices within their settings.

The framing of this research is based on Vygotsky's socio-cultural theory because it recognizes that the culture of the society in which an individual lives plays a significant role in shaping their self-regulation, behaviour, and cognitive processes (Kravtsov & Kravtsova, 2010, p. 29). In the context of this research, socio-cultural theory was considered to examine the impact of cultural aspects on the practices of three different countries.

To achieve this, the research focused on three countries and adopted a purposeful approach to study two types of schools in each country: a mainstream-typical school and a school with a nature-based philosophy. In Türkiye, despite the explicit emphasis on the importance of outdoor activities in the preschool education program, teachers are provided with limited examples and materials, leaving the inclusion of OPL in daily activities to teachers' preferences (Aşkar, 2021). The preschool education program encourages teachers to conduct daily activities outside the classroom as much as possible (Ministry of National Education [MoNE], 2013).

In England, the value of outdoor learning and play in early years education has long been recognized. The Early Years Foundation Stage (EYFS) Framework stipulates the need to provide access to outdoor play areas or, if unavailable, to plan daily outdoor activities to meet children's needs (Department for Education [DfE], 2021). The UK Government's Office of the Children's Commissioner (2018) also emphasized the benefits of outdoor play in the report 'The Potential of Children's Outdoor Play' published in 2018, calling for increased outdoor play opportunities and the removal of barriers to outdoor activities.

In Greece, the curriculum framework highlights the importance of systematic opportunities for children to interact with their natural environment outdoors and the significance of outdoor learning environments. However, the Preschool Teacher's Guide (Dafermou et al., 2006) indicates that teacher training primarily focuses on indoor settings where the educational activities of the national curriculum

are developed (Gessiou, 2022). Previous studies (Gessiou & Sakellariou, 2015) have also noted that Greek educational culture has undervalued the importance of outdoor learning and outdoor play in children's cognitive development.

The varied contexts among the participating countries are likely to result in differences in their practices. Notably, the differences between the types of schools are particularly prominent concerning OPL because nature-based schools exclusively focus on outdoor activities within their school premises. The rationale for examining both nature-based and typical schools is to enable a comparative perspective. This approach allows us to understand the diverse practices in early years education.

The research aimed to address the question of how the practices in different types of schools across three countries connect to a long-term, sustainable, and evidence-informed approach to outdoor learning. To achieve this, the research focused on addressing the following research questions:

1. How is outdoor play and learning implemented regularly in different school contexts?
2. What is the role of outdoor play in different school contexts?
3. What are the teaching, learning, and management strategies used in outdoor play and learning practices?
4. What are the approaches of stakeholders (head teachers, teachers) to outdoor play and learning?

Method

This research was designed as a comparative case study to identify three different countries (England, Türkiye and Greece) outdoor play and learning practices by focusing on two distinct examples from each country so that the clear reflection of these countries is criticized within qualitative research methods. As a part of the qualitative research methods, observations, interviews, and photographs were used to analyse the cases in each country.

Sampling

The research participants were selected using a purposeful sampling method, which involves choosing cases that can provide comprehensive information related to the research objectives (Patton, 2015). Within this sampling strategy, researchers select individuals or sites (or documents or visual material) that will best help them understand the research problem and questions (Creswell & Creswell, 2018, p. 333). Therefore, the research aimed to include two different types of schools that regularly engage in forest and outdoor activities. Schools that aligned with the research objectives were identified and approached conveniently. In this regard, one school from each of the three participating countries (England, Türkiye, and Greece) was affiliated as a forest school or nature school (see Table 1 for details), while the other schools were typical early years settings that focused exclusively on meeting national curriculum requirements. To gain access to these schools, head teachers were initially contacted, followed by teachers. Consequently, two schools from each country took part in the research to fulfil its objectives. From the participating schools, one head teacher and one teacher were interviewed, resulting in a total of six head teachers and six early years teachers. To maintain anonymity and logically identify schools, teachers, and head teachers, coding was employed during data representation, as illustrated in Table 1.

Table 1. Naming of participating schools, head teachers, teachers, and age groups

	Schools	Head Teachers	Teachers	Types of Schools	Age group of children
England	SE1	HTE1	TE1	Forest School	5 years old
	SE2	HTE2	TE2	Typical School	5 years old
Türkiye	ST1	HTT1	TT1	Forest School	5 years old
	ST2	HTT2	TT2	Typical School	5 years old

Greece	SG1	HTG1	TG1	Nature School	4-6 years old
	SG2	HTG2	TG2	Typical School	4-6 years old

Data Collection

After obtaining consent from the schools to participate in the research, head teachers and teachers collaboratively selected a day for observations and interviews. The research days were structured as follows: morning interviews with head teachers, followed by outdoor area and forest or outdoor activity observations, and concluding with interviews with classroom teachers. This approach aimed to gain a comprehensive understanding of the research context.

To collect data, an observation scale and semi-structured interviews were employed. Additionally, photographs of activities and areas were taken to provide researchers with a clear understanding of the contexts. These photos were uploaded to a cloud platform with accompanying explanations regarding the corresponding activity, area, and observed event, enabling researchers to gain an overview of each context for analysis. Observational data are particularly valuable in case studies where it is challenging to separate social phenomena from context (Yin, 2009).

In this study, an observation scale was developed based on the research questions, divided into four domains: 1) a detailed description of daily activities, 2) the focus of these activities, 3) assessment of early childhood outdoor environments using the Preschool Outdoor Environment Measurement Scale [POEMS] (DeBord et al., 2005), 4) teaching strategies based on Dymont et al. (2018). The POEMS scale contains information about curriculum and content, interaction, and play and learning settings while teaching strategies encompass pedagogical strategies and their evidence during activities.

Semi-structured interviews were also designed by the researchers, considering the diverse contexts. A pilot interview was conducted in each country before data collection to ensure that the research aims were achieved. All interviews were recorded with participants' permission, and interviews conducted in Greek and Turkish were subsequently translated into English after transcription. To ensure translation consistency, the interviews were carefully reviewed. To ensure translation consistency, the interviews were back translated to the original language by someone fluent in both languages to verify the accuracy of the meanings.

Data Analysis

The collected data were uploaded into the cloud for both researchers to access for analysis. When the data collection ended, thematic analysis was used to analyse the data, which is "...identifying and describing both implicit and explicit ideas within the data..." (Guest et al., 2012, p. 27). To provide the reliability and validity of qualitative data, the approach of Miles and Huberman (1994) was used by both researchers. The two researchers read and re-read the data (transcribed interviews and observation notes with related photos) to become familiar with the content and gain an overall understanding of the information collected from the three countries. Then, they started coding manually by systematically identifying and labelling relevant units of information. With two researchers making individual notes on the collected data, they could later compare and contrast each other's perceptions and recollections. Researchers looked for patterns, connections, and similarities between the different codes that formed the initial themes that captured meaningful aspects of the data. They reviewed the themes to ensure that they represented the content and meaning of the data and provided informative and representative names to the themes. This was a systematic process of identifying and interpreting patterns in the load of qualitative data collected.

Ethics

The research obtained ethical approval from Necmettin Erbakan University, adhering to its ethical regulations, in consideration of the three countries involved. Each school approached for participation in the research was provided with detailed information about the research and the entire process. As a result,

all head teachers and teachers were informed, and consent forms were duly collected. Parents of the children were also informed about the research, with a focus on observing activities and teachers. To ensure privacy and confidentiality, both school names and participants' names were kept confidential throughout the research. Furthermore, all photographs featuring children were carefully blurred, even though these photos were provided by the participants for research purposes. In most cases, the photos primarily focused on the activities rather than the children themselves.

To address any potential issues involving the children, teachers introduced the researchers to the children, explaining the purpose of the visit. Children were also informed of their right 'not to be observed,' and they had the freedom to express this right if they ever felt uncomfortable. No such issues were reported during the research, as the researchers maintained participant observations.

Findings

As a result of the data analysis, four main themes emerged, which are consistent with the research questions that address the aim of the research. To explain the different cases for further themes, the components of school daily life outdoors are prominent to represent first.

Components of Schools' Daily Life Outdoors

The results from the observations indicate that outdoor time is organised either in break time that aims at tension relief and includes free play or in organised and subject-oriented outdoor activities. Teachers focused on the importance of outdoor play over organised subject-oriented activities, a statement that aligns with the results of Ozturk and Ozer's research (2022), where the teachers preferred more free play activities outdoors compared to drama, mathematics, music, and field trips. Interviewees described their daily plans and outdoor activities, which combined with the researchers' observations, revealed the 10 themes of outdoor activities during play, as described in Table 2.

Table 2. Outdoor activities during play

Theme	Description
Working with other groups, developing relationships, and building relationships	Build a house, build a bubble store
Gross motor activities	lifting, carrying, running, jumping, rolling, climbing, and swinging
Sensory and messy play	Creating mud, playing in the sand pit, and transferring water
Social interaction	Conflicts between children, adults' instructions, and collective decision-making
Exploration	Changes in the outdoor environment every day, observe the habitat of the schoolyard
Practical skills	Learning nots building tents for sun protection
Nature Interaction	Gardening, taking care of domestic animals, observation of a turtle, nature art, and observing the weather to make decisions
Personal Development	Psychical coordination, physical and emotional risk-taking
Combined cognitive outcomes	Collect leaves, count and categorise them or create a craft. Caring for different logs and understanding the concepts of dimension, weight, height, and comparison (smaller, bigger, equal)
Games	Enjoyment and leisure with traditional games with rules

Three out of the six schools (ST1, ST2, SG2) spend less than an hour outdoors per day, and only in one school in Greece, SG1 (defined as Nature School), there was a free transition between indoor and outdoor spaces throughout the day, where the activities were mostly led by children's choices and observations. In this school, the participating teachers seemed willing to completely change their daily plans in response to the children's needs. In other cases, for instance, in SG2, children's observations or explorations were acknowledged or appraised by teachers without making any further interactive questions or discussions. As Harris (2015) mentions, "others (teachers)... find facilitating child-led learning ... to be a challenge" (p.15). However, ST1 provided some opportunities for children to develop an interest

in forest areas before starting the predetermined activities. We also noticed that only in SG1, the day starts with free play outdoors until all children arrive. In this case, observations and teacher narratives highlight outdoor free play as a valuable space and time for children to feel comfortable and secure to establish authentic interactions with other children and teachers, and engage independently with the environment. This allows stereotypically shallow teacher-student interactions to be replaced with more honest reflections that enhance the quality of student learning (Thomas, 2019). As the teacher from SG1 mentions:

...giving them at the beginning of the day the space and time they need outdoors, children have the opportunity to create warm relationships between themselves and the grown-ups, so the day is structured based on the fact that they feel comfortable bringing their observations and lived experience to discuss in our morning gathering where we all together decide the plan of our day. TG1

The sense of ownership supports active interest, engagement in contribution, influencing what is happening, and taking a leading role in the development of play, allowing children to follow their interests and come to their conclusions (Guilbaud, 2003 cited in Canning, 2022). An affirmation of the above statement is offered in the case of SG1, where outdoor free play in the morning leads to children's council instead of starting their day with the teacher's lead and instructions. Children are equal members in terms of discussion, proposing, and deciding their everyday plans. In contrast, other schools usually set up outdoor time after the morning indoor activities that are mostly teacher-led, followed by breakfast.

So we start when the children come in, they are indoors because they do phonic lessons. And then they have a child minute when the child initiates play, that is usually when the learning is outside as well.... They have a math lesson inside... TE2

The participating teachers recognized the impact of outdoor play on children's well-being and cognitive development. However, they found it challenging to fully integrate this awareness into their practice due to the traditional ideology and the ingrained role of being a teacher, which often emphasizes indoor learning and detachment from first-hand experiences. In line with this, TT2 organized a traditional game outdoors instead of offering children opportunities to engage with nature. Nevertheless, TT2 emphasized the importance of interacting with nature.

When you go outside, learning outside the classroom is always attractive and persistent for children because they acquire permanent knowledge by seeing something instead of listening [to adults].

All interviewees in SG2 agreed that whenever they [adults] organised an activity outdoors, children liked the fact that they, adults and children, would all play together; however, they were always distracted by the stimulus of the surroundings and wished to play freely.

Three out of the six schools (SG1, SE1 & SE2) had the equipment and clothes to support children's play in all weathers (e.g. wellies, raincoats) as well as easy access for children. However, in one school (SG1), the teachers and children considered the weather and conditions before going out to be prepared properly. The routines in all schools mostly occurred indoors with some exceptions where children had the option to eat their lunch outdoors (SG1), and one school from England and Türkiye (SE1 & ST1) had their snacks outdoors during their visits to the forest. In two schools (SG1 & ST2), it was observed that the routines were connected to the outdoor environment where children took care of their garden and domestic animals daily. In the case of Greece, children took care of the garden chores every day, they fed the rabbits carrots from their garden and collectively decided what to cook with the vegetables that they collected. In the other case, children in Türkiye had domestic animals in the schoolyard, and they had a chance to feed and take care of them regularly but not daily. In this respect, one of the head teachers explained the process as follows;

We have planted lettuce and spinach in our garden. In winter, we use them to prepare food, so children can experience growing vegetables and then cooking with them in the kitchen. HTT2

We also noticed that only in one school (SG1), children's creations were made by the affordances of the outdoor environment and were sustained for the needs of children's imaginative play (e.g. a bubble store and a pirate ship that was made by logs, mud, water and fabric that were brought from inside). Even though in most of the schools (SG1, SG2, SE1, SE2, ST1) the outdoor environment offered nature and open-

ended materials, the teachers neglected to actualize the affordances to initiate an activity. It was also recorded through the interviews that outdoor play was an important link to sensory and messy play, but in practice, materials such as sand and water were a controversial issue due to institutional restrictions on how and where to use the materials. For example, combining sand and water or transferring mud to play equipment such as a slide or swing was forbidden. However, the participants mentioned that

It is an outdoor play sensory, isn't it? You feel things, you touch things, and you smell things. HTE1

Let us say that messy play is something that I consider essential in a school. Essentially, messy play is happening out here [schoolyard]. TG2

Following the pandemic, children had difficulties even while walking on the road, and children fell even though there was nothing. The teachers mentioned this, so I said we could support outdoor activities more. As we have experienced teachers, they have been choosing activities that consider their needs. If a problem occurs, we can make arrangements for that, such as fixing the swing and using only one way to avoid risks. HTT2

In terms of outdoor practices in the participating countries, there are similarities and differences. This might occur because of traditional regulations around early years, each participating school's approach to outdoor play and learning, and the teacher's engagement with this.

Forest Trips and Excursions

As at least one school from each country regularly engaged in forest- or nature-related activities outside the school premises, field trips were frequently mentioned by participants during interviews. Therefore, it is important to present the stance of each country regarding forest visits and excursions.

Two out of the six schools (SE1 & ST1) conducted forest trips during the observation period. Forest School Leaders had planned a series of predetermined activities in collaboration with teachers, making use of communal forest areas while allowing for some freedom in nature. The activities included counting, writing, observing, collecting, painting, categorizing, and discussing objects, facilitating children's interaction with nature. These activities were mostly predetermined, and teachers encouraged children to discuss and share their observations of natural elements, such as a dead mouse, a turtle, or footprints. Forest trips in both schools typically lasted half a day, with teachers reminding the children of rules at the beginning and providing prepared snacks in the middle of the visits. It's worth noting that in one school (SG1), instead of establishing rules at the beginning of the year, teachers attempted to set agreements with the children based on their outdoor experiences throughout the school year.

During the forest trips, some activities were related to cognitive development, but typical Forest School activities, such as lighting fires, cooking, building dens, imaginative play, climbing trees, and using tools, as described by Stevens (2013), were not observed. The concept of Forest School activities is influenced by the philosophy of *Friluftsliv* from Scandinavian countries, emphasizing freedom in nature and a spiritual connection with the landscape (Gelter, 2000). However, these elements were not apparent during the observed forest trips. SE1 had more extensive opportunities aligned with the Forest School approach compared to ST1 because SE1 had direct access to the forest, while ST1 required a bus journey to reach the forest area. Schools without direct forest access faced greater challenges in managing time, including children's interest in nature within the planned schedule, as well as arranging snacks and drinks.

Four schools (SG1, SE1, SE2, ST1) mentioned frequent trips beyond the fenced play yard. The main recorded activities included: 1) weekly forest trips organized and led by a Forest School Leader in a specific location, 2) monthly visits to local community facilities (e.g., museums, post offices, libraries), 3) neighbourhood visits based on play or project needs, and 4) visits to environmental centres once or twice a year. Frequent visits to a specific forest location helped children become more familiar and comfortable with navigating and exploring the surroundings, establishing a close relationship with the natural environment.

It's worth noting that in schools where Forest School Leaders conducted forest trips, the experiences from previous trips were integrated into subsequent trips. Classroom teachers played a secondary role, primarily supervising the children and supporting the plan prepared by the Forest School Leader, taking

into consideration the weekly teaching objectives.

In actual forest trips, my role is not so much to supervise and help plan but to support the forest school leader. TE1

In ST1, the head teacher is a qualified forest school leader. She mentioned the process from her perspective that

I have either been a participant in the activities or given examples for them. I observe teachers' practices and then talk to them about their practices afterwards. Sometimes I lead forest activities as an example for teachers. They can see and learn from my practice how to conduct forest activities. HTT1

However, in the participating schools where skilled and experienced teachers are in charge of the forest trip, the experiences of the trips are a stimulus for further investigation and creation immediately when returning to the schools or having a plan in the school garden. Moreover, in this case, the classroom teachers sustained their role and built relationships with the children even after leaving the school premises.

An important thing is that upon returning from our excursion, we carry a very big burden of experiences that could unfold back to school in the next few days and build our activities on them. TG1

We nearly go out every day if the weather is sunny. For example, we walked around the garden on Republic Day while listening to a related song. We also have sports-related activities outside... We have some rule games (traditional games) and imitation games. We also make decorations in the garden to make it attractive to children. TT2

It was observed that when the classroom teachers led the forest visits, the children's self-initiated activities were more valued and supported as the classroom teachers seemed more skilled in following the children's free play and observations. Leather (2018), in his critique of 'Forest School' raises concern about the rapid institutionalization of Forest Schools and teachers' training and how the notion of play is missing. However, all classroom teachers stressed the need for in-service training to support practical forest skills based on environmental and cultural features.

From the Break Time to Their Time

In the previous sections, we described the components of the school's daily lives outdoors. Outdoor play, as many scholars (see Cheng et al., 2022; Ginsburg, 2007) refer to unstructured outdoor play, prevailed in most of our references from the head teachers to teachers as a controversial topic. The teacher in SG2, both Head Teachers in Greece (HTG1 and HTG2) and one in England (HTE1), raised concern about the institutionalisation of children's lives and explained outdoor free play as one of children's last choices, potentially providing physical and mental space before organised and predetermined activities for children, which limit their active engagement and critical thinking.

I think children are very directed even at home and not only at school. The activities after school are directed, that is, everywhere they listen to advice, rules, instructions, and how to do things. I think enough is enough, and free play is necessary for kids. TG2

I mean, I grew up on the Moors, and I just played with my brothers as long as I was back for lunch. I was not in trouble. Whereas now I think when children get in the car, they get taken into an activity. It is usually indoors. They'd go home again, they're on their PlayStation or whatever. And I think if we just give them a little taste of that, the outdoors is fun. HTE1

On the one hand, all adults recognized free outdoor play as beneficial and necessary for children's overall well-being, so HTE1 states that "Outdoors is a site for freedom and child-led play". Outdoor free play in school was even recognized as one of the children's last chances to define their own space and time, where they could be agents of their lives. In this way, as TG1 mentions below, early years settings can be more inclusive and can receive valuable and authentic information about what children need, what they want to learn, and how to engage more effectively in the learning process.

The milestone difference is that organised activities have a certain targeting that strengthens children with certain abilities, and pace so automatically the other children are underestimated. Also, we are not sure whether each organised activity interests each child, and if not, will he/she be able to express it or gain anything from this activity? The activities that children themselves choose, we know for sure that they are interested in them and that they are beneficial for them. In the outdoors, because there is more freedom and opportunities for action and observation. TG1

On the other hand, the findings from the interviews and observations revealed a wide spectrum of how outdoor free play is valued and supported in different settings, which also indicates a wide variation in the philosophies and practices of how outdoor free play is perceived and utilised.

Table 3. Spectrum of outdoor free play based on interviews and observational notes

	<i>from</i> Break Time	<i>to</i> Their Time
<i>Time</i>	Between organised and teacher-led activities. The duration is specific.	At the beginning of the day and during the day according to the children's council plan. The duration may vary
<i>Space</i>	All the groups were collected in one area. Specific orders on how not to get dirty or how to use the equipment	Choice of free transition between indoors and outdoors. The sense of mess
<i>Adults' role</i>	Teachers as Experts in learning	Teachers as Fellow Travelers in learning
<i>Curriculum</i>	No connections to educational design	Outdoor free play leads to an emergent curriculum.
<i>Risk</i>	An opportunity for an outburst.	Exploration of children's boundaries and capacities
<i>Visibility</i>	One-way communication with the parents	Pedagogical documentation, parents' active participation

Table 3 describes the wide spectrum of outdoor free play and its place in the different contexts that were focused on. There have been six themes that have emerged corresponding to the perceptions and practices that place outdoor free play from the point of viewing it as "break time" – recess time from the indoor teacher-led activities – to the point of viewing it as "their time" – where children define their own space and time where they can be agents of their play and learning experiences.

