

# '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 Donison<sup>1</sup>, Tanya Halsall<sup>2</sup>

**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.

## Article History

Received: 21 March 2023

Accepted: 20 September 2023

## Keywords

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,

<sup>1</sup> Brock University, Child and Youth Studies Department, St. Catharines, Canada, email: [ld13qt@brocku.ca](mailto:ld13qt@brocku.ca), ORCID: <https://orcid.org/0000-0002-6899-6241>

<sup>2</sup> University of Ottawa, Institute of Mental Health Research, Ottawa, Canada, email: [Tanya.Halsall@theroyal.ca](mailto:Tanya.Halsall@theroyal.ca), ORCID: <https://orcid.org/0000-0001-5791-0986>

'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

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

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

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

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.

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

## **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

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

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

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

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

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

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*

*Acknowledgments:* Not applicable.

*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.

*Competing interests:* The authors declare that they have no competing interests.

*Funding:* This project was funded by Social Sciences and Humanities Research Council of Canada SSHRC - 430-2021-00804.

*Ethics approval and consent to participate:* Participants received written information about the study, which was voluntary. All participants agreed to participate in the study and provided written consent. Guardians of the children provided written consent for children and children provided verbal assent prior to data collection.

*Publisher's Declarations*

**Editorial Acknowledgement:** The editorial process of this article was carried out by Dr. Mehmet Mart, Dr. Helen Little, Dr. Helen Bilton & Dr. Michaela Kadury-Slezak.

**Publisher's Note:** Journal of Childhood, Education & Society remains neutral with regard to jurisdictional claims in published maps and institutional affiliation.

**References**

- Ayotte-Beaudet, J.-P., Vinuesa, V., Turcotte, S. et Berrigan, F. (2022). Pratiques enseignantes en plein air en contexte scolaire au Québec: Au-delà de la pandémie de COVID-19. Université de Sherbrooke.
- Bamberger, M., Rao, V., & Woolcock, M. (2010). Using mixed methods in monitoring and evaluation: Experiences from international development In A. Tashakkori, & C. Teddlie (Eds.), *Sage handbook of mixed methods in social & behavioral research* (2nd ed., pp. 613-641). SAGE.
- Bang, M. (2004). When Sophie gets angry - really, really angry. Scholastic Inc.
- Barrable, A., Booth, D., Adams, D., & Beauchamp, G. (2021). Enhancing nature connection and positive affect in children through mindful engagement with natural environments. *International Journal of Environmental Research and Public Health*, 18(9), 4785. <https://doi.org/10.3390/ijerph18094785>
- Bauer, M. S., Damschroder, L., Hagedorn, H., Smith, J., & Kilbourne, A. M. (2015). An introduction to implementation science for the non-specialist. *BMC psychology*, 3(1), 1-12.
