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# Support Factors and Barriers for Outdoor Learning in Elementary Schools: A Systemic Perspective

Eva Oberle, Megan Zeni, Fritha Munday, and Mariana Brussoni

The University of British Columbia

**ABSTRACT**

**Background:** Outdoor learning offers clear physical, cognitive, social-emotional and academic benefits for children and yet, it is considered a grassroots approach to teaching and learning in elementary schools.

**Purpose:** We examined teachers' perspectives on barriers and supports for outdoor learning in public elementary schools.

**Methods:** Thirty-six teachers in (urban and rural) British Columbia, Alberta, and Ontario (all female; *Mean age* = 43.84, *SD* = 10) participated in one of five virtually administered, semi-structured focus groups. Questions/prompts facilitated a discussion on teachers' experiences with barriers and supports for outdoor learning. Thematic analysis was used to identify main themes.

**Results:** Four interrelated themes and further sub-themes were found: 1) *Teacher characteristics*: interest/motivation to teach outdoors, preparedness, confidence in handling risks; 2) *Systemic factors*: principal support, school/district policies, funding/resources, curriculum, school schedule; 3) *Culture*: school culture, societal beliefs about education, family backgrounds; 4) *Environmental factors*: weather, built/natural environment, hazards.

**Discussion:** Systemic support is needed to integrate outdoor learning in schools.

**Translation to Health Education Practice:** The findings in this study are relevant to health education specialists particularly focused on elementary school education.

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## Background

Outdoor learning has far reaching benefits for children, teachers, communities and society. Emerging research shows that outdoor learning can improve children's social-emotional functioning and behavioral health,[1,2] increase physical activity,[3] enhance academic learning and cognitive functioning,[4–6] and increase motivation for learning.[7] Teachers can benefit from improved student-teacher relationships and classroom management during outdoor learning.[8] The community can benefit because outdoor learning facilitates children's lifelong environmental stewardship.[9]

From a public health perspective, outdoor learning can be a vehicle to address societal health challenges of our time. These include childhood chronic conditions that are related to sedentary lifestyles and that have increased in prevalence in North American over the past few decades, such as childhood obesity, asthma, attention-deficit/hyperactivity disorder, mental health problems, and vitamin-d deficiency.[10–12] In fact, children are more physically active outdoors, which can offset sedentary lifestyles,[13–15] children are exposed to natural sun light outdoors, counteracting vitamin-d deficiency,[14] and outdoor learning is associated with decreased stress levels in children[16] and connectedness with nature, which has been associated with positive mental health and wellbeing.[17–19] More recently, outdoor learning has also been recommended as an approach to teaching during the COVID-19 pandemic since being outdoors supports physical distancing and reduces the risk of viral transmission.[20]

Even though outdoor learning has clear potential for supporting children's health and wellbeing, it is widely missing as a formal approach to teaching and learning in Canada's public K-12 education system. This stands in contrast to early childhood and preschool education in Canada. For example, in the province of British Columbia (BC), outdoor learning is firmly integrated into day-to-day activities (e.g., minimum requirements for active outdoor play/learning need to fulfilled to meet licensing standards;.[21] Currently, outdoor learning can be seen as a grassroots approach in Canadian public education that is driven by individual educators and advocates.[22] Recent survey findings suggest that there is growing interest among

**CONTACT** Eva Oberle eva.oberle@ubc.ca School of Population and Public Health, the Human Early Learning Partnership, Faculty of Medicine, University of British Columbia, 2206 East Mall, Vancouver, BC V6T 1Z3 Canada

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teachers in Canada to implement a nature- and outdoor-based pedagogy more formally as part of their teaching.[22] Nonetheless, as findings from a Dutch study indicate, many teachers hesitate to implement outdoor learning when there is a lack of formal support and guidance.[23]

## Barriers to outdoor learning in schools

Outdoor learning is a broad and complex concept that varies regarding focus, location, outcomes and the degree to which learning activities are structured.[24,25] Different concepts of outdoor learning have been discussed in the literature, including 'education outside of the classroom,'[26] 'place-based learning,'[27] and outdoor education programs that are defined through their specific focus (e.g., "ecological education', 'adventure education,' 'agricultural education,' and 'environmental education').[28] While these forms of outdoor learning differ to varying degrees, they all share an overarching focus on teaching and learning outdoors. The focus of this paper is specific to outdoor learning as a broad concept. We refer to outdoor learning as structured and unstructured learning that takes place outside of the classroom during curricular hours and under the supervision of a teacher. Both outdoor learning on school grounds (e.g., school garden, school yard) and off-site (e.g., park, beach, forest) are included in our definition. Other important outdoor experiences during students" non-instructional time that are relevant to learning in schools (e.g., outdoor play during recess) are not the focus of this study and have been discussed elsewhere.[29]

Several studies conducted in European countries have identified a range of barriers to outdoor learning in schools at individual and systemic levels, such as feeling unprepared and lacking confidence to teach outdoors,[23] concern for classroom management and children's safety outdoors,[30] lack of support, funding and resources,[31] feeling constrained by a traditional view on teaching,[32] and inflexible daily teaching schedules.[23] There is a further need to consider a possible interplay between individual and systemic barriers to outdoor learning (e.g., lack of confidence and feeling constrained by a traditional view on teaching may be a result of teacher training and professional development programs that neglect outdoor learning). Moreover, while it is critical to understand barriers, it is also important to take a strength-based perspective and identify support factors that can drive outdoor learning in schools, and through which barriers can be overcome. In an interview-based study with 19 elementary and high school teachers in Canada[33] participants identified personal values and experience with gardening/outdoor learning, professional development, and administrative support as key drivers of outdoor learning. Further research is needed to systematically understand barriers to outdoor learning in schools in the Canadian context, and to identify factors that catalyze outdoor learning in schools.