During the interviews, teachers and head teachers mentioned that outdoor free play includes free movement and choice, encountering changing conditions and unpredictability, and learning through first-hand experiences and problem-solving situations. However, during the observations, it was revealed that in some schools, free outdoor play was equivalent to break time. This was a break from the organized teacher-led activities, and the duration was specific (approximately 30 min per day). In some cases, it may also be skipped if the indoor activities lasted longer than expected (SG2). In other cases (SG2, SE1, ST2), children used common outdoor spaces for different groups of children, and sometimes there might be children from different age groups. Thus, outdoor playtime was occasionally interrupted as the area became more crowded. Therefore, it was difficult to sustain children's work and various activities (e.g., buildings with bricks and logs, castles with sand).

...So if you like things like water playing capacity and things like that, sometimes the year one teacher wants to teach comes out and says: Can yours not go out for a bit because I've set up something for that. So that does happen. TE1

As mentioned in the findings of McClintic and Petty's (2015) research, there is a parallel finding from this research that in schools where outdoor free play is mostly linked to break time, teachers' main role is to provide safety and guidance. When there is limited time and space for outdoor free play, the adults feel under pressure, so they start imposing directives during play as well as having directive behaviours. As Legget and Newman (2017) indicate, teachers' perceived roles shift from teacher to supervisor during outdoor activities.

We are observers for their safety. First and foremost, we participate when there are relationship management problems to put a stone in how we can manage a situation that can be a bit difficult for the children. TG2

It will be us observing and watching the children seeing what they know, seeing if there were any misconceptions, anything, they're getting wrong, so that we can pick up on that and help them and address and address it. TE2

I like the pedagogical approach of this school. Every day, I explore new knowledge with my children, which makes me really happy. In the traditional method, the teacher plays a leading role, but we, the children and teachers, learn together. We also learn from children. TT1

In these cases, the children's observations and explorations during free play had had no influence on the pedagogical design, nor were they further studied by the team. The spontaneous and informal

learning opportunities, often encountered outdoors, were consequently lost.

However, in one school that is defined as Nature School (SG1), outdoor free play was prioritised, and it was placed both at the beginning and during the day, but the duration would vary depending on the day. In this case, outdoor free play acted as a decisive factor in how the day proceeded. In any case, outdoor free play was recognized as a valuable space and time for children to feel comfortable and provide natural interactions with peers and adults. The experiences and observations in the early morning outdoor free plays usually were the subject of discussion in the children's councils. As in Norway, kindergartens defined as nature kindergartens purposefully try to give children much freedom when spending time in nature, and the adult's role is to support children's spontaneous motivation, excitement, and questioning (Lysklett, 2017).

For me, free play is very important, it helps me observe each child authentically, what their developmental stages, desires, needs are, how they want to learn, and the meanings that they want to structure around the different conditions that they face. It was really helpful for me as a teacher (the free play). Outdoors, there are endless opportunities for free play and problem-solving observations. There is a continuous flow outdoors, and everything is changing. Children outdoors deal with situations that nature has formed and not artificially a teacher. TG1

In these cases, participating teachers actively engaged in children's play. Sometimes, when invited to join activities, teachers would immerse themselves just like children, getting dirty while building a 'mountain,' climbing alongside children, or making music together. Teachers and children enjoyed intimate and relaxed informal conversations. As Thomas (2019) criticized, this kind of relationship may be as productive as more formal small group debriefs. A facilitative teaching style is less directive, allowing children to make decisions for themselves and experience the consequences of their choices and actions (Sutherland et al., 2016). Such a teaching style must be flexible enough to seize emergent learning opportunities (Blenkinsop et al., 2016).

In the case of SG1, learning experiences from outdoor free play were seamlessly integrated into the objectives of the monthly educational plan. However, even in this school, parents and society have expressed scepticism about the educational and academic value of outdoor free play. Their primary concerns revolve around the belief that outdoor free play lacks direct academic outcomes and that the transition to primary school might be challenging due to the perceived underestimation and scarcity of outdoor free play.

We are concerned that the children will be ready to obey and fulfil the learning tasks. In Greece, there is a narrower perception regarding behaviour. You will usually listen to parents or teachers ask "Is the kid good? Does he/she listen?". We (Greeks) still do not know the benefits of free play and the benefits of their play without the intervention of a grownup. We (Greeks) consider free play a waste of time. Therefore, teachers are indirectly trapped in these perceptions, so they try to correspond with them and plan a program that children will follow and produce the desired outcome. Then they (teachers) feel they did their job well. TG1

How will they make the big step to primary school, which is the biggest anxiety of the parents? How will they stand in primary school? When you are in a school that does not have outdoor environments, does not perform excursions in the forest, does not leave children to see the unknown and process it. Then children cannot even imagine the unknown if they are only inside a closed space. I think it limits their abilities a lot. When a child is ready to do all the above, he can also face something new in his life, let's say the 'big school' or 'the next step'. HTG1

The above findings echoed the importance of outdoor free play and how it can help mitigate social inequity and recognize children as capable agents of their presence. Most interestingly, the findings showed how outdoor free play can lead to an emergent curriculum when it is valued and utilized accordingly.

Question of Training

Another theme that emerged from the analysis influencing the delivery of OPL pertains to staff training and their engagement with this philosophy. All participating teachers held bachelor's degrees, and in some cases, higher degrees in Educational Studies. However, none of them had received specific training in outdoor learning and play practices.

Out of the participants in our study, only three, which were the nature school and forest school

teachers (SG1, SE1, ST1), had relevant training. This training primarily focused on forest school activities rather than broader outdoor learning and play practices. Notably, in the first school (SG1), the training was provided only to the head teacher and one teacher. In the second case (SE1), a forest school leader regularly attended the classroom instead of the teacher participating in forest school activities. In ST1, the head teacher held qualifications as a forest school leader, and the teachers in the school were required to complete some level of forest school leader courses as well.

This covers everything from paediatric first aid to risk management to understanding the weather, and knowing about poisonous plants. So, they have had that full training. And that was quite important for me that we invested in that training. And they share that with other colleagues. HTE1

I attended the forest school leader course, but I have not yet obtained the certificate. I have a music teaching certificate. This week, I will get a drama certificate. TT1

It was also mentioned by the other head teacher from England (from SE2) that the school staff attends the necessary continued professional development (CPD) courses outside the school context. However, it may not be sufficient because research on training demonstrates that it takes about 30 hours of training to make a significant change in pedagogy (Marchant et al., 2019). Therefore, such CPD opportunities can only support ongoing pedagogies instead of changing teachers' pedagogical approaches.

I provide teachers access to the necessary CPD for their professional development, you know, that they have access to hubs outside the school. HTE2

In addition to CPDs, two sub-themes emerged on how teachers try to improve their practices: motivation from an influential colleague and modelling by the Forest School Leaders.

I was really lucky because I had a colleague who had a strong internal motive for their job. She wants to pay attention to the quality of what we offer based on children's needs... I was lucky because I had a colleague with whom I could interact and I could express my concerns about everyday life problems and observations, and it was constructive. TG1

I have nothing to do with the Forest School, no outdoor Forest School. Therefore, that is why I always take a backseat on forest school days. I would like to receive some training in an outdoor learning environment. TE1

The subtheme, where motivation is inspired by an influential colleague, aligns with recent research findings from South Wales, Canada, and Australia (Asfeldt, 2020; Evans, 2021; Marchant, 2019). In this scenario, the influential person is often a passionate teacher whose vision and pedagogical values shape the program. However, without a clear program philosophy, the program may undergo changes over time as new leaders incorporate their own expertise and backgrounds (Asfeldt, 2020).

In the second subtheme, where Forest School Leaders model strategies, there is a high likelihood that teaching and learning strategies may become simplified and routinized. This implies that practitioners might imitate practices without necessarily comprehending why they are conducting certain activities in specific ways. As Harris (2015) notes, some Forest School leaders are willing to completely change plans in response to children, while others find facilitating child-led learning to be a challenge. In such cases, it becomes essential to understand the philosophy behind the approach and then put it into practice. Otherwise, accommodating the needs of children during outdoor activities might be challenging for teachers.

During observations in one Greek school (SG1), participating teachers lacked formal qualifications; however, they demonstrated a remarkable set of skills, competencies, and an understanding of free play, both on school premises and in the forest. Nevertheless, TE1, a teacher from a school who collaborated with the Forest School leader, expressed that a lack of knowledge left them with low confidence. All the head teachers mentioned that there were gaps in teachers' adequacy regarding OPL practices, and three sub-themes emerged regarding their thoughts on staff development: self-education, colleague communication, and outdoor environmental improvement.

They are able to speak to other colleagues. HTE1

I think that here lots of people need to do outdoor activities. And you know how adults can reflect on their practice and share with other experts in their early years. HTE2

They will attend PTSA hubs where they can meet other teachers and other schools. HTE2

We encourage them to read this research. I think it will help us know more about what is happening and the effects and help us improve in this phase, not so much theory, but maybe smaller research articles to help us. HTG1

Communication among teachers in the same setting provides them with experiences that contribute to the personal development of their teaching practices so that they can establish a unified philosophy and engage more with the setting considering both teachers' and children's needs. In that case, as TG1 mentions, the motivation for improvement and development will be internal, and it will better correspond to each school's context. However, it was highlighted that the participating Greek teachers would be more encouraged to be part of this process if the working conditions were better (children-teacher proportion, better salary, safety, meetings/training would be included in working hours).

If we had the right information and training, it would be different. However, we don't have it, maybe due to a lack of time or strength. Self-education is a good solution; however, you need to have time, energy, and willingness to do it, and this presupposes strong motivation and good job conditions (e.g., children-teacher ratio, good salary, safety). TG2

Self-education is a way to commit all the way, engage, and be thrilled by what you are learning. The motivation in this case is internal. However, we live in an era where motivations are mostly external. The government offers many seminars that focus on gaining more knowledge but lose the content and teachers' needs. It is more "up-bottom" training. It will be more beneficial to create authentic communication and strong links with the academic community and departments in each community. TG1

In terms of teacher certification, there are some common approaches to implementing forest school activities, such as having forest leader certificates across all participating countries. Head teachers stress the need for further training regarding OPL practices, mainly proposing staff development through self-education outside working hours, such as CPDs. On the contrary, teachers proposed training on the school premises and better conditions that will foster teachers' communication and interaction to establish a more solid and unified philosophy.

Discussion

This paper has brought together outdoor play and learning practices emerging from three different countries: England, Türkiye, and Greece. The focus is on two distinct examples from each country. One school from each country was affiliated as a forest school or nature school, while the other schools were typical early years settings, concentrating solely on the national curriculum requirements. Comparing these three countries highlights various aspects of OPL. It is likely that there are various practices and different amounts of time spent outdoors across different schools, as mentioned by Lysklett and Berger (2017) in the context of nature preschools and other preschools in Norway.

Observations, combined with interviews of teachers and head teachers, revealed a variety of activities regularly implemented in different school contexts. Outdoor time was organized either as a break or in organized, subject-oriented outdoor activities. These outdoor activities were predetermined and planned by teachers based on curriculum objectives and the weekly program design. During these activities, teachers were observed introducing various materials, either to pique the children's interest or to utilize the materials' affordances for the activities. Thus, providing active learning opportunities can enhance children's curiosity (Jansson & Lerstrup, 2021). However, the use of materials tended to be one-dimensional and based on the teacher's instructions. Predictability in material use and environmental features can create frameworks and boundaries during the activities. In contrast, unpredictability can support children in bringing their experiences, ideas, and perceptions of how things function and attributing meaning in their play and learning (Sandseter et al., 2022).

During the implementation of outdoor activities, teachers often followed a directive teaching approach similar to what occurs in the classroom, resulting in teacher-led learning. Some teachers identified the tension that the directive approach created for children during outdoor activities. They perceived this reaction as children asserting their right to follow their instincts and interests without imposed outcomes, allowing them to explore, create, and discover freely during outdoor activities.

However, we documented a case (nature school) where outdoor organized activities were typically designed based on observations of children's outdoor free play. In this case, the teacher recognized that during outdoor free play, children defined their own space and time, allowing them to take on the role of agents in their play and learning experiences. In practice, during outdoor free play, teachers gained valuable and authentic insights into what children needed, what they wanted to learn, and how to engage in the learning process more effectively. This aligns with Ozturk and Ozer's (2022) emphasis on teachers focusing on various outdoor activities. In this school, teachers demonstrated a more facilitative teaching style and actively participated in children's play and exploration whenever they were invited. This approach supports Waters and Maynard's (2010) findings on adults taking on assistant roles. Teachers in this school were willing to dedicate more time to outdoor free play, question their dominant roles as teachers, and establish deeper connections and communication with children. This enabled them to recognize and support emerging learning opportunities outdoors, aligning with the goal of providing a child-friendly environment (Jansson & Lerstrup, 2021). Outdoor free play played a decisive role in shaping the course of the day.

Furthermore, children had the option of freely transitioning between indoors and outdoors if an adult was present in each space. Outdoors, there were many open-ended materials whose affordances were realized in unpredictable ways by children (e.g., sand and logs in the slide), sometimes resulting in a sense of messiness for adults. The teachers' role, rooted in the relationships and communication they fostered with children, could be described as fellow travellers in learning. They actively engaged with children's questions and curiosity, creating play opportunities outdoors through various activities to support these relationships (Gemmel et al., 2022).

The study identified various challenges in supporting outdoor free play. As Maynard and Waters (2007) also noted, the challenge of facilitating outdoor free play is culturally and politically influenced and context specific. Early years regulations in these three countries provide a flexible framework that allows for the freedom to choose themes and activities. However, they lack comprehensive guidance on how to support outdoor free play in terms of risk management, documentation strategies, and teacher training. Policy regulations offer more objective and direct guidance on teacher-led activities, which primarily take place indoors. This could potentially affect decision-making during outdoor free play and hinder the emergence of learning opportunities. Our findings align with those of Marchant et al. (2019). The narrow methods of assessing and documenting learning outcomes typically applied to teacher-led activities may provide evidence that is challenging to apply within the broader context and goals of OPL. This challenge appears to be even more pronounced in typical schools that have limited freedom and security compared to forest or nature schools, which can approach outdoor activities from a more nature-oriented perspective. This raises concerns about demonstrating the learning benefits of outdoor free play to parents and the community and how to make these benefits more visible.

Conclusion

In conclusion, this study addresses the gap in understanding OPL practices through a comparative approach involving three countries. It provides insights from both teachers' and head teachers' perspectives, while also considering observation notes. Within this context, it becomes evident that school culture and the selected educational philosophy may exert a greater influence on OPL practices than environmental features.

The findings underscore that schools lack a strategic and systematic approach for integrating OPL into their educational philosophy and for enhancing teachers' professionalism in this domain. Despite varying opportunities, the same types of schools in the three cases show a similar focus on OPL, especially in terms of forest-oriented activities. Typical schools appear to require more guidance on incorporating nature into their daily activities. This study suggests the need for professional development opportunities that empower all teachers to effectively utilize their surroundings.

For forest-affiliated schools, teacher training should emphasize adapting the curriculum to align

with their forest practices. Teachers who embrace this educational philosophy require a diverse skill set to engage with curriculum content across various settings, fostering an individualized, place-based, and emergent curriculum.

Currently, teachers face various external, top-down pressures. In this research, teachers recommend a bottom-up approach to their training, one that fosters communication and collaboration among teachers within the school premises. This approach aims to establish a more solid and unified educational philosophy that considers the needs of both teachers and children, ultimately enabling more effective engagement with the learning environment.

Despite OPL's long-standing recognition for its benefits to children's well-being and development, it remains a somewhat vague practice area and can be a source of stress for teachers. Empirical evidence from this research reveals that, despite cultural differences and varying policies among the three countries, there are shared concerns regarding the effectiveness and practicality of OPL. The current research highlights some practices that can guide necessary actions. Outdoor free play is acknowledged as valuable space and time for children that can lead to an emergent curriculum. To achieve this transformation, we must navigate existing curriculum pressures and redefine the teacher's role. It was observed that by slowing down the pace of everyday school life and planning, teachers and children were encouraged to form stronger connections with their environment, fostering warmer bonds and supporting equity and inclusion.

Teachers, through pedagogical documentation using photos, videos, or transcriptions of children's outdoor free play, gained valuable and authentic insights into what children needed, what they wanted to learn, and how to engage in the learning process more effectively. This, in turn, led to the participatory design of the outdoor emergent curriculum. Such a process can also be highly effective in communicating the practicality and effectiveness of OPL to parents and other stakeholders, countering the limitations of traditional learning assessment methods that are ill-suited for the ever-evolving nature of OPL. This research contributes to OPL practices across different countries and encourages consideration of policy developments and the re-evaluation of current practices.

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Parents' perceptions of their children's outdoor activities before and during COVID-19 crisis

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Abstract: This study is focused on Israeli parents' perceptions regarding the possible benefits and barriers to their children's outdoor activities as well as on their reports on the actual engagement of their children in these kinds of activities, before and during the COVID-19 crisis. We employed a mixed-method design, including a questionnaire and a semi-structured interview. The participants were 213 Israeli parents. Findings reveal that parents think that outdoor activities benefit children's physical-motor and social development and their health. They consider their long work hours and weather conditions as the main barriers to spending more time outdoors. Parents also reported going out significantly less with their children to playgrounds after the peak of the COVID-19 crisis, compared to their habits before the pandemic. The decrease in the time spent outdoors was attributed by the parents to their long work hours and to an increase in the time spent by their children in front of screens. In light of the findings, we suggest that parents need guidance in order to restore the habit of going out to close playgrounds on an almost daily basis and in order to appreciate the contribution of outdoor activities to children's connectedness and knowledge about nature.

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Introduction

The aim of the article is to show Israeli parents' perceptions of outdoor activities and engagement of their children in this kind of activities, as well as on how they perceive the benefits and barriers to outdoor play, before and during COVID-19 crisis. The general term "outdoor activities" includes various aspects of children's engagement in the outdoor space: play, guided and unguided learning encounters outdoors being based either on active inquiry or on more traditional learning. In the introduction that follows, we present theoretical background and research findings related to children's outdoor activities, parents' perceptions and the impact of COVID-19 on these activities.

Outdoor Activities

Outdoor activities reflect what children do "beyond the walls of the inside" (Zink & Burrows, 2008) and what takes place in the environment (Tal, 2009). Outdoor activities involve both free play and encounters guided by adults (parents and teachers). It should be remembered that play, although by definition initiated by children, and intended to attain enjoyment, almost always involves learning.

Outdoor activities, especially in natural environments, have a significant potential to benefit children's physical, cognitive, emotional, and social development, as well as their health and overall well-being, self-regulation skills, and attention (Gessiou, 2022). Outdoor play spaces and activities conducted in these areas can enable children make effective use of time both physically and mentally if the activities are aligned with their age, development, interests and needs (Towell, 2005).

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Children's engagement in outdoor activities enables direct contact and deep connections with the natural environment and the local community (Levy, 2017; Shurgi, 2018). Stone and Faulkner (2014) found that spending time outdoors affects children's well-being as it increases physical activity, reduces immobility, and prevents excessive weight gain. In addition, children experience feelings of enjoyment in the outdoor space (Armitage, 2001; Millward & Whey, 1997; Waite & Rea, 2007). Furthermore, activities in the open space provide opportunities for children to interact with each other while conducting a dialogue with external and internal boundaries (Frances, 2018). Spending time in the open space was found useful for infants and toddlers as well as for older children. For example, Bento and Costa (2018) made an inquiry into how outdoor activity and contact with nature based on supportive relationships with adults and peers, helped a group of 14 toddlers in a daycare center in Portugal develop a sense of security and positive self-esteem, curiosity and exploratory impetus and social and communication skills.

It was also found that children who are not exposed at all to the natural world in general, and the animal world in particular, develop fear of nature. Based on these findings, experts recommend that young children learn to live with animals and take care of them and learn to show compassion and responsibility towards them (Anders, 2018).

Relevant to the issue of how children spend their leisure time is the fact that in recent years, children are growing up in a digital world, which reduces the number of personal and authentic experiences that help them learn about the real environment they live in. Therefore, it is of crucial importance to encourage activities in the open space that allow children to experience the real natural world and thus get to know and understand themselves, their abilities and the world around them (Anders, 2015).