- Baum, F. (2019). *Governing for health*. Oxford University Press.
- Becker, C., Lauterbach, G., Spengler, S., Dettweiler, U., & Mess, F. (2017). Effects of regular classes in outdoor education settings: A systematic review on students' learning, social and health dimensions. *International Journal of Environmental Research and Public Health*, 14(5), 485. <https://doi.org/10.3390/ijerph14050485>
- Beery, T.H., & Jorgensen, K.A. (2018). Children in nature: Sensory engagement and the experience of biodiversity. *Environmental Education Research*, 24(1), 13-25.
- Bento, G., & Dias, G. (2017). The importance of outdoor play for young children's healthy development. *Porto Biomedical Journal*, 2(5), 157-160. <https://doi.org/10.1016/j.pbj.2017.03.003>
- Blodgett, A.T., Schinke, R.J., Smith, B., Peltier, D., & Pheasant, C. (2011). In indigenous words: Exploring vignettes as a narrative strategy for presenting the research voices of aboriginal community members. *Qualitative Inquiry*, 17(6), 522-533.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology*, 3(2), 77-101.
- Braun, V., & Clarke, V. (2014). What can "thematic analysis" offer health and wellbeing researchers?. *International Journal of Qualitative Studies on Health and Well-being*, 9(1), 26152. <https://doi.org/10.3402/qhw.v9.26152>
- Browne, L.P., Garst, B.A., & Bialeschki, M.D. (2011). Engaging youth in environmental sustainability: Impact of the Camp 2 Grow program. *J Park Recreat Adm*, 29(3), 70-85.
- Brussoni, M., Gibbons, R., Gray, C., Ishikawa, T., Sandseter, E. B. H., Bienenstock, A., Chabot, G., Fuselli, P., Herrington, S., Janssen, I., Pickett, W., Power, M., Stanger, N., Sampson, M., & Tremblay, M. (2015). What is the relationship between risky outdoor play and health in children? A systematic review. *International Journal of Environmental Research and Public Health*, 12(6), 6423-6454. <https://doi.org/10.3390/ijerph120606423>
- Buckley, B. (2018). Bringing outdoor therapies into mainstream mental health. *Frontiers in Public Health*, 6, 119. <https://doi.org/10.3389/fpubh.2018.00119>
- Capaldi, C. A., Passmore, H.-A., Nisbet, E. K., Zelenski, J. M., & Dopko, R. L. (2015). Flourishing in nature: A review of the benefits of connecting with nature and its application as a wellbeing intervention. *International Journal of Wellbeing*, 5(4), 1-16. <https://doi.org/10.5502/ijw.v5i4.449>
- Checkoway, B. (2011). What is youth participation?. *Children and Youth Services Review*, 33(2), 340-345.
- Davis, J. (2014). Towards a further understanding of what Indigenous people have always known: Storytelling as the basis of good pedagogy. *First Nations Perspectives*, 6(1), 83-96.
- Derr, V., Chawla, L., & Mintzer, M. (2018). *Placemaking with children and youth: Participatory practices for planning sustainable communities*. New Village Press.
- Ernst, J. (2017). Exploring young children's and parents' preferences for outdoor play settings and affinity toward nature. *International Journal of Early Childhood Environmental Education*, 5(2), 30-45.
- Ernst, J., & Burcak, F. (2019). Young children's contributions to sustainability: The influence of nature play on curiosity, executive function skills, creative thinking, and resilience. *Sustainability*, 11(15), 4212. <https://doi.org/10.3390/su11154212>