Children Outdoor Activities as Related to the Ecosystem Theoretical Framework

Children outdoor activities and parents' perceptions of these activities are being understood in this study from the ecosystem perspective set forth by Bronfenbrenner and Morris (2006). In their view, human development takes place through progressively more complex reciprocal interactions between an active, evolving biopsychological human organism and the persons, objects, and symbols in its immediate external environment – the microsystem (Bronfenbrenner, 1986). To be effective, the interaction must occur on a regular basis over extended periods of time (as happens in families and educational institutions). These enduring forms of interaction in the immediate environment are referred to as proximal processes. The nature of these interactions and their impact on development are influenced by the characteristics of those involved, the context in which they occur, and time (Bronfenbrenner & Morris, 2006, p. 795). In light of the importance of parents' interactions with their children and their mediation of the outdoor environment for them, it is important to learn about parents' perceptions of their children's outdoor activities, the frequency and duration of spending time outdoors (in preschools and with families), and about the nature of outdoor spaces available to children and families.

During the last years and particularly after COVID-19, the Israeli Ministry of Education encourages schools and preschools to think and act "out of the box" in general and literally to learn "beyond the walls of the inside". This policy is based on studies showing that it is not right to make a clear-cut distinction between learning processes and play (Bodrova & Leong, 2007). Furthermore, young children learn through play, and play constitutes a basis for their emotional, social and cognitive development (Bodrova & Leong, 2007). Therefore, it is expected that in preschools learning should be experiential and based on play and should happen in a natural context and be aligned with the subjects that the children are interested in (The Israeli Ministry of Education Circular, 2019).

The Ministry of Education addressed also the issue of children safety as related to activities in the community-outside the preschool. The Israeli Ministry of Education (2017, p. 52) posted guidelines related to activities in the community outside the preschool in order to enable on the one hand these activities and on the other hand to safeguard the children's safety: Preschool teachers are held responsible for organizing activities in the community. They must consider the educational value of the site chosen for the community activity as well as organizational issues related to time, weather and so on. Furthermore, it is expected that the preschool staff will thoroughly prepare the outdoor activity including: a preliminary tour of the sites

considered for outdoor activities and to consider their alignment with the children's age, and pedagogical value and suitability. Outdoor activities are expected to be included in the annual plan that is approved by the superintendent. Preschool teachers are expected to prepare annual plans for trips, bring them to the approval of the supervisor of the preschool, and the person in charge of the security of preschools. Trips outside the preschool must be accompanied by the preschool teacher, one of the assistants and accompanying parents.

Parents' Perceptions of Their Children's Outdoor Activities

It was found that parents usually favor outdoor activities and that they appreciate the impact of these kinds of activities on their children's physical and social development. Nevertheless, some parents have concerns related to their children's safety (Obee et al., 2021). Furthermore, parents' fear of the risks involved in outdoor activities lead them to not allow their children to engage in risky play (McFarland & Laird, 2018). For example, it was found that children participate in less physical activity and watch more television in cases in which their parents perceive the neighborhoods as unsafe (Datar et al., 2013), and that they play more in parks when parents assess their neighborhoods as safe and as containing walking or cycling facilities, and suitable play areas (Tappe et al., 2013). It was also found that even mothers who acknowledge the benefits of risky outdoor play and want to provide opportunities for their children to safely engage in such play, experience fears and concerns about their children's safety (Little, 2015). Indeed, parental safety concerns were found responsible for the reduction of time spent by children in outdoor play (Faulkner et al., 2015).

Looking at the parents' childhood, it was found that even though parents recognize the benefits of free play, such as opportunities for socialization, positive contributions to health and improving levels of physical activity, some of them spent during their childhood more time outside in free play, than their children do (Watchman & Spencer-Cavaliere, 2017).

It was also found that although parents generally support outdoor play during center-based childcare, they do not know the specifics of policies regulating outdoor activities and the nature and duration of outdoor play in educational institutions (Jayasuriya et al., 2016).

The COVID-19 Crisis and Its Impact on Outdoor Play

COVID-19 has changed the everyday lives of everyone around the globe, including children, by limiting interactions with peers, and closure of schools, preschools and day-care centers. Research found a decrease in the levels of children's physical activity due to the loss of regular activities, the temporal lack of accessibility to recreational spaces, and also the lack of peer support (Ostermeier et al., 2022).

Findings related to the impact of the pandemic on young children's emotional and social functioning is complex. On the one hand, it was found that in spite of the fact that young children have experienced loneliness, they haven't been affected much during the first months of the pandemic (Linnavalli & Kalland, 2021). On the other hand, in a study that was done in Italy after the first lockdown, it was found that parents identified damages caused to their children as a result of the lockdown, such as damage to their emotional-social skills, damage to physical activity, and an increase in the use of screens. Researchers recommended to listen to parents, children, and educational practitioners, and to build up a clearer and more authentic understanding of their experience (Mantovani et al., 2021). In a study that was done in England, Scotland and New Zealand it was found that after the first lockdown preschool children said that they wanted to regain their daily routines. They also said that they wanted to spend more time with their friends, to enjoy extended play time in general and outdoors, in particular (Pascal & Bertram, 2021).

Researchers and educators suggested that the existence of family routines is likely to moderate the impact of the COVID-19 pandemic on the mental health of young children (Glynn et al., 2021). Also, it was claimed that being in parks or other green spaces is important for the health and for well-being of individuals, and it is likely to lead in the future to healthier populations (Slater et al., 2020).

Nevertheless, it was found in a study in Australia, that due to a misunderstanding of the

recommendations, some children thought that they would get sick if they go out on the streets and not if they were close to infected persons (Vasileva et al., 2021).

Impact of COVID-19 in Israel

Preschools provide a significant developmental framework for children that allows them to develop and acquire cognitive, emotional, social, and physical skills. The closing of the preschools for long periods (due to the closures and due to the multiple periods of isolation as a result of illness or suspicion of infection), created significant damage to the growth and developmental processes that take place in the preschool as a routine, which, unlike learning in schools, cannot be replaced by online processes. Therefore, the achievement of significant developmental milestones that depend on the processes taking place in preschools was compromised and gaps and inequality among children widened (The Israeli Ministry of Education- Office of the Chief Scientist and Preschool Department, 2021).

Studies show that support for parents in terms of guidance related to their mediation skills may help promote children's development even in the long term, such as predicting the development from kindergarten to second grade (The Israeli Ministry of Education- Office of the Chief Scientist and Preschool Department, 2021). To sum up, children's engagement in outdoor activities (play as well as guided activities) matter. Nevertheless, data show that lately, children spend less time outdoors, mostly due to the impact of COVID-19 lockdowns and regulations. Indeed, as reported in a review article of studies that were done in Europe and North America during the COVID-19 crisis, it was found that the time spent by children outdoors was reduced drastically during the pandemic. This decrease was accompanied by a parallel increase in time spent in indoor play in general and in videogames-screen, in particular. In addition, a decrease in time spent by children in outdoor and indoor physical activities was reported (Kourti et al., 2021). Parents play a central role in enabling, encouraging or blocking children's activities outdoors both by their perceptions and by their actions. Therefore, this study is focused on Israeli parents' perceptions of the possible benefits and barriers to their children's outdoor activities and on their reports on the actual engagement of their children outdoors, before and during the COVID-19 crisis.

Research Questions

1. How do parents perceive their children's outdoor activities before and during the COVID-19 crisis?
2. What are the benefits attributed by parents to their children's outdoor activities?
3. What are parents' perceptions of the barriers that hinder their children's outdoor activities?

The study presented in this article is part of a larger study focused on Israeli ECE teachers' and parents' perceptions of outdoor activities performed in 2021-2022. The research questions that are the subject of the present study deal with only part of the questions that were included in the interview and questionnaire

Method

Research Design

A mixed method design, including both quantitative and qualitative tools, was employed to make an inquiry into parents' perceptions. The qualitative component of the study included interviews and the quantitative component included a questionnaire.

Participants

Participants were 213 Israeli parents: 201 (101 mothers and 100 fathers) responded to questionnaires and 12 parents (nine mothers and three fathers) were interviewed. The parents participating in the interviews were recommended by preschool teachers whose perceptions related to outdoor learning had been the subject of a parallel study. The parents who filled out the questionnaire, were recruited by a survey company (**Sekernet**) and constituted a representative sample of Jewish parents in Israel. Sekernet is the

survey company chosen by Levinsky-Wingate Academic College for studies that are based on representative samples of the Israeli population.

Forty-four percent of participating parents stated they were secular, 23% stated that they were traditional, 16% stated that they were religious and another 16% stated that they were ultra-religious. The average age of parents was 37 (SD=5.45; range 25-51). Fifty-one percent held academic degrees, 16% held various diplomas 20% high school or less. Families were reported to live in towns (big towns 50%, small towns 30%), 12% in medium-sized settlements (population less than 10,000) and smaller community settlements (such as kibbutz with a population of less than 2000).

Data Collection

The data were collected using semi-structured interviews and a questionnaire. The interviews were performed between February and October 2021 and the questionnaires were administered in June 2022. All these after the lockdowns imposed during the pandemic, but while there were still waves of infections. We remind that the first infections were recorded in Israel at the end of February 2020. The first lockdown was between 25.3.2020 and 4.5.2020. The second lockdown was between 18.9.2020 and 17.10.2020 and the third lockdown was between 27.12.2020 and 7.2.2021

Tools and Process

The semi-structured interview employed in this study included open questions addressing parents' perceptions regarding nature, possible benefits associated with outdoor activities and barriers that interfere with routine outdoor activities. All these both before and during COVID-19 crisis (The protocol of the interview is included as Appendix 1).

The questionnaire used in this study included both items from Gallager's (2015) survey of parents' perceptions of unstructured outdoor play, as well as questions derived from the content analysis of interviews performed with 12 parents. Included in the questionnaire beyond items focused on demographics of parents filling in the questionnaires (age, education, occupation, number of children in the family, their ages and genders and characteristics of the living environment (type of housing, the type of settlement, geographical location in Israel), items focused on type, frequency and duration of activities in the open space before the COVID-19 crisis compared to when filling out the questionnaire during the pandemic after three lockdowns. In addition, included in the questionnaire are questions focused on parents' perceptions regarding benefits of the activities in the open space as well as barriers to their children spending time in outdoor activities (The part of the questionnaire relevant to this study is included as Appendix 2).

Analysis of data

The following steps were employed in the process of data analysis:

1. Analysis of interviews with the parents led to the final formation of the questionnaire (for example items related to possible activities outdoors were added, as well as barriers related to children's outdoor activities).
2. We analyzed the items included in the questionnaires that are directly related to the research questions included in this study. We focused on questions related to parents' reports of outdoor activities in the afternoon before and during COVID-19 and on their perceptions of possible

benefits as well as barriers to outdoor activities that limited the time spent by their children outdoors.

3. Comparisons of frequencies of activities before and during the pandemic were based on chi-square tests and comparisons of parents' evaluations of duration of time, benefits and barriers were based on analysis of variance and t-tests.
4. We sought support or contradiction in interviews related to the main findings extracted from the analysis of the questionnaires.

Ethics

Interviewees gave their consent to participate in the study. Questionnaires were anonymous and the identity of respondents was unknown to the researchers. The study was approved by the Ethical Committee of Levinsky-Wingate Academic College.

Results

Analysis of questionnaires and interviews focused on parents' perceptions of their children's outdoor activities yielded the following main findings:

1. Parents indicated that COVID-19 crisis changed families' habits related to spending time outdoors; Parents attribute the decrease in time spent outdoors associated with COVID-19 crisis, to their long work hours and to their children's engagement with screens;
2. Parents pointed to the development of physical-motor and social skills as well as improving health as being benefited by the children's outdoor activities;
3. Parents pointed to their long work hours and the weather conditions as main barriers to the frequency and duration of their children's activities outdoors.

Parents indicated that COVID-19 crisis changed families' habits related to spending time outdoors

Both quantitative and qualitative data indicate that COVID-19 was associated with less frequent outdoor activities than what the families had been used to before the pandemic. One of the questions included in the questionnaire was focused on how parents perceive possible changes in the frequency of going out with their preschool children before versus during COVID-19 crisis. Forty five percent of the parents reported that the COVID-19 crisis has reduced the frequency of going outdoors in the afternoons with their young children; fourteen percent of the parents reported that the COVID-19 crisis has increased the frequency of going out and 41% reported that the frequency of their outdoor activities was not affected by the pandemic (chi-square: =34.66, $p < .0001$).

An additional question addressed the parents' evaluation of the frequency of various locations of outdoor activities before and during the COVID-19 crisis based on a scale from 7(never) to 1(every day). Comparison of evaluations of frequency of spending time outdoors was performed on the mean evaluation of the parents before and during COVID-19, for each location. Locations of outdoor activities that were evaluated included: public playgrounds close to children's home, community gardens, large parks, forests, orchards, mountains, beach, lake/river, uncultivated and cultivated fields. Analysis of data shows that parents reported going out significantly less with their children to playgrounds and public gardens after the peak of COVID-19 crisis compared to their habits before the crisis ($t=2.15$, $p < .03$). Thus, parents reported that preschool children used to go out to playgrounds approximately twice a week before the pandemic compared to between twice and once a week during the COVID-19 crisis, when questionnaires were filled. Other less frequent family outdoor activities such as going to the sea, forests or mountains were reported to be less affected by the COVID-19 crisis.

Analysis of the interviews shows that COVID-19 crisis and the restrictions imposed on the citizens have influenced the habits of going out into the open space. Analysis of the interviews reveals that most parents (58%, 7 of the 12 parents interviewed) stated that the pandemic led to a reduction of time spent by

the children in activities in the open space. One of the factors mentioned by some of the interviewees as responsible for this reduction was children's preference for activities involving screens. Robert, one of the fathers interviewed, was a prominent spokesperson for this position:

You know we stay at home with the zooms [Zoom meeting/lessons] it's very difficult to take them out later for outdoor activities... It is hard to motivate them [the children]. From the moment they are at home all day and they don't go out in the morning, it's much harder to motivate them to go out.

Michal, one of the mothers interviewed claimed that due to the lockdowns, families got used to spending time at home and this habit continued after the lockdowns, when going outdoors was permitted and even recommended. Michal:

Since the COVID-19 crisis, we got used to spend time together at home as a family.

Nevertheless, there were also 5 parents (42% of the parents interviewed) who reported that either the pandemic and the lockdowns associated with it, did not affect the time spent by their children outdoors, or that the pandemic was associated with an increase of time spent outdoors. For example. Hadar, one of the mothers interviewed claimed that at the beginning of the COVID-19 crisis there was great concern to get infected and they did not go out. Later, even after the birth of her new baby, they started going out more. Furthermore, Asaf, one of the fathers interviewed, talked about going out into the open space more after the third lockdown with the understanding that being outside is good for the children and also due to the lack of existing alternatives at the time of the interview (as shopping centers were closed at the time). Finally, Roy, one of the fathers interviewed explained that it is important to stay and spend time in the open space, therefore apart from the first two lockdowns, the COVID-19 crisis has not changed the family's habits of going out into the open spaces.

Parents attribute the decrease in time spent outdoors associated with COVID-19 crisis, to their long work hours and to their children's engagement with screens

The analysis of both questionnaires and interviews indicated that most parents appreciate that their preschool children spent in general more time at home and particularly more time in front of screens during COVID-19 crisis compared to the screen time before the pandemic. Parents were also asked to assess the duration of time spent by the children in various places and activities before the pandemic and at the time of filling the questionnaires-during the pandemic after the three lockdowns. Table 1 shows the distribution of time spent in various leisure activities before versus during COVID-19-as reported by preschool children's parents.

Table 1. Distribution of time spent in various leisure activities before versus during COVID-19-as reported by preschool children's parents

Leisure activity	COVID-19 did not affect time spent	More time spent due to COVID-19	Less time spent due to COVID-19
Children spend time at home	45%	%46	%9
Children spend time in front of screens	%34	%64	%2
Children spent time in shopping centers/malls	%59	%18	%23
Children spend time with friends	%52	%21	%26
Children spend time with family	61%	%21	%18

Data presented in table 1 indicates that 64% of parents reported that children spent more time at home as opposed to only 2% that reported that children spent less time at home compared to the time spent before the pandemic (chi -square=113.75, p<.0001). Furthermore, parents' reports show that children spent after the lockdowns, during the pandemic, more time in front of screens compared to the time spent in front of screens before the pandemic: 46% of parents assessed that their preschool children spent more time in front of screens as opposed to only 9% of parents that reported that children spent less time in front of screens compared to the time spent before the pandemic (chi-square=52.51, p<.0001). These findings are aligned with reports of parents emerging from the interviews and presented in the previous section.

Analysis of data revealed parents' perceptions of benefits of outdoor activities to children's development as well as barriers which limit them. These benefits and barriers are likely to be relevant before, during and after the pandemic.

Parents acknowledge the benefits of outdoor activities to their preschool children's development

Both quantitative and qualitative data indicate that the parents acknowledged the benefits of outdoor activities to their preschool children's development. Examination of the parents' answers to the question "To what extent do you estimate that free play in the open space contributes to your child in each of the domains of development?" showed that the parents estimate that play in the open space contributes most of all to the development of physical -motor skills (M=4.69, SD=0.54), and in descending order to the development of social skills (M=4.55, SD=0.67), and maintaining and improving health (M=4.46, SD=0.66). On a scale from 1 to 6, where 6 indicates total agreement with the statement and 1 total disagreement with it (see Fig. 1).

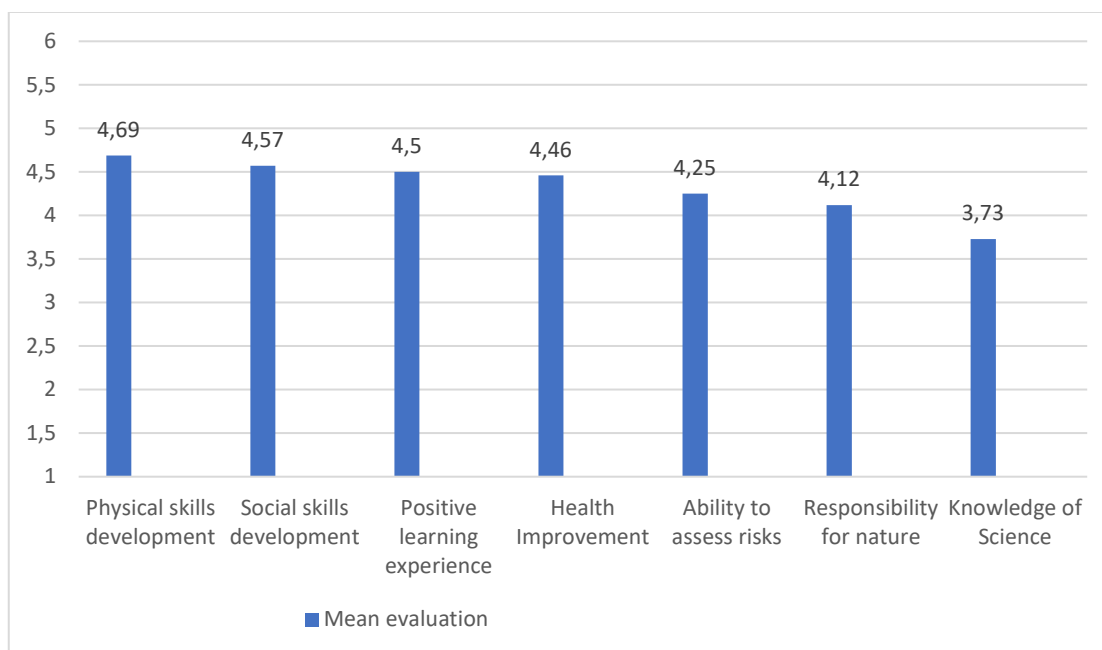


Figure 1. Parents' perceptions of benefits of outdoor activities

The difference between physical skills and social skills is marginally significant ($F= 3.632, p< .057$), meaning that parents perceive the benefit derived from free play outdoors to the children's physical skills as slightly higher than the benefit to the social skills. Furthermore, they perceive the benefit to physical skills as significantly higher than the benefit to positive learning experiences ($F=8.34, p<.004$). Finally, we mention that parents attribute the least benefit of outdoor activities to knowledge of science (e.g. difference between social skills and knowledge of science is highly significant ($F=83.27, p<.000$) and so is the difference between responsibility for nature and knowledge of science ($F=13.20, p<.000$).

Analysis of the interviews brought up a series of advantages and contributions that the parents attribute to children's activities in the open space. For example, Asaf one of the fathers pointed to the development of the mind and the body associated with outdoor activities: "It's important because these activities develop the mind and body, they [the children] ... learn much more than if they sit at home and watch TV". Robert, another father, referred to a combination of benefits. He mentioned the feeling of enjoyment and relaxation, and the potential of authentic learning as well as the improved connection between him and his children - all related to outdoor activities:

We have a huge park near the house; beyond spending energy, which is also important, there is an encounter with nature, the children are exposed to more stimuli and are more settled down, more relaxed, and happier. This is [also] a time for the most meaningful learning. There's always a conversation about what's happening outside and it's also quality time when I'm with them the most, and without the distractions of television and screens.

Maayan, one of the mothers interviewed, also mentioned a combination of benefits. She said that being outside is relaxing, liberating and also it creates opportunities for social gatherings and contribute to physical development.

The growth of the ability to assess risks is included in the list of benefits of outdoor play evaluated by the parents as shown in Fig.1. It was found that parents evaluate as moderately high the contribution of play in the open space to their children's ability to assess risks ($M=4.25$, $SD=0.86$). Parents evaluated the contribution of outdoor play to the children's ability to assess risks on a scale from 1 (do not agree at all) to 6 (totally agree). As shown in Fig 1, the benefit of outdoor activities to health improvement ($M=4.46$, $SD=0.76$) was assessed by parents as higher than their contribution to learning to assess risks ($F=6.73$, $p<.01$), whereas the benefit of outdoor activities to knowledge of science ($M=3.73$, $SD=1.12$) was assessed by parents as much lower than their benefit to learning to assess risks ($F=27.26$, $p<.000$).

Nevertheless, parents showed a lower willingness to encourage their children to take risks in play involving various types of playground equipment on a scale from 1 (do not agree at all) to 6 (totally agree), ($M=3.56$, $SD=1.57$ for boys and $M=3.53$, $SD=1.59$ for girls), compared to their position that outdoor activities are likely to contribute to the children's ability to assess risks ($F=29.86$, $p<.000$ boys, $F=31.89$, $p<.000$ for girls), with no gender differences. This means that possibly although parents do recognize the opportunity to learn to assess risks associated with outdoor activities, they tend not to encourage them to engage in play that involves risk-taking.

Parents' perceptions of barriers that affect frequency and duration of outdoor activities

Parents were also asked to assess the extent to which various factors serve in their opinion as barriers to children's daily outdoor activities. Parents' assessments (on a scale from 1 (do not agree at all) to 6 (totally agree) of what constitutes barriers to their children's outdoor activities are presented in descending order in Fig 2. Analysis of data shows that the parents' limited time ($M=4.06$, $SD=0.88$) and unfavorable weather ($M=3.98$, $SD=0.98$) are perceived by the parents as the strongest barriers to outdoor activities, with no significant difference between them. Parents' limited time is perceived as a significantly stronger barrier than the parents' concern for their children's safety ($F=23.99$, $p<.000$). No significant differences between parents' assessments of concern for safety, fear of strangers and distance from playgrounds were found. Finally, dirt is perceived as the weakest barrier to children's outdoor activities -when compared to other barriers (for example, the distance from playgrounds $F=40.53$, $p<.000$; dirt- $M=2.82$, $SD=0.94$; distance from playgrounds- $M=3.48$, $SD=1.13$).

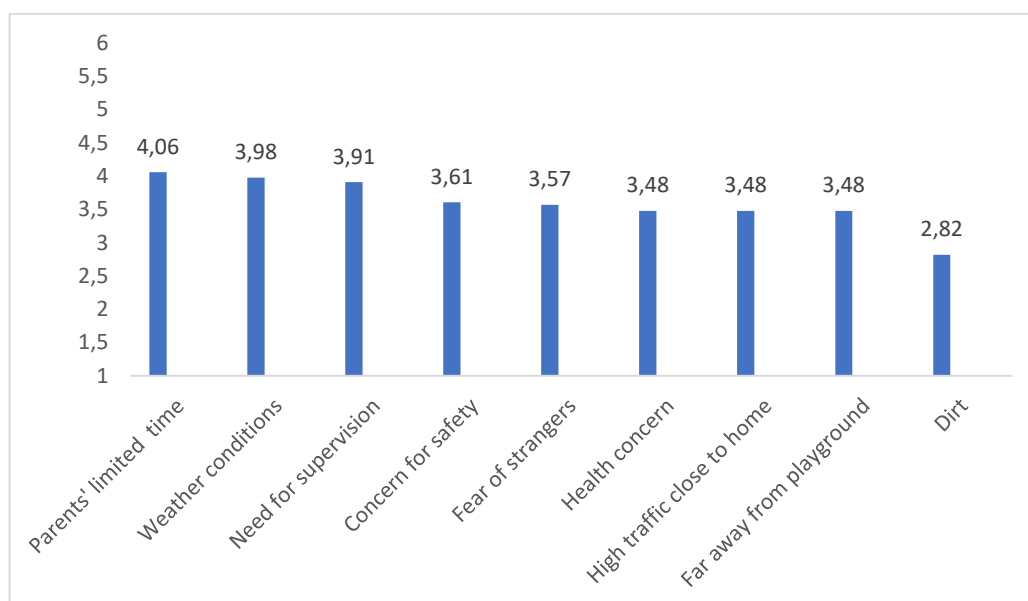


Figure 2. Parents' perceptions of barriers that interfere with the children's daily outdoor activities

The analysis of interviews supports the findings derived from the analysis of the questionnaires.

Testimonies of parents included in the interviews reveal that parents often claim that their busy daily routines interfere with their children's more frequent activities outdoors. An example of how the parents' limited time interferes with outdoor routines is found in the interview with Noa, one of the mothers interviewed:

I always pick up the children, at half past three-four o'clock, and my husband comes home at five. We spend time at home. We don't go out often. Something calm [activities] like Lego. We are usually weak with friends. Enrichment activities or going out and especially [spending time] at home.

Some parents refer to the fact that being in the open space makes it difficult to spend a smooth evening after coming back home. For example, Maayan describes the routine of spending time and getting ready for bed and explains why she does not like to spend time with her sons in playgrounds:

I want us to have time to get home so we can enjoy dinner at home, take a shower, tell a story, and brush our teeth, the whole ceremony of getting ready to go to bed. So if we are out for a long time it makes it.

There are parents who mention the rain in winter and the heat in summer as barriers to going out into the open space. Ma'ayan, the mother interviewee refers to the weather conditions in the winter as a barrier:

In the winter it is very difficult [to go out], and in the winter there is a lot more TV, unfortunately...

Asaf the father interviewee claims:

It is impossible during summer, to even take walks outside because of the heat.

Concern for safety was perceived as a moderately strong barrier to children's outdoor activities ($M=3.61$, $SD=0.96$) by the parents who filled the questionnaires. Analysis of the interviews revealed that a few parents expressed strong concern for the children's safety and explained why this factor had an impact on the time spent by children outdoors. For example, Angie, one of the mothers whose family lives in the city of Jaffa said:

It's not like it used to be that you can go out and play and everything is fine... because especially here in Jaffa, everything is very scary, especially recently, every motorcycle that passes by on the road takes out some kind of weapon [and continues.]... It is a nightmare for me.

Angie's concern for her children's safety needs to be understood in the context of an unprecedented safety and governance crisis affecting Muslim-Arab communities in Israel.

Finally, there are parents who don't like sand and dirt. Hadar, one of the mothers interviewed said:

.... I don't like the sand" but she is ambivalent as on the one hand she understands the importance of playing with sand and on the other hand she is worried by "the mess caused by sand in her daughter's curly hair.

Conclusion and Discussion

This study is focused on Israeli parents' perceptions of their preschool children's activities outdoors, mainly not during preschool hours, before and during COVID-19 crisis. To the best of our knowledge, no such study has been performed before in Israel. Studies related to parents' perceptions of their children's outdoor activities was performed in many countries in Europe, the United States, Australia and New Zealand (Glynn et al., 2021; Kourti et al., 2021; Vasileva et al., 2021). Thus, this study makes possible making comparisons between perceptions of Israeli parents and those of parents in other countries.

The main findings show that Israeli parents of preschoolers appreciate the benefits of play and activities outdoors to their children's physical-motor and social development as well as their health. Parents did not mention in their interviews possible benefits related to their children's acquaintance or engagement with nature (animals, plants, stones, skies, etc.) in their routine activities outdoors. Nor did they mention the possible contribution of outdoor activity to developing children's inquiry skills. The children's most frequent engagement with the outdoor space reported by parents in the afternoons is the public playgrounds close to home that are for most children, visited at least once a week. These findings seem to be aligned with findings from other countries (Datar et al., 2013; Tappe et al., 2013). Although

knowledgeable of the fact that in their children's preschools their children spend time outdoors, parents seem not to be aware of either the policy or the details of how outdoor time is being spent by their children in preschools. The parents participating in this study appreciate the risk involved in the children's outdoor activities as moderate. Nevertheless, parents display a quite "conservative" approach in encouraging their children to dare to take risks in their free play, primarily with various equipment (slides, swings, and so on) in public playgrounds. For example, parents' fear of the risks involved in outdoor activities, leads them to not allow their children to engage in risky play (McFarland & Laird, 2018). It seems that parents participating in this study do not set an educational goal for their preschool children to take advantage of outdoor activities in order to learn to take calculated risks.

Participants in this study were both mothers and fathers (about 50% of respondents to questionnaires were fathers and a quarter of interviewees were fathers as well). We did not find meaningful differences between fathers' and mothers' perceptions of outdoor activities. Interviews revealed that the fathers participating in the study were deeply involved in their children's education and in their outdoor activities.

This study was performed during the COVID-19 crisis, after three lockdowns and while a wide range vaccination of the population (preschool children included) was still in process. Therefore, included in interviews and questionnaires were questions focused on the parents' perceptions of preschool children's activities before and during COVID-19 crisis. Findings show that most parents reported that the pandemic was associated with changes in families' habits focused on spending time outdoors. Most affected by the pandemic according to the parents' reports was the frequency of visiting close playgrounds. Frequency of visiting playgrounds decreased significantly after the lockdowns for most preschool children as compared to parents' reports of the frequency of public playground visits before the pandemic. Nevertheless, we were also able to hear the voices of the fewer parents whose preschool children either increased the time spent outdoors during the pandemic and of those who reported that COVID-19 did not have an impact on the frequency of going outdoors. For these families, it seems that frequency of going out did not change due to the determination of the parents to take their children outdoors and to some extent due to the limited possibilities of entertainment (as restrictions were imposed on entrance to cinemas, theaters, shopping centers).

Parents' reports indicate that the main barriers to going out more frequently with preschool children are the parents' long work hours and the children's preference for activities involving screens that were deepened during COVID-19 crisis. Children's preference for activities involving screens in general and the increase of screen time during COVID-19 crisis are similar to what has been found in studies around the globe (Mantovani et al., 2021). Parents' long work hours as barriers to spending time outdoors seem to be particularly relevant to the Israeli context.

The choice of employing mixed methods in this study helped us on the one hand get an idea about the frequency and sites visited by children and families outdoors as well as the parents' overall assessments of benefits and barriers to outdoor activities in general and during COVID-19 crisis in particular; Interviews helped us get an idea about the parents' state of mind related to children's outdoor activities and the nature of barriers to spending more time outdoors. Also, the interviews with the parents enabled us to understand both the position of the majority of parents and children (those going out less during the pandemic) as well as the few parents who maintained or even increased the time spent outdoors.

Recommendations

In view of the findings, it seems important to guide parents to take advantage of the benefits of outdoor activities beyond the physical-motor, social and health realms, and also beyond the regular use of equipment in public playgrounds. Parents seem to need guidance focused on the need to be attentive to the children's interest in nature and encourage it. Climbing trees, observing insects, birds, dogs and cats; taking an interest in plants, in meteorological phenomena, looking at the sky... all those are of great interest and importance for the children but have not been mentioned by parents as benefits of outdoor activities. It could be that well-trained preschool teachers could serve as agents of change. All these are likely to both improve children's acquaintance with the surrounding nature and improve their inquiry skills. Indeed,

issues and concerns related to global climate change and sustainability have not been mentioned by the parents. The real concern for the surroundings emerges on the basis of frequent close encounters with the animate and the inanimate world around us.

Encouraging qualitative and longer time spent outdoors following children's interests is likely to compete with activities involving screens. Therefore, encouraging children to go out more and enjoy the surroundings seems as a better educational practice than just limit or forbid screen time as it offers an alternative.

Limitations of the study

This study was performed during the pandemic and therefore the findings show what are the parents' perceptions related to outdoor activities at this specific point in time. An additional study is needed to find out what are the parents' perceptions one year or more after the restrictions imposed by the pandemic are released.

This study included in the quantitative part only Jewish Israeli participants. It is important to understand what are the Arab Israeli parents' perceptions of their preschool children's outdoor activities in order to get a more complete picture of outdoor activities in Israel.

Declarations

Authors' Declarations

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Appendix 1

Parents' perceptions of their children's outdoor activities before and during COVID-19 crisis

1. Tell me about yourself -about your family, age, education, type of place you live in, where did you grow up, how many children do you have? What is your occupation?
2. Tell me about your children. How old are they? Please refer to the child who is 3 to 6 years old in this interview, wherever questions address the children's outdoor activities.
3. How did you spend your time outdoors during your childhood?
4. When do you get home from work?
5. Who brings the children to the preschool? Who takes them home from preschool at the end of the day or how they get home? Who takes care of the children in the afternoon?
6. Do you have in the settlement you live in and particularly in your neighborhood open spaces in which you can spend time? Does your child spend time there? With whom? When? How often? What is your child doing in these places?
7. Tell us about how you and your child spend your time in the afternoon?
8. Also please tell us how, to the best of your knowledge, is your child spending time outdoors during preschool hours? How often to the best of your knowledge children spend time outdoors during preschool hours and what is the nature of their activities?
9. What is your child's favorite outdoor activity? What is your favorite outdoor activity? Do you think this activity contributes to your children's development in any way?
10. Has the COVID-19 crisis affected the frequency of your family spending time outdoors and length of time spent by your child outdoors? How did the crisis affect your children's outdoor activities? How did it affect the places that you and your child spend time outdoors?
11. Tell me how your family likes to spend free time? Do you spend time in nature and the open space? How often? Do you like the activity in the open spaces? Why?
12. Do your children like to spend time in the open space? What do they like to do outdoors?
13. Do you think that activities outdoors contribute to the children's development? What domains of development tend in your opinion to be benefited by outdoor activities? Try to explain your position.
14. What is in your view your role as a parent when accompanying your children outdoors?

Appendix 2

Parents' perceptions regarding the activity of their three- to six-year-old children in the open space

Dear Parents,

We are a group of ECEC researchers. We are conducting research that focuses on how you as parents see the activity of your young children, ages 3 to 6, in the open space in general, near the house, in the preschool yard. We would be very grateful if you would honestly answer the questions included in this attached questionnaire. The questionnaire is anonymous. If you have more than one child between the ages of 3 and 6, please fill out the questionnaire referring to the older child.

Thank you

Part I- General Questions-Demographics

1. What is your role:
 - a. Mother
 - b. Father
 - c. Another role ____
2. What is your age? ____
3. What description would best suit how you perceive yourself:
 - a. Secular
 - b. Traditional
 - c. Religious
 - d. Ultra-religious
4. With whom does the child for whom you complete the questionnaire live?
 - a. Two parents in the same household
 - b. Two parents in different households
 - c. One of the parents
 - d. Other living arrangement _____
5. What is your highest education?
 - a. Elementary school
 - b. Secondary school – without matriculation
 - c. Secondary school – with matriculation
 - d. Some college/university education
 - e. B.A. degree or equivalent
 - f. M.A. degree or equivalent
 - g. Ph.D.
6. What is your occupation?
 - a. College/university student
 - b. Industry
 - c. Hi-tech
 - d. Self-employed
 - e. Civil servant
 - f. Cleaning profession
 - g. Teaching
 - h. Another. Please specify _____.

7. How many children do you have? ____

8. Specify each of your children's age and gender

	Gender (girl, boy, another)	0 - 3 years	3-6 years	Grades 1-2	Grades 3-6	Grades 7-9	Grades 10-12
1.							
2.							
3.							
4.							
5.							

Part II- The characteristics of your living environment (yours and your child's)

9. Where do you reside?
 - a. In a large city (over 100,000 residents)
 - b. In a medium-sized city (50-100,000 residents)

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- c. In a small town or local council (fewer than 50,000 residents)
- d. In a communal settlement or village (up to 2,000 residents)

10.. What best defines your place of residence?

- a. Apartment in a shared building without a balcony
- b. Apartment in a shared building with a balcony
- c. A two-family house
- d. Private house
- e. Other. Specify _____

11. If you live in a multi-story building, please indicate the number of floors in the building: _____

12. What floor do you live on? ____⁷

Part III- Activities in the open space – habits

14. How often did your children visit each of the following places before COVID-19 crisis?

Frequency	Every day	Twice a week	Once a week	Once in two weeks	Once a month	A few times a year	Never
Place							
Playground/ / public garden							
Community Garden							
Large, spacious park							
Grove/forest							
Orchards							
Mountains							
Sea shore							
Lake/river							
Uncultivated field							
Cultivated field							

15. How often did your children visit each of the following places during the last six months (originally indicating during Covid/19 crisis).

Frequency	Every day	Twice a week	Once a week	Once in two weeks	Once a month	A few times a year	Never
Place							
Playground/ / public garden							
Community Garden							
Large, spacious park							
Grove/forest							
Orchards							
Mountains							
Sea shore							
Lake/river							
Uncultivated field							
Cultivated field							

23. To what extent has the COVID-19 crisis affected the frequency of going outdoors with your children?

- a. COVID-19 did not affect/did not make a difference
- b. COVID-19 reduced the frequency of going outdoors
- c. COVID-19 increased the frequency of going outdoors

24. How do you think COVID-19 affected the way your children spend their leisure time after preschool? (Each of the lines in the table must be answered)

- a. COVID-19 did not affect the way children spent time outdoors
- b. COVID-19 did affect the way children spent time outdoors

	More time than before COVID-19	Less time than before COVID-19
Children spend time indoors		
Children spend time with screens		
Children spend time in shopping centers		
Children spend time outdoors		
Children spend time with friends		
Children spend time with family		

Part V: Parents' perceptions regarding the benefits and barriers to activities/ playing in the open space during the hours when the children are not in the educational setting.

35. Please indicate how much you agree with each of the following statements on a scale from 1 (completely disagree) to 6 (completely agree).

- a. It is important that children experience activities in the open space that will help them learn to deal with risk-taking situations.
Completely disagree 1...2...3...4...5...6 Completely agree
- b. Boys should be encouraged to take risks in their outdoor play.
Completely disagree 1...2...3...4...5...6 Completely agree
- c. Girls should be encouraged to take risks in their outdoor play.
Completely disagree 1...2...3...4...5...6 Completely agree

36. To what extent do you estimate that the free play in the open space contributes to your child in each of the following activities? (Mark an X in each line) – Please answer all questions

Extent	To a very large extent	To some extent	To a very small extent	Not at all	I am Uncertain
Free play in the open space contributes to:					
A positive learning experience					
Development of physical-motor skills					
Maintaining and improving health					
Developing the ability to assess risks					
Developing the ability to take responsibility for the environment					
Developing awareness of nature					
Development of scientific knowledge					
Developing of social skills					

37. To what extent do you estimate that each the following aspects constitutes a barrier/interferes with your child's daily activities in the open space? (Mark an X in each row). You must answer each of the lines. Please answer all questions

Extent	To a very large extent	To some extent	To a very small extent	Not at all	I am Uncertain
Possible barriers to free outdoor activities/play					
The location of our house					
Heavy traffic					

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Great distance from public parks					
Unfavorable weather conditions					
Parents' limited time					
Children's limited time					
Parents' concern for security					
Fear of strangers					
Fear of dogs					
Need for close supervision by an adult					
Parents' concern for health					
Inaccessibility, for example, passing through a private area					
Dirt - the child returns home dirty (mud, sand					

'I'd rather learn outside because nature can teach you so many more things than being inside': Outdoor learning experiences of young children and educators

Laurel Donison¹, Tanya Halsall²

Abstract: Outdoor and nature-based activities promote better health and academic outcomes for children. The school context represents a critical opportunity to support increased outdoor time. Yet, outdoor learning (OL) is not being implemented consistently across school contexts, therefore, many students do not receive the opportunity to participate. This study was designed to support increased uptake of OL and explores young children's perspectives of learning within an outdoor context and explores how educators support OL opportunities within an early learning context. This research places a focus on children's voices in order to emphasize their perspective of the learning experience and to highlight experiential child-led processes within OL. We collected semi-structured interviews with students, their parents and school staff who were involved in OL. An exploratory thematic analysis was applied using QSR NVivo. Findings that emerged were organized under two main themes: Nature as the teacher and Child-led exploration of nature. Nature as a teacher contained three subthemes: 1) Seasonal change influencing inquiry, 2) Engagement with other living things in nature and 3) Dimensionality of the outdoors as an element that enhances learning – experiential immersive learning. Child-led exploration of nature contained one subtheme: Learning driven by play. These findings can be used to advocate for increased uptake of OL in education and to provide guidance to educators regarding how to include OL within their practice to enhance equitable access for children.