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

- Fjørtoft, I. (2001). The natural environment as a playground for children: The impact of outdoor play activities in pre-primary school children. *Early Childhood Education Journal*, 29, 111–117. <https://doi.org/10.1023/A:1012576913074>
- Gray, C., Gibbons, R., Larouche, R., Sandseter, E. B., Bienenstock, A., Brussoni, M., Chabot, G., Herrington, S., Janssen, I., Pickett, W., Power, M., Stanger, N., Sampson, M., & Tremblay, M. S. (2015). What is the relationship between outdoor time and physical activity, sedentary behaviour, and physical fitness in children? A systematic review. *International Journal of Environmental Research and Public Health*, 12(6), 6455–6474. <https://doi.org/10.3390/ijerph120606455>
- Greene, J. C., Benjamin, L., & Goodyear, L. (2001). The merits of mixing methods in evaluation. *Evaluation*, 7(1), 25–44.
- Green, M. C. (2004). Storytelling in teaching. *The Association for Psychological Science Observer*, 17(4), 37–39.
- Halsall, T., Daley, M., Hawke, L., & Henderson, J. (2021). Exploring peer support services for youth experiencing multiple health and social challenges in Canada: A hybrid realist-participatory evaluation model. *International Journal of Qualitative Methods*, 20, 1–13. <https://doi.org/10.1177/1609406921995680>
- Halsall, T., Donison, L., Zeni, M., de Lannoy, L., Buxton, R., Sundar, P. & Matheson, K. (forthcoming). "I feel like nature's healing, it just brings me joy": Students and educators experiences of wellbeing within outdoor learning. *Adventure education and Outdoor Learning*,
- Halsall, T., & Forneris, T. (2020). Examining outdoor recreation as an approach to promote youth development and environmental activism. In R. Millington & S. Darnell (Eds.), *Sport, development and environmental sustainability* (pp. 148–162). Routledge.
- Harper, N. J., & Obee, P. (2021). Articulating outdoor risky play in early childhood education: Voices of forest and nature school practitioners. *Journal of Adventure Education and Outdoor Learning*, 21(2), 184–194.
- Harwood, D., & Collier, D. R. (2017). The matter of the stick: Storying/(re)storying children's literacies in the forest. *Journal of Early Childhood Literacy*, 17(3), 336–352. <https://doi.org/10.1177/1468798417712340>
- Hirsh-Pasek, K., Golinkoff, R. M., & Eyer, D. (2003). *Einstein never used flash cards: How our children really learn – and why they need to play more and memorize less*. Rodale Books.
- Hunter, J., Syversen, K. B., Graves, C., & Bodensteiner, A. (2019). Balancing Outdoor Learning and Play: Adult Perspectives of Teacher Roles and Practice in an Outdoor Classroom. *International Journal of Early Childhood Environmental Education*, 7(2), 34–50.
- Hussein, H. (2017). Sensory affordances in outdoor play environment towards well-being of special schooled children. *Intelligent Buildings International*, 9(3), 148–163. <https://doi.org/10.1080/17508975.2015.1015945>
- Jordan, C., & Chawla, L. (2022). A coordinated research agenda for nature-based learning. In R. Jucker, & J. von Au (Eds.), *High-Quality Outdoor Learning* (pp. 29–46). Springer. [https://doi.org/10.1007/978-3-031-04108-2\\_2](https://doi.org/10.1007/978-3-031-04108-2_2)
- Julien, M., Wright, B., & Zinni, D.M. (2010). *Stories from the circle: Leadership lessons learned from aboriginal leaders*. The Leadership Quarterly, 21(1), 114–26.
- Kaplan, S. (1995). The restorative benefits of nature: Toward an integrative framework. *Journal of Environmental Psychology*, 15(3), 169–182. [https://doi.org/10.1016/0272-4944\(95\)90001-2](https://doi.org/10.1016/0272-4944(95)90001-2)
- Kellert, S. R. (2002). Experiencing nature: Affective, cognitive, and evaluative development. In P.H. Kahn, Jr & S.R Kellert (Eds), *Children and nature: Psychological, sociocultural, and evolutionary investigations* (pp.117-151). The MIT Press.
- Kemple, K. M., Oh, J., Kenney, E., & Smith-Bonahue, T. (2016). The power of outdoor play and play in natural environments. *Childhood Education*, 92(6), 446–454. <https://doi.org/10.1080/00094056.2016.1251793>
- Khan, M., Bell, S., & Wood, J. (2021). *Place, pedagogy and play : Participation, design and research with children*. Routledge, Taylor & Francis Group.
- Kilkelly, U., Lynch, H., Moore, A., O'Connell, A., & Field, S.C. (2016). *Children and the outdoors: Contact with the outdoors and natural heritage among children aged 5 to 12: Current trends, benefits, barriers and research requirements*. Heritage Council. [https://www.heritagecouncil.ie/content/files/children %20outdoors commissioned report 26mb.pdf](https://www.heritagecouncil.ie/content/files/children_%20outdoors_commissioned_report_26mb.pdf)
- Kovach, M.E. (2010). *Indigenous methodologies: Characteristics, conversations, and contexts*. University of Toronto Press.
- Kyle, A. D., Balmes, J. R., Buffler, P. A., & Lee, P. R. (2006). Integrating research, surveillance, and practice in environmental public health tracking. *Environmental health perspectives*, 114(7), 980–984.
- Kuo, M., Barnes, M., & Jordan, C. (2019). Do experiences with nature promote learning? Converging evidence of a cause-and-effect relationship. *Frontiers in Psychology*, 10, 305–305. <https://doi.org/10.3389/fpsyg.2019.00305>
- Lawrence, R. L., & Paige, D. S. (2016). What our ancestors knew: Teaching and learning through storytelling. *New Directions for Adult and Continuing Education*, 149(Spring), 63–72.
- Lawson Foundation. (2020). Increasing outdoor play in early learning and child care in the context of covid-19. <http://www.lawson.ca/op-elcc-covid19.pdf>
- Lee, E.-Y., de Lannoy, L., de Barros, I., Bentsen, P., Brussoni, M., & Fiskum, T. (2022). Play, learn, and teach outdoors - network