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Children's rights; Early learning; Play-based learning; Nature; Outdoor learning

Introduction

Outdoor and nature-based activities promote better health and academic outcomes for children (Barrable et al., 2021; Fjørtoft, 2001; Gray et al., 2015; Kuo et al., 2019; McCormick, 2017; Norwood et al., 2019; Perry et al., 2016; Preuß et al., 2019; Pritchard et al., 2020; Ulset et al., 2017; Vanaken & Danckaerts, 2018). Since children spend a significant amount of time within the school context, outdoor learning (OL) represents a critical opportunity for students to experience increased exposure to the outdoors and nature. Further, experts have recommended that children increase time spent outdoors at school (Lawson Foundation, 2020; McNamara et al., 2020; Tremblay et al., 2015). However, the application of OL has been inconsistently integrated into the mainstream pedagogical curriculum, therefore, many students do not receive the opportunity to participate. This study examines student and educator experiences within OL to explore children's perspectives of learning within an outdoor context, as well as how educators can support these opportunities. This research places a focus on children's voices in order to emphasize their perspective of the learning experience and to highlight experiential child-led processes within OL.

Benefits of Spending Time in the Outdoors

OL and play can provide valuable experiences and benefits for children (Fjørtoft, 2001), it is important for children's physical, social, emotional and cognitive development (Kemple et al., 2016; Mann et al., 2021) it can also be beneficial for children's mental health and wellbeing (Buckley, 2018). Several recent reviews have identified comprehensive beneficial outcomes of time in the outdoors and in nature on children's health and wellbeing, including improved general health, attention, memory, mood,

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'I'd rather learn outside because nature can teach you so many more things than being inside': Outdoor...

cognitive development, competence, social support, self-discipline, academic performance as well as reduced stress and symptoms of attention-deficit hyperactivity disorder (ADHD) (McCormick, 2017; Norwood et al., 2019; Tremblay et al., 2015; Vanaken & Danckaerts, 2018). In addition, exposure to nature in childhood has been associated with enhanced wellbeing in adulthood (Preuß et al., 2019). Regular participation in OL environments was found to enhance student social, academic, physical and psychological outcomes (Becker et al., 2017). Kuo et al. (2019) have identified a range of recent advances in the field that suggest that there may be a causal relationship between nature-based experiences and enhanced learning and development. This is supported by evidence that overall, nature-based learning is more effective than traditional teaching approaches and there is a dose-response relationship with positive outcomes in a range of contexts. Positive impacts to psychological health may be influenced through stress reduction and the restoration of attention (Capaldi et al., 2015; Kaplan, 1995). Positive outcomes may also be accrued through increased physical activity as children tend to be most active when engaged in outdoor play (Perry et al., 2016) and outdoor exposure has been found to increase levels of physical activity (Gray et al., 2015).

OL may also promote child health and development because it represents a significant opportunity to increase physical activity. According to the ParticipACTION report card (2022), children's physical activity levels have decreased significantly in Canada, and are below the recommended 60 minutes of physical activity a day. In part, this is the result of a combination of barriers that restrict children's access to the outdoors including risk aversion in relation to outside activities, urbanization and an increase in time spent on screens (Bento & Dias, 2017; Kellert, 2002; Kilkelly et al., 2016; Tremblay et al., 2015). Since children spend a significant portion of their waking hours at school, OL can be integrated to create dedicated time in the school day when children can be physically active.

OL also offers children the opportunity to participate in risky/adventurous play (Harper & Obee, 2021). Risky play relates to play that involves an element of open-ended outcome and the possibility of physical injury (Brussoni et al., 2015; Sandseter, 2009; Sandseter & Kennair, 2011). Such as activities that involve increased height/speed, rough play or exposure to contexts that may contain hazards (Sandseter, 2009). Engagement in risky play may support the development of cognitive problem-solving and social competence (Brussoni et al., 2015).

Outdoor and nature-based interventions have also been found to support the development of environmentally sustainable behavior and engagement in environmental advocacy (Browne et al., 2011; Lumber et al., 2017; Reis et al., 2015; Zelenski et al., 2015), therefore, OL may benefit the environment through the development of individuals who are willing to invest in climate advocacy and sustainable development (Halsall & Forneris, 2020).

Outdoor Learning in Early Childhood

OL relates to "learning that takes place outdoors", whereby the outdoors represents "any open-air, wild, natural, or human-made space which may have a temporary or fixed cover (e.g. awning or roof)." (Lee et al., 2022, p. 12). Further, we define nature or natural environments as "non-built surroundings and conditions in nature in which living and non-living things co-exist" (Lee et al., 2022, p. 12) The outdoors can provide learning opportunities that do not exist in the indoor environment (Kemple et al., 2016) and research has identified that environments that provide different choices and opportunities for children to follow their interests are spaces where children can learn best (Hirsh-Pasek et al., 2003). Learning in a nature-based environment is a unique opportunity because it immerses children in a dynamic living environment (Prins et al., 2022) that affords changing and novel learning environments that can drive curiosity and love of learning. Further, outdoor settings provide a first-hand experiential opportunity to learn from the world and nature (Malone & Tranter, 2003). Natural contexts offer children a multiplicity of richly visual, auditory and tactile stimuli while supporting impactful exploration (Khan et al., 2021) and different types of plants help children observe growth and offer exploration through natural colours, textures and scents (Hussein, 2017). These aspects are often overlooked and should be a key consideration when examining the value of OL.

Despite the benefits, barriers still exist which can impact the implementation of outdoor play and learning opportunities in early learning settings (Oberle et al., 2021; Ramsden et al., 2022). Therefore, there is a need for more research to examine how to support uptake of OL within educational settings. Uptake is a term that is often used within the implementation science field that describes the increased application of a specific practice across systems (Bauer et al., 2015). Further, much of the existing research on OL is focused on adult perspectives and observations (Jordan & Chawla, 2019; Tremblay et al., 2015; Zamani, 2017). Examining experiences in OL practice can support the identification of barriers and to develop system-level strategies and improve access across the education system (Ayotte-Beaudet et al., 2022; Mitra et al., 2020; Oberlee et al., 2021) and it can help to highlight the benefits of OL (Ayotte-Beaudet et al., 2022; Mitra et al., 2020).

Further, there is a need for more research that captures children's perspectives of outdoor experiences (Marchant et al., 2019) and to increase awareness and understanding regarding the importance of children's right to play in the outdoors (Bento & Dias, 2017). Listening to children's perspective is also important because it highlights their lived experience of how learning through nature can inspire them. They notice things that adults do not, and viewing these experiences through their eyes draws attention to the details that play an important role in driving their curiosity and potential to develop a love of learning. Since children are the main beneficiaries of these OL spaces in early educational settings, it is essential that their perspectives are taken into consideration as well to support a better understanding of what is important to them.

Purpose

Exploring OL is important because it is an opportunity to learn more about how place shapes learning processes and it can help us better understand the opportunities that different spaces provide for children's learning and development. This can support increased uptake of OL across educational settings to increase equitable access. This paper is based on findings that were taken from a larger study that was designed to 1) leverage the experiences and insights from Canadian educators who are championing innovations in OL within public schools, 2) capture information about novel practices in OL that may have broad applicability to diminish current inequities in access and 3) compile emergent information about educational practices within the pandemic context. The current paper is based on a subset of findings and has the main objectives to describe the characteristics of nature that support learning for young children, highlight children's perspectives of these learning experiences and how they engage in the learning process and increase awareness and understanding regarding children's rights to play in the outdoors.

Children should be recognized as participating citizens and their perspectives should be included to inform issues that influence their lives, including research (Merewether, 2015). This study acknowledges children as capable beings who have valuable knowledge to share with us about their views of the world and aligns with Articles 12 and 13 of the United Nations Convention on the Rights of the Child that state that children have the right to share their opinion and to be heard in matters that affect them (UNICEF, 2014). This study also upholds Article 31 (children's right to play). Embracing children as citizens with rights is important because they have unique perspectives, and they deserve to have opportunities to share them. The information that they share with us in research can inform adults about their lives and help shape policies and practices that impact them. Through dialogue with children we can explore their understanding of the world and draw attention to their ways of knowing, values, and judgements and apply this knowledge to enhance educational practice and policy.

Method

This paper presents findings from a larger developmental evaluation (see Patton, 2011) that included a mixed-method approach and was guided by a pragmatic research paradigm (see Morgan, 2007). Pragmatic research prioritizes contextual requirements, allowing them to guide design and methods (Greene et al., 2001) and supports responsiveness to diverse stakeholder voices (Morgan, 2007). This creates the flexibility needed to respond to the needs of the context and to enhance the engagement of relevant

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stakeholders and the higher likelihood of use (Bamberger, 2010; Patton, 2011). This study was designed to capture emergent experiences related to teaching outside during the pandemic and places a focus on children's voices in order to emphasize their perspective of the learning experience and to highlight experiential child-led processes within OL. The qualitative data presented in this paper were collected as part of an initial exploratory phase focused on capturing current knowledge developed through the innovation and implementation of OL practices that may have broad applicability to diminish current inequities in access.

Participants and Procedures

The findings presented in this paper were captured through semi-structured interviews that were conducted through Zoom with students, their parents and school staff who had been involved in OL within the Canadian public school system in Kindergarten to grade 8. A purposeful sampling strategy was employed that also involved snowball sampling (Patton, 2002). In the fall of 2021, we worked in partnership with a public school board in southeastern Ontario Canada to recruit staff and students/families who were involved with OL. The school board shared a posting about the study on their website as well as through Twitter and Facebook to invite participants interested in participating. As a result of recruitment difficulties related to the pandemic, a second, broader recruitment was initiated in the spring of 2022 to increase participant numbers and to expand the examination to include a national focus. This was achieved directly through social media and was supported by several OL and play organizations and partners. Communications were disseminated through blogs, website postings, newsletters, Twitter and Instagram. Staff and families who participated were asked to share the information about the study with peers and colleagues who were also involved in OL. Informed written and verbal consent was obtained from educators. Informed written consent was obtained from parent guardians before data collection and informed verbal assent was obtained from children before the interview began. This study protocol has been approved by Carleton University's Research Ethics Board (CUREB# 116021).

Within Canada children from birth to age 8 are considered a part of the early years, which includes students attending junior kindergarten to grade three (Ontario Ministry of Education, 2014, p. 2). 27 school staff participated (24 female, three male) in semi-structured interviews (see Table 1 for professional designations). The majority of participants self-identified as White European and White North American, with the exception of three staff who self-identified as Iranian, East Asian and Metis. Participants were located across Canada with 16 from Ontario, eight from British Columbia, two from Alberta and one from Manitoba. In terms of positions, two participants were principals, one was an Environmental & Land-Based Learning Lead/Vice principal, one was a Learning Leader grade 7-9 outdoor and physical education, two were early childhood educators and 21 were teachers with the majority (19) working in early learning (K-grade 3). We interviewed seven children (one female, six male), and five mothers. All self-identified as White European and White North American ethnicity. Children ranged in age between four and nine years old (see Table 2). One child had been diagnosed with autism and another had a diagnosis of (ADHD). All families described their economic status as middle class (3) or middle-upper class (2). One mother was a single parent.

Table 1. Professional designation of the school staff

Elementary educator	Early childhood educator	Administrator	Specialist
21	2	3	1

Table 2. Frequency of gender and age in the student sample

Age	Girls	Boys
4 years	0	2
7 years	1	3
9 years	0	1

Interviews were facilitated between December of 2021 - 2022. Staff interviews ranged from 21 to 78 minutes (average 42 minutes) and children's interviews (conducted with parents and sometimes siblings)

ranged from 23 minutes to 50 minutes (average 34 minutes). All interviews were conducted and audio-recorded through Zoom. Recordings were transcribed using otter.ai and then transcripts were reviewed to ensure accuracy. All audio recordings were anonymized and stored locally on the researcher's personal computer or in a password protected OneDrive file. Pseudonyms were created to support participant confidentiality. Children chose their own pseudonym. Staff were assigned pseudonyms.

Measures

All student interviews were conducted with parent involvement. Staff interview guides were designed to capture their general experiences implementing outdoor classes. Questions were designed to explore influencing factors, including support required, previous training, lesson adaptations, successes and challenges, environmental influences, perceptions of student behaviour, key lessons learned and recommendations. Semi-structured interviews with students explored their personal experiences in outdoor classes, suggestions for improvement as well as perceptions of how experiences in the outdoors can be beneficial to them. Finally, parents were involved in a shorter interview to capture information about family demographics, participation in outdoor activities outside of school, as well as barriers and facilitators that affect family involvement in outdoor activity.

Researchers recommend using visual prompts within interviews with younger children (Derr et al., 2018). Storytelling facilitates child engagement as it is social and enhances meaning and relevance (Davis, 2014; Green, 2004; Lawrence & Paige, 2016; Phillips, 2013). In addition, narrative story can support perspective-taking in young children through the reference of the protagonist viewpoint (Ziegler et al., 2005). As such, the student interview included a first-person story that follows a child's experience of nature (see Bang, 2004). This strategy was used as a prompt to support children's reflection on their own experiences in nature, what these experiences mean to them and whether this applied to the school setting. Our intention was to increase student engagement in the interview and enrich their descriptions of OL experiences, despite having to participate in the interview within an indoor virtual format.

Analysis

An exploratory thematic analysis (Braun & Clarke, 2006, 2014) was applied using QSR NVivo. This involves a process of 1) familiarization with the data, 2) the generation of initial codes, 3) identification of themes, 4) review and revision of themes, 5) definition of themes and 6) development of the written report. Themes are developed inductively, therefore many themes are not closely tied to the original research objectives and interview guide questions but emerge from patterns identified across participants. Laurel interviewed all participants and kept a log of initial insights to inform analyses. Laurel completed an open-coding on two thirds of the interviews and Tanya coded the remaining third. Tanya integrated, refined and organized the codes into higher order themes. The two coders met to discuss coding revisions and came to consensus on the final structure and definitions.

Results

This paper presents the findings on emergent themes that focused on children's immersive experiences within the environment. This includes two main themes: Nature as the teacher and Child-led exploration of nature. Nature as a teacher contained three subthemes: 1) Seasonal change influencing inquiry, 2) Engagement with other living things in nature and 3) Dimensionality of the outdoors as an element that enhances learning – experiential immersive learning. Child-led exploration of nature contained one subtheme: Learning driven by play. Within the data, we centre children's voice to highlight their perspective and experiences.

Nature as the Teacher

Many educators mentioned the importance of the outdoor space and valued the opportunities it provided for learning. Many spoke about the land as a teacher and letting go of the idea that they were the only ones initiating and leading instruction and instead let the children engage with nature allowing learning opportunities to emerge from the novelty presented by the outdoor environment. Educators also

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acknowledged that this process allowed them to learn alongside the children. The educators shared a unique perspective which is reflected through the following educators statement,

We (the teachers) do not need to be the only one's teaching. I think it's like, there is a natural teacher. And I love that when I'm outside, that I'm not the holder of all knowledge, like I'm learning and have all this wonderment beside them. We can let go and let the land teach. (Renee)

The educators provided insight into the many ways nature teaches them and the children. For example, Ariel spoke about the sounds, and the smells in the outdoors highlighting learning from nature through our senses. Brooklyn spoke about the life cycles of plants that happen and how observing pumpkins can teach children about growth and also how plants decompose. The educators in this project show how they were able to engage with nature in many different ways and use it to support many different learning areas. One teacher described how she used clouds for mindfulness "we do mindfulness activities, such as like Cloud watching. Like just looking at the clouds and doing mindfulness and deep breathing" (Cheryl). This example demonstrates how nature can support relaxation and also shows that nature extends beyond our direct surroundings and also includes the sky.

The value of learning from nature was also made clear during the interview with one of the children, Vinny (age 7), who explained that she valued OL because "nature can teach you so many more things than being inside". Being outdoors and being with nature gives us a different opportunity for learning that can shift our practice away from believing that subjects need to be taught separately and individually in the classroom. Instead it provides a relational approach that highlights the interconnectedness that exists within the world and our relationships with each other and nature. This example from a conversation with Ranger (age 7) and his mom highlights how Ranger's curiosity and wonder is sparked by nature and how this can lead to significant and meaningful learning in literacy.

Mom: What about the nature mobiles you make? What do we collect for that?

Ranger: They collect six pine cones, leaves.

Mom: you always have your pockets filled with rocks and your book bags filled with sticks to come home to put on your mobile. [Hey, come back here]

Ranger: because I want I want so show her my collection ...I have two sticks that looks like the letter "A", in capital form!

Seasonal Change Influencing Inquiry

Part of the novelty that supports learning in the outdoors is generated by the natural seasonal changes. The educators shared details about how each season offers unique opportunities. The following quote highlights spring and how nature within this specific season is changing and providing opportunities for students to see growth and new life blossoming she stated,

In spring, there's so much going on. Like you've got things are melting, and things are sprouting, and things are coming out of hibernation, or, and like birds are coming back and starting to build nests, and the tree buds are starting and the flowers are straight. Like it's just such a whole lot of really cool stuff going on all at one time. (Christine)

Many spoke about the fall and observing the trees as the leaves change colors and begin to fall. Educators shared how valuable it was to have different seasons because as nature would change, different learning opportunities would emerge.

Seasonal changes also create opportunities for the children to interact with water and natural opportunities for exploration and play within the school grounds. For example, educators spoke about puddles and the learning opportunities that they produced such as jumping in puddles and measuring puddles using different materials such as blocks or string. Cheryl shared the children's feelings of joy in her interview she said, "They love puddles. They love mud. They love snow. They love ice. They love that stuff. That's what kids want to do, right? They want to build. They want to play." Similarly, Sophia explained that "the kids will find any little bit of mud, a little bit of a patch where grass hasn't grown or was and they will dig and they love digging and things like that."

Engagement with Other Living Things in Nature

Many of the learning experiences in the outdoors included engagements with the more than human

world with plants, animals and in forests. When Moose (age 7) was asked what he would like to do more through OL he said “bring me outside in the forest. And bring me to the pond.” The educators spoke about the many ways the plants and trees became opportunities for exploring and learning. They mentioned looking at moss, salmon berries, different trees, fiddle heads etc.

The movement of the plants and animals around the children in the forest shape their learning and play, they are a relational part of learning which can feel separated from us when we are indoors. Being outside in a space where you connect with the more than human world, is an opportunity to develop more relationships that aren't always possible inside the school. In the outdoors learning becomes enriched through the space and place which actively contribute to wonder, curiosity and other driving factors that spark children's interests and lead to inquiry. This was evident in Erika's experiences with OL, and she shared how inquiries would emerge unexpectedly from the nature that was present in the moments, for example she said:

One of the coolest experiences was, we were reading a story and all of a sudden, these things kept dropping on us. It was pinecones, two little ones. And a little boy picked them up. And he had two cones. And one was green with a little bit of pink inside. And the other one was pink with a little bit of green inside. And it looks like it came from the same tree. And we were trying to figure out which one came first. It was then all of a sudden just this little inquiry emerged right there.

The educators mentioned the different animals or signs of animals such as tracks they would see. For an example Kyla explained that they would see a lot of bunnies, squirrels, chipmunks, ducks and they even saw an eagle a few times. Some shared their experiences with birds such as Samantha who explained that they would spread bird seed around the forest and create bird feeders to hang in the trees. Other educators shared experiences in the snow such as learning about different animals from the tracks they left in the snow. Brooklyn shared an example of how they were able to explore fox tracks and behaviours: “We had a cool thing that happened last winter. In being outside, we noticed a lot of animal tracks. And it turned out that we had an actual fox on our school property.” Erika shared that although they did not often see big animals, the tracks were just as intriguing and exciting. She explained that each time they would see animal tracks they would stop and try to identify who's tracks they were and where they were going or why they may be going in a certain direction which provoked the children to think more about animals that shared and lived in the space with them.

These interactions with nature were very important and meaningful for the children and were often mentioned as highlights of OL within the interviews as described by Ranger (age 7) below:

Interviewer: Can you tell me what can you tell me what some of your favorite things are in nature?

Mom: What is your favorite thing about nature? what do you like about nature?

Ranger: I love the birds.

Vinny (age 7) also appreciated the OL because of the nature contact opportunities that were available when she was outside with her class. She shared a particular experience she had in the forest with her class in the interview which highlights her own encounters with wildlife.

Interviewer: So what else have you guys done in the forest? Anything else?

Vinny: We have gone to the field trip in Griffith woods.

Interviewer: Oh, yeah. Um, what was that like?

Vinny: I wasn't there. But I have gone before. We saw, me and [my teacher], four great horned owls.

Later in the interview, Vinny described an arts-based outdoor activity that involved collecting rocks to paint them. In the below statement, she expresses the importance and meaning that the encounter with the owls had for her:

Vinny : We got to draw with a thick Sharpie, the thing that really connected to us most.

Interviewer: And what was that for you?

Vinny: And I chose the owls. And then we got to paint, not paint them exactly paint them. But just like, paint them with, like the paint pucks, like outside. That was really cool.

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Dimensionality of the Outdoors as an Element That Enhances Learning – Experiential Immersive Learning

The outdoors offers a different learning experience that by its nature is immersive, as students move through the world, their learning becomes experiential. Interactions with concrete materials increases intensity of experience and opportunities to translate new concepts within applied environments. This supports a more in-depth interaction with learning content and potential for understanding and retention. Cameron describes how this immersive learning approach enhances meaning for the learner: “going outside with them, teaches them about being a learner, making observations making conclusions with the concrete world.”

Learning opportunities are enriched because they offer opportunities for children to explore the lived experiences of others through a more rich immersion in their worlds. An example is offered by Clara as she describes her class experience on Remembrance day outdoors in the rain and how OL supported an immersive learning experience about history and war for children as they were discussing Canadian Soldiers who went to war:

It was torrential rain. And I said 'You know the soldiers that we just commemorated? And [how] the ones who survived, couldn't leave?' ... that experiential connection of, you know, try to empathize and feel. And think about the fact that we can look forward to leaving this. They were in trenches with dirt and mud.... The kids were like, 'I've never thought of Remembrance Day this way.'

The dimensions of the outdoors and the possibility of moving through them offers a unique learning opportunity with respect to spatial awareness, place-based learning, learning the dimensions of math and the development of the ability to explore one's own surroundings. This allows learning to transcend subjects and offers an opportunity for deeper processing for students. This is characterized by Daisy's lessons on maps and the exploration of navigation and the translation to algebra and learning about dimensions in math:

I had so much fun with maps last year with my class because we went out and we drew maps from memory of a place on the land that we were at. And then we go out and we check our map and add details ... And we look at the grids and we start learning about X axes and Y axes and coordinating. And so that was our math, we integrated. How to talk about coordinates on a map and translation and rotation and like, everything's connected.

The children were also able to recall the learning they derived from interacting with structures in the outdoors when they were exploring their school surroundings. For example Snowy (age 4) learned about colour, language and pattern during his pattern walk:

Mom: ... His class went on a pattern walk. So they go outside and see all the patterns that they can see.

Interviewer: Wow! And what types of patterns did you guys see?

Snowy: Yellow and red, yellow and red, yellow and red.

Interviewer: That is a pattern. And you're so right. That's cool.

Snowy: And white, blue, white, blue and white.

Interviewer: And where did you? Where did you see the blue and white pattern?

Snowy: On the blue and white [play] structure.

Spark described how these real-world interactions enhance learning and are, for some individuals who may be experiencing learning challenges, the best way for them to gain new knowledge as traditional approaches are not effective for them. And this creates opportunities for growth and development that do not exist for them inside the classroom:

And there are children who are not able to access the learning in the classroom, for whatever reason, right? Could be exceptionalities. It could be because of trauma, it could be whatever. If you observe a child outside, they can learn. They can access the learning. And that's really what it's all about. Is them being able, kids and adults, actually, reaching their potential. Accessing the learning in a way that is going to be meaningful.

Some of the dimensionality of the outdoors is enhanced by the fact that there are many features that can be interacted with. These natural features, such as rocks, sticks or seashells are an important part of the exploration and have special meaning for the children as described by Ranger below:

Interviewer: Because you enjoy picking up rocks sometimes, I like to look at rocks too

Ranger: Ya I bring them home. Do you?

Interviewer: Do I bring rocks home? I do. I give them to my son and he plays with them with his trains

Mom: Hahah there you go.

Ranger: I collect them for so I draw faces on them.

Interviewer: Oh yeah.

Ranger: I draw faces on sea shells.

Interviewer: Yeah?

Mom: Yeah, we do that. And he hides them all over. People can hunt for them. Look for them.

Ranger: This also. I have a special, I have a container I have a special jar. It has two sea shells. And they are unique.

Cameron applies this way of learning in a three-dimensional space as having applications to enhancing the curriculum by creating a more holistic an integral learning system for children. He identifies that it supports the transfer of learning from the concrete interactions of the outdoors to more abstract and enduring knowledge and that this educational approach is being supported by his school board:

I think it's a way of looking at the curriculum, which is being encouraged by the board, like our board wants you to bend the curriculum. Think differently about it. Not just like check, check, check, I got this specific X. Okay, now we move on to the next unit. It's like...Why is a kid only using a ruler to measure things two weeks out of the school year? When it's a tool that literally is lying around the classroom all the time? So like, they should be using a ruler all throughout the year, they should be learning about, you know, circumference in conversation, let's check the circumference of this tree. And then when you go and do circumference in the classroom, they're like, yeah, that means the, the surface around the tree is circumference.

Child-Led Exploration of Nature

The educators described a practice of stepping back and allowing those features of the outdoors that were of interest to the children guide inquiry. They described this practice as supporting children's motivation and curiosity and served as a driver to enhance love of learning. This also supported children's agency and investment in their own learning. Brooklyn described how lessons can build on the interest of children: "Part of it is like, following their leads, but then picking up on what their leads are. And being like, 'Today, you learned all about worms. Let's dig deeper and see what's there.'" Elizabeth's mom described how she observed this practice in Elizabeth's class and noted a particular example where they returned to an activity called "not a stick" whereby the class used sticks to support the student's imaginative creativity:

Elizabeth's teachers in particular, they're always looking for, like, what the students want to do. So they're very, they're doing a very child led program. So the, again, back to the whole, like, 'not a stick' thing. They had done it in the fall. And it wasn't the plan to continue doing it in the winter. But the kids brought it up again and said how much fun it was, you know? Let's just, you guys want to do that? Let's do it.

Similarly, Daisy shared that they adapt programming in their classroom to support the children's emerging needs. She described an example where a planned activity led to some interpersonal conflict and because they take a flexible and child-led approach, they were able to shift to a conflict resolution activity that supported emotional development and community-building for the group:

We're oriented to child led inquiry, and to emergent learning. Sometimes the plan we make is completely scrapped. It was last week or the week before, we had a very specific and intentionally designed afternoon activity planned. But the game that we did after lunch, created a lot of conflict. And so we had a council we had a circle, and we took turns listening to each other's perspectives and experience. It took all afternoon... the community building that comes from being able to work through that, is beautiful.

Our conversation with Vinny and her mom helped to draw attention to how nature can inspire children's learning. Vinny encountered some caterpillars with her class and described how they were intrigued by the dynamic movement and interaction of the mass of insects:

We actually went to the park across the schoolyard the other day. And back in with trees, we found like a whole big pile of caterpillars, like a big pile. And they were just like, with their heads back and forth. [My teacher] has a video. We called it caterpillar dance party.

Vinny's mother described how these influential experiences can be used as a foundation for writing and can be applied to enhance learning motivation and creativity:

... it's some scholar, some educational scholar that talks about writing the world. And this idea that they can't write the world if they don't experience the world. And so being in the outdoors, interacting, gives them something

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inspiring to return and write about in an authentic and purposeful way. Where like, you know, using a writing prompt from a Scholastic Book or whatever. Like, maybe that has its value, but the kids could write and write and write about the dancing caterpillars.

Learning driven by play

Play can provide many pathways to learning and can support a child's love of learning. The educators highlighted the different play opportunities the children in their classes had and explained why they felt those opportunities were so important. This supports the importance of play for learning in the outdoors because of the multiple benefits it provides in relation to learning. Sasha explained how different subjects would emerge through the children's interests and play in the outdoors. They did not need to pre-plan for language and literacy, science and geography,

So for school, we don't, we don't delineate by subject. I would say like, a lot of things just come up naturally, like sciences and geography. But like literacy and numeracy comes up a lot, because like, they'll write signs for their shops that they've made or they make menus for their mud kitchen things. And they make cards for each other and for their families and stuff. So with clipboards and paper, they're always reading and writing.

When children are motivated through their engagement with play, learning automatically emerges. This is driven through their interests and their exploration in the outdoors which ends up teaching them curriculum or content areas that would otherwise be teacher-led inside of a classroom.

Play that included physical activity was also mentioned and highlighted some of the ways children practice problem solving skills, teamwork and use big movement to learn about themselves and the world. Risky play, in particular offers an increased intensity to the experience of outdoor interactions. Being in the outdoors also offers opportunities for movement, which is a valued feature of this mode of inquiry. The below quote from Elizabeth describes tobogganing and his experience of acceleration, excitement and delight going over the bumps. These aspects are valuable and meaningful for children and can enhance love of learning.

Interviewer: You play outside? And what kinds of things do you play?

Elizabeth: Slide down the hills.

Interviewer: Nice. You slide down the hills like on the snow?

Elizabeth: Yeah.

Interviewer: Wow. And do you use a toboggan? Or do you guys just slide down on your bums?

Elizabeth: On a toboggan.

Interviewer: Nice. And what else do you do outside?

Elizabeth: We also go over a bump of snow.

Interviewer: Over bumps of snow?

Elizabeth: Yeah, then we go flip, in a loop de loop!

The intrinsic pleasure of movement and learning are themes that emerged when discussing outdoor play. These were attributes of child-led play that were possible because of the outdoors. These are important reasons why all children need to be given opportunities to spend time outside while at school. These valuable insights should be used to inform decisions about where learning takes place. Samantha shared her experience supporting the children in the forest and their opportunities for risk taking,

I let them explore. I let them climb. I let them do things. I think that they need to have big movement opportunities to balance. And like we'll talk about and see, you know, why, okay, those logs are really slippery today because of the rain or because of the dew, or because of the frost, you know? You need to think about where you're going to put your feet you need to think about, you know, how fast or slow you're gonna go. Because I think that kids need to learn how to be careful how to how to fall, how taking risks is part of learning.

As children engage in risky play they can also develop self-confidence and experience joy when they are able to do new things and overcome challenges. For example Latoya shared that when she first started taking children to the forest they were often uncomfortable climbing however as the year progressed the children started climbing on tree trunks and big logs where they would practice balancing and became more confident in engaging in these types of play.

Play is often enjoyable for children and can foster many areas of development. Opportunities for free play or unstructured play can include elements of learning that children do not even realise they are

engaging with because the fun over powers. Bacon head (9) expressed this when he was asked how OL made him feel. He replied, “Fun. Much funner than boring old school.” Jean also explained her experience with unstructured free play,

I let them go to free play and the free play is a whole other fantastic time for learning that they have no idea really that they're learning and we can watch all these wonderful things happening around social responsibility and working together and social emotional learning and risky play and and you know, building and all this stuff.

In the outdoor environment the open space can support these opportunities because children have space to move and explore. This can be different in comparison to learning in a classroom because students are often restricted or expected to sit, which can limit learning opportunities that exist through movement and play. Moose highlighted this aspect of learning in his interview,

Interviewer: And so um, do you like going outside to learn?

Moose: Um, sometimes, Yeah.

Interviewer: Sometimes.

Moose: Yeah.

Interviewer: And what would you say you like about it?

Moose: I like walking and running.

Elizabeth's mom also agreed that the physical activity part of playing outdoors was important for Elizabeth,

[Outdoor time] helps with self regulation for sure. Because he's very active. And you could tell if he's inside for too long. He gets antsy. And we're like, okay, you need to get outside.

Educators also argued that play can be a useful approach to support learning across development and in the older elementary grades as well. Some educators identified that the kindergarten curriculum made it easier to include outdoor play-based learning, but that the curriculum in later grades made it more complicated.

While sometimes school environments and curriculum can make it trickier to go outside, in kindergarten they use a play-based curriculum which makes it easier to go outside. (Tammy)

Kindergarten is so adaptable to be done outside. Like, it's on plants, on animals and plant life cycles, in kindergarten to grade one. We use push and pull as part of science. And so we can easily adapt those curriculum pieces right into the outdoors and just do it naturally. Right outside. (Erika)

Renee also argued that there is a need for a change in perspective with respect to the curriculum and that an emergent and play-based approach can be beneficial for the older grades as well,

It's interesting that we always have to have this performative task. And why is it that we're not okay, for kids to just play? Like, play is for kindergarten, play is only for four year olds? No way.

Discussion

This paper provides a detailed exploration of experiences and perspectives of OL in public schools in Canada. Major findings highlight the features of nature that drive children's learning as well the elements that reinforce learning in the outdoors. These are centered on the natural characteristics of nature that afford unique learning opportunities as well as allowing a child's natural curiosity and engagement with nature to enhance learning.

This research integrates children's voices by capturing their own perspectives on OL. The inclusion of young people's perspectives in developing programs and policy directions that affect them is essential (Checkoway, 2011; Libby et al., 2005). Further, the engagement of young people in research aligns with the United Nation's Convention on the Rights of the Child (UNCRC, 1989) and supports social justice (Zeldin, 2014). The inclusion of children's voices is critical as it supports a more in-depth understanding of their experiences of OL. This can be useful to enhance the quality and relevance of the findings as well as the utility of recommendations (Halsall et al., 2021).

It is also hoped that the inclusion of the lived experience of those most affected can support advocacy for change in policy (Baum, 2019; Kyle et al., 2006) and the promotion of health equity through the

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enhancement of access to OL.

Another unique feature of this study was the use of stories to enhance children's participation in the interview. To our knowledge, this is the first application of this strategy within qualitative interviews with young children. Given that the interviews took place in a virtual environment with an interviewer who was not familiar to the children, we believe that this strategy was successful and should be included in future research designed to capture children's perspectives. Indigenous people have long recognized that story-telling is an effective way to share knowledge (Blodgett, 2011; Davis, 2014; Julien, 2010; Kovach, 2010). The use of story as an approach to engage young children aligns with Indigenous oral narratives and has often been applied to support learning as well as education regarding Indigenous people within OL practice (Halsall et al., forthcoming).

Our educators shared the value of viewing nature as a teacher and using inquiry-based learning which allows learning moments to unfold in real time with nature. Letting go of pre-planned lessons and letting nature and children lead proved to be beneficial and provided rich learning experiences. The children also described the value and meaning that these experiences held for them. The 'nature as the teacher' theme aligns with previous research that identifies the benefits of OL because of the opportunities it provides for nature contact. When children engage with nature it can lead to open-ended exploration, discovery and creativity (Ernst & Burcak, 2019).

Active experiential learning and play has been central in early childhood education for a long period of time now (Maynard, 2007). This includes outdoor play which has been recognized as an important component of early childhood programs in North America (Hunter et al., 2019; Ramsden et al., 2022). Many early childhood educational theorists such as Froebel, Dewey and Montessori, have recognized the important role nature can play in children's learning which improves development and well-being (Ernst, 2017). Outdoor play has many benefits for different areas of children's development and it is an important part for the quality of early childhood programs. For example, playing in nature can encourage open-ended exploration, discovery and creativity (Ernst & Burcak, 2019) which is supported by seasonal changes (Zamani, 2017), especially in areas of the world where changes are distinctive. Playing in natural environments also provides joyful opportunities, and connection to nature and supports social skill development (Marchant et al., 2019). Children have shown a preference towards natural materials because they are open-ended and can be used in a variety of different ways and serve many purposes in different types of play (Zamani, 2017). Natural environments provide children with hands-on learning experiences and can "trigger their curiosity for collecting, exploration and play" (Beery & Jorgensen, 2018, p.15).

The educators and children mentioned the importance of the forests and spaces where plants and trees were growing. This was exemplified by our participants' experiences as they described the different ways they were learning from plants, snow, mud, water and the sky. These findings align with previous research suggesting that the outdoors and nature provide children with a rich sensory environment that promotes more profound learning experiences (Khan et al., 2021) and offers children the opportunity to observe growth (Hussein, 2017). They also expand on the literature by privileging the child's perspective of these experiences.

They also described their experiences with animals such as encountering animal tracks, feeding the birds and observing insects. Their experiences with the animals provided opportunities for children to learn about the more than human world they share space with and better understand the life that surrounds them in a meaningful way. Such as the bees that live in the gardens, the caterpillars that live on the trees and the fox that was never seen but left trails and signs for the children to discover.

Nature is all around us and regardless of the spaces the educators and children were playing and learning on they all mentioned that there were some sort of opportunities to learn from and with nature. In line with Malone & Tranter (2003) our research demonstrates how school grounds provide multiple experiences for children, they are a rich resource for learning and play and they offer the opportunity to be immersed in real-life experiences. These finding can be important for other educators because it can inform them about the affordances school grounds present and the many opportunities for nature experiences that

are possible outside, regardless of location. It is hopeful that if they are aware of these opportunities, it will encourage them to see nature as a teacher and use OL as a way to explore many curriculum areas instead of depending on only indoor learning.

Phenice and Griffore (2003) suggest that regular and positive interactions with nature can foster a respect and ethic of care for the environment. Therefore, these opportunities to explore and be in contact with nature at a young age will also be beneficial to support student engagement in environmental stewardship in the future. This was true for some of the children in our study who valued their experiences of learning from nature and shared their love for the different aspects of nature that they had engaged with, such as the trees, flowers, birds and insects.

Nature can both initiate and enrich play-based interactions (Prins et al., 2022) as it “elicits actions, sounds, movement and relations” (Harwood & Collier, 2017, p. 337). Our findings demonstrate how nature plays an important role in supporting outdoor play. Participant experiences highlighted playful interactions within a range of contexts as well as with various loose parts from nature, such as rocks, sticks, snow and seashells. Play and OL are complementary, therefore it may be beneficial for educators of all grades to engage more with play-oriented pedagogies and identify new opportunities to use play in the outdoors with their students.

The educators in our study were engaging with OL within early grade levels, from kindergarten to grade three. These findings were intuitive as many early years curriculums and programs in Canada require outdoor play and learning as per licensing standards (Oberle et al., 2021) and although these programs are different from school board programs, they have some similarities and values in relation to curriculum such as playing to learn. Our study demonstrates how play can provide many pathways to learning and can be an enjoyable way to learn. These findings are similar to Sahrakhiz et al. (2018) who explored children’s perspectives of their outdoor space and found that play was one of the most dominant activities. They also suggest that the importance of play relates to the opportunities it provides children to gain new knowledge through playful exploration and experiential learning. Our findings suggest that it would be valuable for teachers to partner with early childhood educators and other teachers who are currently teaching in the outdoors because their existing philosophies and curriculum grounded in the early years can be used to support uptake of OL.

These findings also highlight the benefits of including early childhood educators in public school systems. This approach is unique to some provinces in Canada and is used in different extents for example in Ontario it is applied universally and in British Columbia there is uptake in some schools. This disciplinary approach to play-based learning can support ongoing efforts to implement OL in more educational settings. These efforts can also enhance social justice and equity for all children as play has been recognized as a right within the UN Convention on the Rights of the Child (1989). When educators provide time for play in the outdoors, they are not only respecting children’s rights, but they are also supporting children’s natural curiosity and giving them the opportunity to fully engage in learning.

Last Learning with nature represents a cost-effective solution to current public health issues (Mann et al., 2021) as it can support mental health, well-being, physical literacy and increased physical activity. Our study provides examples of how these approaches can be put in place within the shared experiences of how to include nature in mindfulness and meditation as well as supporting physical activity. Of key importance, opportunities for movement and physical activity were emphasized by the children as being important to them. Further the outdoors can also support educator’s mental health and provide them with opportunities to experience the benefits of the outdoors on their own physical health and well-being (Halsall et al, forthcoming) as well as stewardship behaviours in young people to promote sustainable development (Halsall et al, forthcoming).

Limitations

One of the major limitations of this study was that we experienced difficulties with the recruitment of both educators and students. This study was originally implemented within the province of Ontario

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while public health measures were in place. During the time-frame of the study, there was one province-wide school closure as well as significant public health restrictions in place within schools that involved screening measures, mask requirements, cohorts and outbreak management, among others. As a result, although we had partnered with one school board at the outset to support recruitment, we had to shift the strategy to a national online approach as there was not enough uptake. Challenges with recruitment resulted in a limited sample of students.

We were also limited to facilitating online interviews that explored abstract recollections with very young children. This meant that we had to try and create a safe space for open communication with children through a virtual medium with someone they were meeting for the first time. In addition, children had to try and recall events that may not have taken place very recently as well as describe them. There are considerations that should be taken into perspective when involving very young children in qualitative research such as their language skills. Conceptual thinking and the ability to accurately recall previous experiences develops with age (Murnikov & Kask, 2021) and it can be challenging for young children to describe previous outdoor learning experiences in an interview. Although this was challenging, Laurel has a strong background and experience working in early learning environments and was able to develop rapport with the children and their parents. In addition, although, the children had difficulty recalling outdoor experiences at school, they were able to describe activities that were of most interest and all children shared important aspects of their experiences.

Despite these challenges, we were able to recruit educators and students from five different provinces and across a range of community contexts, educator roles and grade levels. In addition, we successfully showcased young voices and perspectives. This study represents a unique example of centering young children's voices with the intentions to enhance advocacy and promote increased uptake of OL to support equitable access. An achievement that is relatively rare within the OL literature (Marchant et al., 2019). Further, parental participation supported both child engagement but also enriched their understanding of children's context and experiences. Engagement of both children and family perspectives should be a significant component of future research and practice in OL going forward.

Conclusion

Our study provides concrete examples of how OL is currently being implemented in public elementary schools within Canada and how the natural features of the environment drive these opportunities. This study also highlights that children's perspectives and attitudes towards OL and play are important and this information can be used to shape the curriculum and learning experiences that are provided to them. This research aligns with the UNCRC as it privileges the child's voice by centering their experiences and perspectives on OL and highlights the importance of play in their learning process. These findings can be used to advocate for increased uptake of OL in education and to provide guidance to educators regarding how to include OL within their practice to enhance equitable access for children across Canada. Children's experiences and the value that they attribute to spending time in the outdoors can contribute to supporting this movement.