- (PLaTO-Net): Terminology, taxonomy, and ontology. *International Journal of Behavioral Nutrition and Physical Activity*, 19(6), 1-20.
- Libby, M., Rosen, M., & Sedonaen, M. (2005). Building youth–adult partnerships for community change: Lessons from the youth leadership institute. *Journal of Community Psychology*, 33(1), 111-120.
- Lumber, R., Richardson, M., & Sheffield, D. (2017). Beyond knowing nature: Contact, emotion, compassion, meaning, and beauty are pathways to nature connection. *PLoS One*, 12(5), e0177186. <https://doi.org/10.1371/journal.pone.0177186>
- Maynard, T. (2007). Outdoor play and learning. *Education 3-13*, 35(4), 305–307.
- Malone, K., & Tranter, P. J. (2003). School grounds as sites for learning: Making the most of environmental opportunities. *Environmental Education Research*, 9(3), 283–303. <https://doi.org/10.1080/13504620303459>
- Mann, J., Gray, T., Truong, S., Sahlberg, P., Bentsen, P., Passy, R., Ho, S., Ward, K., & Cowper, R. (2021). A systematic review protocol to identify the key benefits and efficacy of nature-based learning in outdoor educational settings. *International Journal of Environmental Research and Public Health*, 18(3), 1199. <https://doi.org/10.3390/ijerph18031199>
- Marchant, E., Todd, C., Cooksey, R., Dredge, S., Jones, H., Reynolds, D., Stratton, G., Dwyer, R., Lyons, R. & Brophy, S. (2019). Curriculum based outdoor learning for children aged 9-11: A qualitative analysis of pupils’ and teachers’ views. *PLoS One*, 14(5), e0212242. <https://doi.org/10.1371/journal.pone.0212242>
- Merewether, J. (2015). Young children's perspectives of outdoor learning spaces: What matters?. *Australasian Journal of Early Childhood*, 40(1), 99-108. <https://doi.org/10.1177/183693911504000113>
- McCormick, R. (2017). Does access to green space impact the mental well-being of children: A systematic review. *Journal of Pediatric Nursing*, 37, 3–7. <https://doi.org/10.1016/j.pedn.2017.08.027>
- McNamara, L., London, R., Ramstetter, C., Baines, E., Beresin, A., Claasson, J., Doyle, W., Hyndman, B., Jarrett, O., Massey, W., & Rhea, D. (2020). *School re-opening? Make sure children have time for daily recess*. Global Recess Alliance. <https://globalrecessalliance.org/recess-statement/>
- Mitra, R., Pelopidas, C., Propa, F., & Yutiga, P. (2020). Outdoor Play and Learning (OPAL) in school communities: Results from the pilot programming in Toronto. <https://transformlab.torontomu.ca/wp-content/uploads/2020/06/OPAL-Report-Final-2020-Revised2.pdf>
- Morgan, D. L. (2007). Paradigms lost and pragmatism regained: Methodological implications of combining qualitative and quantitative methods. *Journal of mixed methods research*, 1(1), 48-76.
- Murnikov, V., & Kask, K. (2021). Recall accuracy in children: Age vs. conceptual thinking. *Frontiers in Psychology*, 12, 686904.
- Norwood, M.F., Lakhani, A., Fullagar, S., Maujean, A., Downes, M., Byrne, J., Stewart, A., Barber, B., & Kendall, E. (2019). A narrative and systematic review of the behavioural, cognitive and emotional effects of passive nature exposure on young people: Evidence for prescribing change. *Landscape and Urban Planning*, 189, 71–79.
- Ontario Ministry of Education. (2014). *How does learning happen? Ontario’s pedagogy for the early years*. Queens Printer for Ontario. <http://www.edu.gov.on.ca/childcare/howlearninghappens.pdf>
- Oberle, E., Zeni, M., Munday, F., & Brussoni, M. (2021). Support factors and barriers for outdoor learning in elementary schools: A systemic perspective. *American Journal of Health Education*, 52(5), 251–265. <https://doi.org/10.1080/19325037.2021.1955232>
- ParticipACTION. (2022). ParticipACTION report card on physical activity for children and youth. <https://www.participaction.com/the-science/children-and-youth-report-card/>
- Patton, M. Q. (2002). *Qualitative research and evaluation methods* (3rd ed.). Sage.
- Patton, M. Q. (2011). *Developmental evaluation: Applying complexity concepts to enhance innovation and use*. Guilford Press.
- Perry, C. K., Ackert, E., Sallis, J. F., Glanz, K., & Saelens, B. E. (2016). Places where children are active: A longitudinal examination of children’s physical activity. *Preventive Medicine*, 93, 88–95. <https://doi.org/10.1016/j.ypmed.2016.09.015>
- Phenice, L., & Griffiore, R. (2003). Young children and the natural world. *Contemporary Issues in Early Childhood*, 4(2), 167–171.
- Phillips, L. (2013). Storytelling as pedagogy. *Literacy Learning: The Middle Years*, 21(2), ii+.
- Preuß, M., Nieuwenhuijsen, M., Marquez, S., Cirach, M., Dadvand, P., Triguero-Mas, M., Gidlow, C., Grazuleviciene, R., Kruijze, H., & Zijlema, W. (2019). Low childhood nature exposure is associated with worse mental health in adulthood. *International Journal of Environmental Research and Public Health*, 16(10), 1809. <https://doi.org/10.3390/ijerph16101809>
- Prins, J., van der Wilt, F., van der Veen, C., & Hovinga, D. (2022). Nature play in early childhood education: A systematic review and meta ethnography of qualitative research. *Frontiers in Psychology*, 13, 1–15. <https://doi.org/10.3389/fpsyg.2022.995164>
- Pritchard, A., Richardson, M., Sheffield, D., & McEwan, K. (2020). The relationship between nature connectedness and eudaimonic well-being: A meta-analysis. *Journal of Happiness Studies*, 21, 1145–1167.