Declarations

Authors' Declarations

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Authors' contributions: Tanya Halsall designed the study. Laurel Donison collected data. Laurel Donison and Tanya Halsall completed data analysis together and wrote the paper together.

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Exploring the feasibility of outdoor indigenous games and songs to enhance play-based pedagogy in early childhood education

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Abstract: Indigenous play activities are crucial to cross-cultural knowledge and practice and are gaining ground as a pedagogical approach in early childhood education settings. The study aimed at systematically documenting culturally and developmentally appropriate outdoor indigenous games that could serve as resource materials for play-based learning in ECE centres. Participants comprising teachers, parents, grandparents, and adolescent girls and boys were drawn from Lufwanyama district of Zambia. Data was generated through Participatory Action Research to allow inter-cultural dialogue. Data was analysed using thematic categorisation. Results showed that documentation of indigenous games can serve as a resource capital for enhancing play-based learning practice in an early childhood education setting. The study further revealed that integrating indigenous games can strengthen home-school linkages through active community engagement. The study recommends that teachers can effectively implement play-based learning when the reservoir of developmentally appropriate indigenous games is easily accessible to them. We further argue for rethinking early childhood education pedagogical practice so that learning and development are seen as being influenced more by contextually responsive play and exploration, than by direct instruction and teaching.

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Indigenous games; Outdoor play; Songs; Early childhood education; Play-based learning

Introduction

The roots of Early Childhood Education (ECE) in Zambia can be traced to indigenous practices when young children were taught basic life skills, cultural norms, and customs within the confines of the family and the community. Story telling, indigenous games, and songs were seen as universal means of education as well as essential tools for cultural transmission of knowledge. However, the advent of formal Western-style education during the colonial era saw the emergence of a more structured approach to the provision of ECE. Upon Zambia's independence in 1964, the Government prioritised increasing access to education for all citizens, albeit, the provision of ECE was largely in the hands of the private sector. The Ministry of Local Government and Housing regulated ECE service provision, while the Ministry of Education provided an oversight on teacher training and curriculum. In 2004, the mandate for ECE was transferred to the Ministry of Education (MoE) Zambia and ECE has since been integrated into the national education structure as a foundation for lifelong learning (Matafwali & Kabali, 2017; MoE, 1996). With the introduction of the ECE curriculum in 2013, pedagogy at the ECE level was redefined by placing an emphasis on a play-based, child-centered approach (Ministry of Education, Science, Vocational Training and Early Education [MESVTEE] Zambia, 2013, 2014). In keeping with the demands of the curriculum, the pedagogical discourse in ECE has recently been dominated by the concept of play-based learning. In practice, play-based learning approach requires a teacher to be innovative by employing a variety of strategies including providing adequate classroom space for children to engage in various play activities such as dramatic play, block building, and sensory play (Lungu & Matafwali, 2020). The curriculum further recommends the use of low-cost teaching and learning items made with locally available resources to promote play-based

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learning (MESVTEE, Zambia, 2014).

Play is a vital aspect of child development that transcends cultural barriers, fostering cognitive, emotional, and social development. Evidence confirming the importance of play in child development is well documented. Friedrich Froebel emphasised play as the foundation of learning, where children naturally explore and experiment to make sense of the world around them (Ransbury, 1982). According to Vygotsky (1978), play is an essential developmental activity that has a significant impact on a child's cognitive and social development during the early years. Research has repeatedly demonstrated that academic competency, such as language, cognitive, social-emotional, and psychomotor, is readily acquired through play. Children acquire high-level cognitive skills through play, including abstract thinking, exploratory skills, imagination, creativity, self-regulatory executive functions, memory, and problem-solving skills (Bergen, 2002; Johnstone et al., 2022; Semmar & Al-Thani, 2015). Play also enhances the development of social-emotional abilities, such as the capacity to form friendships, empathy, emotional control, conflict resolution, and attachment (Gagnon et al., 2007; Mendelsohn et al., 2018). For the majority of children especially in rural communities, play experiences involve outdoor activities that allow them to create their own play spaces, choose games play materials that interest them, and engage in vigorous physical activities such as climbing, jumping and running. Clements (2004) notes that outdoor play enables children to explore their community and engage in sensory-rich experiences like playing with sand, clay and water, searching, and fleeing. Children can experience all their senses while playing outdoor games through observations, physical activity, social interaction, math, science, art exercises, and dramatic play. The right to play also aligns with the African Charter on the Rights and Welfare of the Child and the United Nations Convention on the Rights of the Child, which emphasises the importance of providing children with appropriate play opportunities and safe spaces for recreation.

Even though play-based learning is widely acknowledged, ECE teachers frequently concentrate on structured indoor play activities that skew toward modern games, without maximizing on positive effects of unstructured outdoor indigenous games on child development (Khalid, 2008). Marginalisation of indigenous outdoor games in the ECE setting may be attributed to several factors. Usman and Yusuf (2021) contend that in today's technologically driven society, many ECE educators may be less knowledgeable about outdoor indigenous games and their value in promoting early childhood development. A qualitative study by Davies (1997) found that although teachers were aware of the value of outdoor play for children's development, they lacked the necessary knowledge and motivation to promote it as a pedagogical strategy.

Kemple et al. (2016) observe that children no longer spend as much time engaging in unstructured, child-directed outdoor play. The availability of television programmes, the popularity of computer games and other technology products, the lack of adequate physical space for outdoor play, and parental concerns about their children's safety in the physical environment have all been identified as factors reducing children's participation in outdoor indigenous play activities (Sanga, 2017; Singer et al., 2009). Other scholars have observed that the current educational system in many African countries is primarily based on the Western paradigm, and as a result, pedagogical strategies are reminiscent of Western societies' traditions relegating indigenous education practices to a subordinate position (Fafunwa and Aisiku, 1982 as cited in Nsamemang & Tchombe, 2012; Sanga, 2017). Pence and McCallum (1994) added that ECE was viewed as an institutional power and a modernising, globalising tool. Accordingly, Nsamemang (2008) contend that it is simple to spot a modernity index put forth by ECE specialists, while rarely acknowledging the cultural hegemony of the local communities. This study explores the potential of indigenous outdoor play activities into Early Childhood Education centres to enhance play-based learning.

Literature Review

Indigenous outdoor games have long been an essential aspect of human culture, providing entertainment, education, and fostering a sense of belongingness. For centuries, indigenous outdoor games have been treated as an institution for organised socialisation and leisure time (Petrovska et al., 2013; Usman & Yusuf, 2021). These games have been transmitted from generation to generation, cherished, used, and perfected (Khalid, 2008; Petrovska et al., 2013). Additionally, indigenous games preserve the folk

tradition central to national heritage. Khalid (2008) states that through engaging in indigenous games, children learn about the rules and values of their culture (Usman & Yusuf, 2021). These games also have spiritual value as well as social and historical relevance.

In the context of ECE, outdoor indigenous games hold enormous benefits as they foster holistic development, physical fitness, and cultural awareness (Usman & Yusuf, 2021). Indigenous outdoor games enhance gross and fine motor skills, balance, eye-hand coordination, increased spatial awareness and more significant social skills (Khalid, 2008). Mtonga (2012) compiled texts of indigenous children's songs and games in the 1980s in rural and urban areas of Zambia. His analysis illustrates how outdoor indigenous games help children to think, intellectualise or discuss their ideas and explore the world around them.

A review of literature shows that outdoor indigenous game genres are diverse and transcend cultures, thus highlighting the universal character of indigenous games across cultures. For instance, pebble games are played in many parts of Africa and other regions of the world. One such game is *Chiyato*, a game which is played by two or more players and requires placing several small stones in a small dug hole. The game is called *Gittey* in Pakistan (Khalid, 2008); *Nhodo* in Zimbabwe (Mandondo & Tsikira, 2021); *Chiyato* or *Chiyenga* in Zambia (Mtonga, 2012); *Mdako* in Tanzania (Smørdal, 2012), and *Ondota* in Namibia (Utete et al., 2017). Although the rules of the game may vary across regions, *Chiyato* game has been reported to promote eye-hand coordination, numeracy skills, emotional regulation, social skills, and problem-solving skills (Mandondo & Tsikira, 2021).

Another game is a board game that has several variations across cultures. It is called *Nsolo* in Zambia (Mtonga, 2012), *Tsoro* in Zimbabwe and has been played for thousands of years (Madondo & Tsirika, 2021; Moyo & Chinamasa, 2022; Nyanhongo, 2015). In East Africa, a version of this game is popularly known as *Bao*, with origins in Tanzania, in Malawi, it is called *Bali*, whereas in South Africa, this game is popularly known as *Morabaraba*. Previous research has shown that *Morabaraba* has been used in teaching math (Matsekoleng et al., 2022). The strategic skills found in *Morabaraba* can be likened to those in chess and checkers (Nyanhongo, 2015). This game teaches young children how to count (Moyo & Chinamasa, 2022) and helps them develop mathematical concepts and cognitive skills. Additionally, there are rope-jumping or skipping games which are popular among children. Two such examples are South Africa's *Lekusha* (Matsekoleng et al., 2022) and *Kgati* (Moloi et al., 2021) games. In Zambia, it is popularly known as *Waida*. Moloi et al., (2021, p. 245) highlight that movements in *Kgati* game are intricately woven with mathematical concepts like geometric figures, fractions, and word sums."

Other games involve rigorous physical engagement. An example is *Pitto Garam*, as referred to in Pakistan (Khalid, 2008), and *Tachi* in Zambia (Mtonga, 2012). The game is played between two teams. One team is expected to fill up sand in a bottle. The opposing team is supposed to hit the bottle with a ball while the other team members try to refill the bottle with sand. This game enhances children's eye-hand coordination, and filling the bottle with sand promotes gross and fine motor coordination. Hide and seek is also a popular game played by children across cultures and goes by various names. In some regions in Zambia, the game is referred to as *Chidunu* or *Chidunune* (Mtonga 2012), *Oonch Neech*, in Pakistan (Khalid, 2008), *Escondidas* in Mexico, and *Chamuhwande Muhwande* in Zimbabwe (Madondo & Tsikira, 2021). Although the games bear different names, the rules require a group of children to run around for safety to avoid being caught by the chaser. The game helps children with gross motor skills, resilience, self-regulation, and turn-taking. Hopscotch is another popular children's game where players toss a pebble into patterned squares and hop through the squares to retrieve the pebble. The game is called by different names across cultures: *Espada* or *Kapendo* in Zambia (Mtonga, 2012); *Pada* in Zimbabwe (Madondo & Tsikira, 2021); *Tumatu* in Ghana (Adjei-Boadi et al., 2022); and *Hinke* in Denmark. Some of the benefits of hopscotch include movement of large muscles, flexibility, coordination, balance, and agility. Laely and Yudi (2018) conducted an experimental study which examined the impact of hopscotch on kinesthetic intelligence. Similarly, Polevey et al. (2023) found a statistically significant improvement in rhythm movements among 8 to 9 year olds who played hopscotch compared to children who participated in the standard school physical culture programme. Findings showed that children's kinesthetic intelligence increased after

exposure to hopscotch. Sriwidari et al. (2018) further found improved gross motor and social skills. While the efficacy of outdoor indigenous games in child development cannot be underscored, research has indicated a decline in these games in children's playgrounds and schools due to the influence of digital technologies and games (Gul, 2023; Madondo & Tsikira, 2021; Matsekoleng et al., 2022; Moloi et al., 2021).

Theoretical Framework

The social-cultural theory was applied in this study. Given the significant role the social-cultural milieu plays in influencing children's learning and development, the application of the social-cultural theory highlights several important elements. Vygotsky's sociocultural theory (1978) explicitly acknowledges the concept of Zonal of Proximal Development (ZPD), that children learn and develop through interactions with more knowledgeable adults through scaffolding and within cultural settings. Teachers, parents, and elderly community members would act as facilitators in the learning process by participating in indigenous games. Scaffolding, a social-cultural theory concept further involves providing temporary support to children to bridge the gap between their current understanding and advanced understanding, can easily be done through indigenous games. Thus, the study contends that indigenous games offer opportunities for children to engage in meaningful play, social interactions, and cultural practices, fostering the development of language, cognitive skills, psychomotor skills, social-emotional and cultural knowledge.

Study Objectives

The study sought to underscore the importance of outdoor indigenous games that could serve as resource capital for play-based learning at ECE centres in the Zambian context. Understanding the perception of relevant community members, parents, and grandparents was a strategic entry point to integrating outdoor indigenous games as a pedagogical approach at ECE.

Study Questions

The following questions guided the study:

1. What was the perception of community members, parents and grandparents on outdoor indigenous games?
2. What outdoor indigenous games and songs could serve as a resource capital for play-based learning at early childhood centres?

Method

This intervention was implemented through action research using a Participatory Action Research (PAR) approach. The rationale for a Participatory Approach was ensuring meaningful participation of community members, which is a significant ethical consideration, especially when dealing with indigenous cultures. Dunbar and Scrimgeour (2006) stressed the importance of cultural protocols in indigenous research, the need for researchers to be cognisant of the cultural customs, traditions, and protocols of the indigenous population they are researching. Orminston's (2010) research underscored the importance of incorporating indigenous knowledge systems and methodologies in research from an indigenous perspective. Ermine et al. (2004) notes the significance of respecting indigenous knowledge, fostering collaborative relationships, involving locals, demonstrating cultural sensitivity, and ensuring research ownership and management. It also highlights the role of diverse participants as co-researchers in constructing social knowledge (Baldwin, 2012; Cashman et al., 2008; MacDonald, 2012; Reason and Bradbury, 2008). Selenger (1997) highlights the seven components of the PAR process: recognising the community's origin, aiming for radical social transformation, involving community participation at all levels, addressing powerless groups, and creating awareness for self-reliance development. PAR is more than a scientific method, as community participation enhances the analysis of social reality. PAR also allows researchers to be committed participants, facilitators, and learners, fostering engagement rather than detachment.

Study Site and Implementation Context

The study site was Lufwanyama district of the Copperbelt Province of Zambia. Implementation was done through an International Civil Society Organisation (referred to hereinafter as the implementing partner) that was supporting community-based ECE centres in the implementing district. The programme was implemented at the ECE centres, household level, and within the community. Although the intervention's main objective was to gain an understanding of indigenous practices that were important to child development, the research team recognised the ethical value of not imposing predefined views on the community. Identifying potential partners and opportunities for synergy was essential. Thus, Community engagement began by forming collaborative partnerships with the implementing partner, an ECE-implementing organisation, to gain insight into their priorities and community needs. Through this initial meeting, the implementing partner highlighted the value of play-based learning and the viability of incorporating low-cost play materials to improve the quality of instruction. As a follow-up to this initial meeting, the implementing partner proposed a scoping visit to Lufwanyama district to engage with stakeholders at the community level to gain a deeper understanding of the implementation context of ECE and explore the potential entry points for the promotion of low-cost play materials. The visit served as a needs assessment for the research team to better understand the community's goals, challenges, and aspirations regarding ECE services being provided in their respective communities. Community stakeholders recognised the efforts to promote ECE but acknowledged the significant challenge of the non-availability of play materials and age-appropriate textbooks. The reflections from the meetings were collaboratively reviewed by the research team and community stakeholders to prioritise the research focus.

During the second visit, meetings were scheduled by the Centre Management Committees to discuss potential solutions. As regards to non-availability of books, the implementing partner pursued the issue with the Ministry of Education as the service provider. However, the absence of play materials prompted the need for community-driven solutions as the ECE centres had no financial resources to procure play materials. Community stakeholders, included members of the Centre Management Committee, were prompted to engage in intercultural conversations to reflect on their childhood experiences as a way of encouraging participation in decision-making. Their vivid recollections of the games, songs, stories, and dances they played as children struck a chord in their reflections. Based on the knowledge that emerged during inter-cultural dialogue, community stakeholders were asked to reflect on whether the recreational activities they remembered would still be appropriate for children. Participants recalled their grandparents' historical role in storytelling, suggesting their involvement has an intercultural indigenous recourse. Furthermore, the intercultural reflections in community communal spaces were primarily dominated by outdoor indigenous games played by pre-adolescents. Based on this, the participation of grandparents and preadolescents in the implementation process was regarded as essential.

As part of capacity building, all the participants and research assistants completed a capacity-building process which was facilitated by the research team from the University of Zambia. This training aimed at empowering community members by providing them with the necessary knowledge, skills, and tools to actively participate in the data collection and implementation process, thereby fostering ownership and culturally relevant and sustainable outcomes. Participants were taken through the data collection tools and oriented on documentation using tape recorders and notes. Community members through the Centre Management Committee volunteered to oversee some of these activities and report on the outcomes to the implementing partner community-based staff. The capacity-building approach was viewed as part of the policy for the implementing partner, aiming for communities to eventually become self-sustaining.

The next stage involved collaborative documentation of games, songs, and stories by ECE teachers and community stakeholders using books and tape recorders provided by the research team. The documentation process was completed within six months. The activities were then collectively reviewed by community stakeholders, the implementing partner staff, and the research team to identify activities that were developmentally appropriate. The ultimate goal of the action research cycle is social change by working together with the community to address an agreed-upon goal (Kelly, 2005). Thus, the next stage

was the integration of indigenous games into play-based learning both at ECE centres and at home.

Participants

Participants comprised the implementing partner office staff, including the Sponsorship Manager, the two Community mobilisers (community-based staff), one Desk Officer, and one implementing partner ECE Facilitator. The key informants from the local community comprised: eight ECE teachers drawn from five centres were involved in the study; twenty-five parents, some of the preschool children, a hundred preschool children enrolled in the ECE centres; fifteen grandparents; and twenty-five pre-adolescents between the ages of 10 and 12 were purposefully selected from the neighbouring primary schools, five of whom were attached to each centre.

Participant Selection

The key informants who were believed to be repositories of indigenous knowledge and traditions were purposefully selected by the ECE Center Management Committees (Kjorholt et al., 2019). These included parents and grandparents. Others included ECE teachers, children from the ECE centres, pre-adolescents, and some members of the Centre Management Committee. The inclusion of teachers in the study was seen as a strategic approach to ensure the sustainability of the intervention. Mtonga (2012) asserts that schools serve as channels for the spread and enculturation of indigenous knowledge and practices. Parents and grandparents were considered to be an important source of indigenous knowledge and practices. Pre-adolescents with siblings in or near ECE centres were primarily targeted. Pre-adolescent children were a strategic addition to the sample as they play a crucial role in providing daily mentoring to their younger siblings during indigenous play activities. These preadolescents sometimes serve as peer models who could demonstrate complex games to their younger learners. The ECE teachers worked closely with the members of the Centre Management Committee in the selection of pre-adolescents. Vaughn and Jacquez (2020) highlight the importance of community co-researchers in empowering indigenous people through shared decision-making, resulting in sustainable practices and social change. Community involvement in participant selection ensured a culturally sensitive selection process and reduced the risk of excluding or marginalising certain community members, such as grandparents and children.

Data Collection Process

Data collection was done through unstructured interviews, Focus Group Discussions, and observations. Focus Group Discussions comprising 5-10 key informants were conducted at each of the five ECE centres. Focus group discussions fostered intercultural dialogue, involving parents, teachers, and grandparents sharing memories of indigenous games and cultural practices. Focus Group Discussions were also conducted with the ECE learners to discuss their experiences at the ECE centres and the games they played. Researchers observed children playing games in and outside the classroom, using observation guidelines and documented their interactions with teachers and parents. The observational approach allowed for a comprehensive observation of children's participation in outdoor games, both individually and in social contexts with peers. The community members and the research team collaboratively documented responses from the Focus Group Discussions and Observations. In-depth interviews were conducted with the implementing partner staff and ECE teachers.

Analysis

Data analysis was done using framework analysis. The participants and researchers focused on a wide array of experiences to construct an in-depth understanding of how indigenous knowledge can inform child development and ECE practices. At each centre, a data analysis committee comprising the implementing partner, academic researchers, ECE teachers, parents, grandparents, and pre-adolescents was formed as part of the data analysis team. The first step was for researchers, teachers, and community members to familiarise themselves with the data. Secondly, all audio-recorded transcripts for the focus group discussions were professionally transcribed into the local language, Bemba. Thirdly, emerging themes were identified. After completing this process at each centre, there was a collaborative meeting of

all five centres with representation by an ECE teacher, a core group member, a few parents, grandparents, and the implementing partner staff and academic researchers. All identified themes were discussed at this collaborative meeting, which deliberated on the findings from each centre. Some of the emerging themes were the benefits of indigenous games in the development of children; the role of grandparents as reservoirs of indigenous knowledge (games, stories, and songs) and indigenous games played in the centres. These emerging themes were further consolidated in relation to the child developmental outcomes the game or song was promoting. Community representatives from each centre were involved in the final analysis to ensure their input in the intervention and collective responsibility in ECE practices and sustainability of the ECE centres.

Ethical Consideration

Ethical requirements were adequately addressed in the implementation process. Ethical approval was sought from the University of Zambia Research Ethics Committee. At the community level, community consultations were undertaken to ensure the research's alignment with the community's norms, values, and beliefs. Through Participatory Action Research, community members were actively involved in the research design and implementation. Informed consent was obtained from community leaders, the implementing partner, parents, grandparents, and children prior to implementation of the study. Utilising a variety of data sources, together with active community participation at each level of data collection and analysis, helped minimise researcher bias. In order to ensure confidentiality, participants' names were kept anonymous, and labels were assigned for reporting purposes.

Findings

The programme was evaluated one year after the implementation of the project. This section presents the findings of the study.

Perceptions of Grandparents, Parents and teachers on the Value of Outdoor Indigenous Games

Through inter-cultural dialogue, grandparents were asked to reflect on their early years, their early experiences, the indigenous games they played as small children, and the cultural significance of these games to delve deeper into intergenerational practices. Grandmother A recollected her childhood memories as follows:

When I was young, in 1966, I moved to this region. Playing netball was something we used to do after school. Even though I was terrible at netball. Because I had trouble sprinting, I was never any good at netball. We used to get together in the evenings and play "kambushi kalilalila, Leya Leya, Nambushi" and "nakabwambe" to pursue each other. We used to play that way.

Grandfather A recounted:

My upbringing was in the village at Chilubi Island in the Bangweulu swamps of the Northern Province of Zambia. We once incorporated games that encouraged both boys and girls. We used to play tug of war when we got off school. The boys would be on one side of the rope, and the girls would be on the other until a single party prevails when they would begin pulling the rope.

Grandfather B recounted:

I was raised in a region where we kept animals in Mumbwa, in Zambia's Central Province. Therefore, most of the time when we were children, we would play while herding cattle, and the play activities would be based on everyday events to represent the daily lives of people in the community. We created numerous clay creatures, including cattle, dogs, rabbits, and possibly a hunter. We occasionally struggled to find water during the hot season, so we had to travel great lengths to reach water sources and animal grazing grounds. Young children would be placed at the rear of small cattle that were specially taught to transport children. Our nighttime activities were modelled after local pastimes, like boys playing with spears to imitate hunters.

The key informants in the focused group discussion reported that the programme positively impacted the community. The communities provided culturally appropriate insights into the relevance of the findings in their lives, such as expected mannerisms and proper use of language. Additionally, parents have since strengthened their participation in their children's education, and parents who previously did

not enrol their children in ECE centres began doing so. The implementing partner Staff member A at Lufwanyama noted that;

Members of the community have appreciated the project, especially that the use of indigenous cultural games has improved the parent-child relationship. Parents are spending time with their children making play materials using locally available resources.

This corroborated with the observation by Grandmother B who noted that,

Children are cleverer than they used to be because of the traditional games they are playing, songs, and storytelling. We have seen a lot of similarities between the games children are playing and those we played when we were young. For instance, moulding toys using clay and house play or pretend play. I remember when I was young, we used to do a lot of *house play* with some people pretending to be mothers while others pretended to be children, like in a home setting. At times we even used to cook real food. These used to be amusing and educative games. I am happy to see that even modern children are enjoying the same games. (Grandmother, at the ECE centre).

Teacher A also noted the following,

Indigenous games, stories, songs, and proverbs were used as teaching methods as well as a means of passing on good morals and cultural norms from one generation to another. There was compartmentalisation of the home and school environments through indigenous games, stories, and participation of grandparents. Before project implementation, the use of indigenous resources was viewed to be more effective at home than at school, whereas play was also viewed as a domain mainly for children and not adults.

What Outdoor Indigenous Games and Songs Could Serve as a Resource Capital for Play-Based Learning at Early Childhood Centres?

ECE teachers and community members collaborated to systematically document indigenous games and songs. Among the documented outdoor play activities that stimulate various aspects of child development were *Chiyenga* (a hand-stone game without song), *Chidunu* (hide and seek), *Kanongo* (Clay pot-A hand and elbow game), *Kabushi kalilalila* (Bleating goat-A circle chasing game), *Kalenga mushalile* (A hand-stone game with a song), *Buunga Bwamale* (Millet meal-An imitation game), and *Espada* (pebble game)

Chidunu (Hide & Seek)

This version of hide and seek involves all players going into hiding while one player does the seeking. After that, a ball is centrally placed in an open area. The seeker must guard this ball as he or she seeks other players. This ball can redeem players seen by the seeker by a player running out of hiding as fast as possible to kick it before the seeker gets hold of it and counts to ten to validate that a player has been successfully seen. However, if the seeker gets to the ball faster, the player that's been seen stops participating in the game and patiently waits to be redeemed by other players still in hiding. The game ends upon the seeker successfully seeking out all players in their hiding places and ensuring that none manages to reach and kick the ball (if this happens, all players seen by the seeker re-join the game.) However, if players in hiding continue to redeem those seen by the seeker, the game goes on until the seeker gives up or players declare the game to end. These games stimulate the cognitive skills of the players in that tact is required in finding a hiding place that will not be easy to spot by the seeker. At the same time, those in hiding need to be very calculative of when they can leave their hiding spot and reach the ball to redeem others before the seeker gets to the ball. Equally, the seeker must be vigilant, especially when other players are spotted and need redemption. If the seeker wanders off too much, a player hiding nearby may reach the ball in time to redeem other players. This part of redeeming and safeguarding the ball requires the players and seeker to implore their cognitive skills. This game also promotes motor skill development, as both the player that has been spotted and the seeker must rush for the ball. On the social-emotional part, the seeker is supposed to be resilient and exercise self-regulation, especially in the event of many redemptions. Additionally, language and counting skills are stimulated through singing and counting.

Kanongo (clay pot game)

This game is played in pairs. A group of children come together and put themselves in pairs, with each player holding the other's elbow with the left hand. All players then sing together while rhythmically tapping and hitting each other's palms and elbows to a simple quadruple-time beat. Players must

concentrate during the tapping and hitting of palms and elbows. When a player misses, she or he falls out of the game. The winners of each pair play with each other until the last standing pair. This game requires a lot of coordination and concentration, thus promoting cognitive skills. Motor skills are also stimulated because of the tapping and hitting movements that must be done in rhythm. The singing promotes language and cultural practices relevant to the local setting. The song is a dialogue between the mother and child, where the child is telling the mother that the clay pot is broken, and the mother asks the child how the clay pot would have broken as that's where the father eats from. Song;

Mayo akanongo katobeka
 Katobeka shani we mwana
 Emwakulila bawiso
 Fukula, fukula, namukatenta

Kabushi Kalilalila (Bleating goat)

Players in this game form a circle and sit down. One player starts the game; with a ball in their hand, the player runs around the circle bleating like “mee mee mee” (making the sound of the goat), and those seated chant in response to the player with the ball. At some point, the player leaves the ball behind one of the seated players; s/he must run very fast to go and occupy the space where the other player was seated (where the ball was placed). Meanwhile, the latter picks the ball and tries to overtake the player who placed the ball behind him/her. Whoever sits in the vacant place first is the victor, while the other is a prisoner and sits in the middle of the circle. This goes on until only a few players remain; these are the winners. This game, just like most games, stimulates the cognitive skills of players in that they must pay particular attention to quickly notice on whose back the ball has been placed. In most instances, there is a lot of amusement as some players do not realise that the ball has been placed behind them until other players prompt them. Dropping the ball allows the player to run ahead, reducing chances of catching up or bypassing the player. Chasing enhances gross motor skills, while chanting promotes language.

Ichiyenga/Chiyato (Stone/pebble game)

This game stimulates visuomotor integration. To play the game, a circle is drawn on a flat, hard surface, and stones are put inside the circle. A few stones are placed in a shallow hole dug on level ground. One stone is thrown into the air by the first player, not too high, and while it is in the air, the player must carefully scoop a few stones from the hole before catching the stone. The stone is thrown in the air again, and the stones are returned but one in the hole or circle. This continues until the hole is empty. However, if a player fails to catch the stone, another player takes over. In the next round, the players return all stones but 2, then 3, then 4. In the second version, the player removes all stones from the hole and returns one stone at a time with each throw of the stone in the hand. When all the stones are successfully put in the grid, the player starts round 2, where two stones must be returned in the hole, then three, four, and five until all 10 (or whatever number) are returned at once. Focused concentration and a lot of eye-hand coordination are required for this game. Even some very young children can master the ability with practice. The hand scoops the stones, and at some times, only the fingers are needed to put certain stones back into the hole, which greatly stimulates fine motor skills. Additionally, in the second iteration, it is occasionally necessary that the other scooped stones be touched as they are being put back in the hole, so perhaps some kind of self-control is also required. This game is primarily played in silence; there is neither a song nor any form of conversation, probably because of the intense focus it demands. The chiyato game offers numerous benefits such as enhancing eye-hand coordination, teamwork, resilience, social-emotional skills, and problem-solving skills.

Kalenga Mushalile (Stone/pebble game with a song)

Players sit in a circle, each one holding a stone or similar object. The game starts with the song. Players hit the stones on the ground rhythmically. When the soloist comes to the prompting phrase, each person must pass the stone to the person on the right. The passing quickens as the pace of the song. Kalenga

mushalile is a verbal game where players must quickly pass stones while maintaining a rhythmic beat. It promotes social skills, cognitive, motor, and language development.

Waida (skipping game)

This skipping game promotes gross motor skills, coordination, and collaboration. There must be at least three players to engage in this form of skipping. Two participants hold a rope while one performs various skipping techniques. The last degree of support for the rope is around the armpits, followed by the ankles, calves, knees, and waist. The player advances to higher levels/heights as they effectively complete each level. This game involves skipping and jumping. The players must follow directions for the latter because there are various styles of skipping and jumping; if they commit even the smallest error, the turn passes to the following player. Some players may become stuck at a certain level as the height to jump/skip rises, forcing them to replay it repeatedly whenever it is their turn to play. To complete a difficult stage, it might take some players days or even weeks. The skipping technique, requiring coordination of gross motor skills, is intricate and challenging. Playing *Waida* encourages communication and vocabulary expansion in children. As the game progresses, players may encounter setbacks, but learning to make attempts can enhance persistence and resilience.

Nsolo (board game)

This game is played extensively across the African continent and goes by various titles (*Mancala, Okwe, Mchobwa, Nchurwa, Bao, Bali, and Morabaraba*). Two people play this game. One or more people may carve twelve or more holes in the earth or a wooden board. In each cavity, two stones are inserted. Until the final stone is placed in an empty hole, the first player must take two stones from one hole and put one stone into each hole. A player must determine whether there are enough stones in a specific hole to approach a target hole by counting the stones there. It is the second player's turn if the first player has no stones remaining to move. The two continue trading rounds until the winner gathers every stone in a single hole. Each player in this game must mentally compute each move to decide which hole with stones they will use to advance. *Nsolo* enhances the child's physical prowess and self-control.

Gemu (Dodge ball game)

A minimum of three players are required to play this ball game, which has several variants. The most typical and fundamental variant is where the third player stands anywhere in between the two players, with the two players standing at opposite ends about five meters apart. The middle player attempts to dodge the ball as the other two players try to hit him/her with the ball. After being struck or hit, the middle player must move to one of the ends and concede control to another person. The player in the centre must consider the best way to avoid being hit by the ball; they may duck, jump over it, or use any other manoeuvre so long they stay within a certain distance. The players at the two ends need to focus and coordinate skillfully on how to hit their target, the player in the middle. Thus, this game draws on the cognitive skills of all players involved. Another variation of this game may involve two teams, where all members of one team are targets, and they are individually eliminated until the last player is eliminated. However, if the middle player accumulates a set number of points, the other team's players re-join. Points are awarded differently. For instance, merely dodging the ball attracts the least scores, followed by jumping over the ball, while catching the ball mid-air accumulates the most points. Another variation *Washomba wa Loba*, involves multiple players playing individually, the one that is hit goes to one end, while the one who hits a target joins other players in the middle. Some players are easy targets, while others are difficult targets to hit, which may sometimes be frustrating. *Gemu* enhances motor skills, spatial planning, and cognitive abilities through counting and memory retention of scores.

Ego/Kapendo/Espada (Hopscotch)

This game is played by children of all ages. However, it has more challenging variations for older children. It can be played alone, individually in a group or in teams. Children may draw a hopscotch court which is a geometric arrangement of shapes (squares, rectangles, triangles, a semi-circle) depending on the variation of hopscotch. The most basic court uses 8-10 squares, even 6 for very young children. Squares one

to four are arranged vertically attached to each other, then squares 5 and 6 are arranged side-by-side as a horizontal pair, then 7 and 8 are single squares, followed by another horizontal pair of squares 9 and 10. Having a pair at the end allows for turning around and hopping back. Alternatively, if the last cell is 8, a single shape, it may be drawn larger to allow for turning or a semi-circle is attached to it to allow the player to turn. The hopscotch court can be drawn using chalk on any flat surface (tarred road, concrete/pavers etc.). However, it is popularly drawn on the ground using a stick. In addition to the hopscotch court, a marker (small tossable rock or object) is required. Children must select this marker with care, it should be sturdy enough so that it does not easily roll over when throwing it into a cell/shape, and it should not be too light, as tossing it to the further cells/shapes may be a challenge. To play the game, the first player throws the marker into the first cell/square. This marker must land within the parameters of the target square. If it lands on the parameter line or outside the target square, then the player loses their turn. If the marker is successfully thrown in the first square, the player hops on one foot into the next empty square (they skip the square with the marker). The player must hop into every empty square/cell following the numerical sequence. When the player reaches a pair of shapes (in this case, 5-6 and 9-10), the player can land with both feet, one in each square. When the player reaches the last cell/square, the player turns around and heads back to the starting point, where upon reaching the square with the marker, the player picks it up while balancing on one foot and skips over the cell that had the marker. In the next round, the player aims for the second cell and repeats the course. The same is done for all cells. When a player completes a course, another player takes a turn. For older children, when a course is successfully completed, the player proceeds to round two, and the other players only take turns when the first player makes a mistake. Mistakes include falling, jumping outside the lines or on the line, missing a square or the marker. Additionally, a player should not alternate the leg for hopping within a course; they may do so only when starting another course. If a player makes a mistake in round 4, they wait their turn and restart at round four. The winner is the player who completes the whole course up to the final square. The game may continue to determine the second and third in place, or it can end with the first winner. Sometimes, the game is continued the following day. A variation for older children involves kicking the marker from one box to another while hopping. Overall, Hopscotch promotes agility, attention, visual-spatial, gross motor, cognitive, and kinesthetic skills in children.

In-depth interviews with community members highlighted the potential advantages of indigenous outdoor games to child development. Parents and grandparents interacted across cultural boundaries by sharing similar games and memories from their youth. They acknowledged that engaging in indigenous outdoor activities is not only entertaining but can stimulate developmental outcomes. Community members recounted that outdoor indigenous games help improve linguistic, cognitive, social-emotional, psychomotor, teamwork, coordination, empathy, and self-regulation skills. The study further revealed that, prior to the implementation of this initiative, outdoor indigenous games were being underutilised as a pedagogical tool. However, upon exposure to indigenous games in ECE settings and at home, teachers and children began to embrace play-based learning. The game promotes empathy among learners, as knowledgeable children were able to assist their peers who struggled with understanding the concepts. For instance, there were instances where other learners would step in to console their peers when they lost a game, sometimes even assisting those struggling to grasp concepts behind various activities. Indigenous games instil values like patience, perseverance, respect, empathy, accountability, hard work, teamwork, cooperation, reciprocity, and obedience in children. There were also instances when children had sad, angry, and occasionally teary expressions when they lost a game or did not get something right the first time, but they understood that losing was part of the game.

Discussion and Conclusion

Findings underscore the significance of context-based early childhood experiences and call for the development of culturally sensitive programmes for cultural responsiveness. The study supports Serpell's (2009) argument that ECE should be culturally responsive. One key aspect was that community engagement and ownership in the intervention led to strengthened home-school partnerships and the revival of indigenous games. The study particularly highlights the significant role of grandparents, a

cultural resource often overlooked in ECE programming. Grandparents expressed pride in the continuation and revival of indigenous games they played in their childhood and celebrated their participation in the implementation process. Furthermore, children experience a stronger sense of identity and belonging when they play games that represent their cultural history or include components from their community. This aligns with Dunbar and Scrimgeour's (2006) ethno-ethical approach, emphasising the importance of community involvement in community-driven initiatives.

Outdoor indigenous games, documented in this study and highlighted in literature, share similarities with games across cultures, demonstrating the universality of indigenous games. For instance, *Chiyato* is documented across cultures such as Pakistan *Gittey* (Khalid, 2008); *Nhodo* in Zimbabwe (Mandondo & Tsikira, 2021); *Mdako* in Tanzania (Smørdal, 2012); and *Ondota* in Namibia (Utete et al., 2019). Other games such as *nsolo* in Zambia (Mtonga, 2012), *Tsoro* in Zimbabwe (Madondo & Tsirika, 2021; Moyo & Chinamasa, 2022; Nyanhongo, 2015); *Morabaraba* (Matsekoleng et al., 2022); and *Bao* in Tanzania offers feasibility for use by ECE teachers and parents to stimulate development of visual motor integration, social-emotional, and cognitive abilities in young children. Previous studies have also confirmed that *Nsolo* is a game that promotes socialisation, fine motor skills, and mathematical concepts in children, fostering logical and mathematical thinking from an early age (Mtonga, 2012). Indigenous songs are also vital for knowledge generation, and stimulation of language skills, as they expose children to new words, enhance vocabulary, and improve oral language skills. In the game of *Chidunu* (Hide and Seek) and hopscotch, children engage in physical activity while playing the game and observing the rules. What is clear is that children prize the suspense of the hunt. Although both games require resilience and perseverance, participants recognise that "this is play", and this recognition creates a secure environment in which emotions can be experienced in a playful way without the intense emotional drain of the "real" world (Lester & Russell, 2010).

Additionally, the indigenous games niche contributes to the ethno-theory of child development by promoting opportunities for engagement in intergenerational play activities, allowing children to interact with elders, and acquiring cultural knowledge, values, and practices through participation and learning (Röttger-Rössler et al., 2015). This interaction helps children and community members develop social ties, as noted by Johnson and Samuelsen (2018). Indigenous games also promote inclusive early childhood pedagogical practices, addressing barriers to inclusion for children with disabilities. Matafwali (2022) found that inadequate knowledge of inclusive pedagogical practices among ECE teachers was one of the barriers to the inclusion of children with disabilities in ECE. Cost-effective and utilisation of minimal resources and materials within the community make these games a valuable tool for promoting inclusivity and responsiveness to diversity. Incorporating indigenous games is also essential for establishing home-school partnerships and encouraging parental involvement. These outdoor activities foster creativity, critical thinking, and problem-solving due to their open-ended and unstructured character. Children gain the ability to weigh risks and come to decisions on their own, which can boost their resilience and sense of self-confidence. Indigenous games also provide an opportunity for children to enhance their linguistic competence, encouraging the use of a familiar language and therefore laying a foundation for the development of emergent literacy skills (Matafwali & Bus, 2013).

Documentation of outdoor indigenous games can be an important source of resource capital for advancing play-based learning strategies in ECE settings. Indigenous knowledge does not only offer a comprehensive approach to child development, but encourages responsiveness, inclusivity and preservation of the cultural hegemony in Early Child Development (Lester & Russel, 2008). Thus, documentation of indigenous games will create an opportunity for the Ministry of Education to incorporate indigenous play activities into the ECE curricula and teacher training for improved learning experiences in the early years. Literature suggests the need to create opportunities for capacity of teachers to equip them with knowledge and skills in various pedagogical approaches (Banja, 2022; Moyo & Chinamasa, 2022; Mwanza-Kabaghe & Mofu-Mwansa, 2018). Furthermore, indigenous games can foster home-school relationships by promoting cultural awareness, family involvement, and collaborative activities, ultimately improving children's educational experiences and outcomes (Epstein, 2018).

In conclusion, the study acknowledged the importance of indigenous games and songs in play-based learning in ECE centers for child development, promoting problem-solving, leadership, decision-making, teamwork, and critical thinking. Games enhance interpersonal skills, problem-solving, and reciprocity in children, providing valuable life lessons and fostering healthy childhood memories. They involve physical activity, songs, and motor activities, promoting vocabulary, oral language, and bodily-kinesthetic intelligence. Almost all games involve some aspect of self-regulation because of the aspect of winning and losing. Most importantly, children found these games to be fun, and for most children losing is part of the amusement of playing games. Overall, outdoor indigenous games and songs are significant components of ECE because they help improve quality by stimulating children's growth in various areas. The study suggests systematic documentation of indigenous outdoor games and songs as a valuable resource capital for play-based learning in early childhood education. The integration of indigenous games in play-based pedagogy can enhance cultural responsiveness of the Early Childhood Education (ECE) curriculum and promote collaborations between schools and the community. The development of teachers' capacity is crucial for them to be equipped with adequate knowledge and skills to effectively contextualize indigenous games for learning and create engaging teaching experiences for children.

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