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

- Ramsden, R., Han, C. S., Mount, D., Loebach, J., Cox, A., Herrington, S., Bundy, A., Fyfe-Johnson, A., Sandseter, E. B. H., Stone, M., Tremblay, M. S., & Brussoni, M. (2022). An intervention to increase outdoor play in early childhood education centers (PROmoting Early Childhood Outside): Protocol for a pilot wait-list control cluster randomized trial. *JMIR Research Protocols*, 11(7), e38365. <https://doi.org/10.2196/38365>
- Reis, G., Ng-A-Fook, N., & Glithero, L. (2015). Provoking ecojustice—taking citizen science and youth activism beyond the school curriculum. In M.Muller & D.Tippins (Eds.), *Ecojustice, citizen science and youth activism* (pp. 39–61). Springer International Publishing. [https://doi.org/10.1007/978-3-319-11608-2\\_4](https://doi.org/10.1007/978-3-319-11608-2_4)
- Sandseter, E. B. H. (2009). Affordances for risky play in preschool: The importance of features in the play environment. *Early Childhood Education Journal*, 36(5), 439–446. <https://doi.org/10.1007/s10643-009-0307-2>
- Sandseter, E. B. H., & Kennair, L. E. O. (2011). Children's risky play from an evolutionary perspective: The anti-phobic effects of thrilling experiences. *Evolutionary Psychology*, 9(2), 257-284 <https://doi.org/10.1177/147470491100900212>
- Sahrakhiz, S., Haring, M., & Witte, D., M. (2018). Learning opportunities in the outdoor school—empirical findings on outdoor school in Germany from the children's perspective. *Journal of Adventure Education and Outdoor Learning*, 18(3), 214-226.
- Tremblay, M. S., Gray, C., Babcock, S., Barnes, J., Bradstreet, C. C., Carr, D., Chabot, G., Choquette, L., Chorney, D., Collyer, C., Herrington, S., Janson, K., Janssen, I., Larouche, R., Pickett, W., Power, M., Sandseter, E. B. H., Simon, B., & Brussoni, M. (2015). Position statement on active outdoor play. *International Journal of Environmental Research and Public Health*, 12(6), 6475–6505. <https://doi.org/10.3390/ijerph120606475>
- UNICEF (2014). Convention on the rights of the child: Rights under the convention on child. [https://www.unicef.org/crc/index\\_30177.html](https://www.unicef.org/crc/index_30177.html)
- United Nation. (1989) United Nations convention on the rights of the child. <https://www.ohchr.org/en/instruments-mechanisms/instruments/convention-rights-child>
- Ulset, V., Vitaro, F., Brendgen, M., Bekkhus, M., & Borge, A.I.H. (2017). Time spent outdoors during preschool: Links with children's cognitive and behavioral development. *Journal of Environmental Psychology*, 1(52),69–80.
- Vanaken, G.-J., & Danckaerts, M. (2018). Impact of green space exposure on children's and adolescents' mental health: A systematic review. *International Journal of Environmental Research and Public Health*, 15(12), 2668. <https://doi.org/10.3390/ijerph15122668>
- Zamani, Z. (2017). Young children's preferences: What stimulates children's cognitive play in outdoor preschools?. *Journal of Early Childhood Research*, 15(3), 256–274. <https://doi.org/10.1177/1476718X15616831>
- Zeldin, S., Krauss, S. E., Collura, J., Lucchesi, M., & Sulaiman, A. H. (2014). Conceptualizing and measuring youth–adult partnership in community programs: A cross national study. *American journal of community psychology*, 54 (3-4), 337-347. <https://doi.org/10.1007/s10464-014-9676-9>
- Zelenski, J.M., Dopko, R.L., & Capaldi, C.A. (2015). Cooperation is in our nature: Nature exposure may promote cooperative and environmentally sustainable behavior. *Journal of Environmental Psychology*, 42, 24–31.
- Ziegler, F., Mitchell, P., & Currie, G. (2005). How does narrative cue children's perspective taking?. *Developmental Psychology*, 41(1), 115-123. <https://doi.org/10.1037/0012-1649.41.1.115>