## Purpose

The goal of the present study was to examine elementary school teachers' perceptions of the barriers and support factors for outdoor learning in public elementary schools in Canada. Understanding barriers and support factors within education systems is critical for a number of reasons. Once barriers are identified, strategies for removing barriers can be developed; once support factors are identified, they can be further enhanced, solidified and systematically incorporated into school and school district planning. A holistic understanding of barriers and support factors at all levels of the education system is needed to transition from a grassroots approach (i.e., outdoor learning driven by individual educators in schools) to a systemic approach in which outdoor learning is integrated into education and scaled out systematically across schools and school boards.[34]

Given the limited research on outdoor learning in public elementary schools in Canada, we examined teachers' perspectives on outdoor learning barriers and supports through semi-structured in-depth focus group discussions with teachers from small and large school districts in three Canadian provinces. Consistent with an inductive approach to research and to not constrain teachers' responses, we refrained from using a predetermined framework through which barriers and support factors for outdoor learning were organized. Themes representing barriers and support factors emerged freely during focus groups and were then mapped onto a best fitting theoretical model in the process of data analyses and discussion.

## Method

### *Participants*

A total of 36 elementary school teachers from the provinces of BC (n = 32), Alberta (n = 2), and Ontario (n = 2) participated. Participants were from 16 different school districts. Ages ranged from 23 to 60 years (*Mean* = 43.48, *SD* = 10). Participants ethnic backgrounds were European (92%), Asian (8%), Arab/West Asian (3%), and Hispanic (3%). All participants

identified as female. Twenty-nine participants were teaching full time as classroom teachers, three participants were teaching part time or in a job-share position as classroom teachers, one held administrative responsibilities as a teacher-assistant principal in addition to her role as a teacher, and four teachers were currently in non-enrolling positions (e.g., resource teacher). Teaching experience were up to 5 years (n = 4), 6–15 years (n = 11), 16 years (n = 13). Except for one, all teachers had some experience with implementing outdoor learning and 34 teachers reported currently teaching some curricular content outdoors. Eight teachers had participated in professional development for outdoor learning. All had graduated from a preservice teacher education program; eight participants held an additional graduate degree at the Master level. All participants consented to participating in this study.

## Procedure

Participants were recruited through postings on social media and in professional networks for educators. Postings invited elementary school teachers to participate in a focus group discussion on perceptions, attitudes, and experiences with implementing and facilitating outdoor learning and supporting outdoor play in schools. Inclusion criteria were: currently teaching in a primary grade classroom (K-3) in a public elementary school in Canada, and availability to join a focus groups hosted remotely via Zoom. Teachers who met the criteria were asked to provide consent for participation in research, complete a brief demographic survey online, and indicate their availability for participating in a 2-hour focus group at one of the prescheduled dates. Participants were assigned to a focus group date based on availability. There were six to eight participants per focus group. Focus group sizes typically range from 4 to 12 participants[35,36] with smaller group sizes being considered more effective for virtual focus group discussions.[37] Focus groups took place in the end of June and beginning of July 2020 and were facilitated by the second author, a university researcher who is also an elementary school teacher and experienced in outdoor teaching and learning. Data saturation was reached after five focus groups (N = 36 participants). This is in line with previous research that suggests that in focus groups with a clear thematic focus in which participants meet predetermined eligibility criteria, data saturation is often reached as early as after five groups discussions.[38]

Focus group discussions were facilitated using a standardized research protocol in which identical semi-structured interview questions were shared in the same order. The facilitator provided a brief overview of the study purpose in the beginning of the meeting and reminded teachers that there were no right or wrong answers, that did not expect teachers to be advocates for outdoor learning, and that we were interested in any position they held about this topic. Guiding questions were asked verbally and shown via screen share (e.g., "What are your experiences supervising outdoor play and learning at school?," "What do you notice when children play and learn outdoors?," "What do you perceive to be barriers to outdoor play and learning in schools?," "Who makes decisions at your school about the rules for outdoor play and learning, and how important is this person?"). Follow-up questions and prompts were added when appropriate. Following completion of each focus group, the facilitator documented her observations. Participants received 50 USD as compensation for their time. This research was approved by the Behavioral Ethical Research Board of (the University of British Columbia).

## Analysis

Focus groups were digitally recorded, transcribed verbatim and prepared for thematic analysis.[39] Coding in NVivo was completed by the first and third author. The first three authors were involved in all six phases of the thematic analysis: familiarization with data, generating codes, constructing themes, revising themes, defining themes, and final reporting.[40] The last author provided guidance with the study design and contributed to discussion and interpretation of the data. During the familiarization phase, we listened to the recordings, read the transcriptions line by line, took note of key themes, and developed a consensus on the list of codes. Transcripts were then entered into NVivo 12 software (QSR International Pty Ltd, Melbourne, Australia) and the codes were entered as "free nodes." The first author and the third author each coded all portions of the transcripts that made reference to facilitators and barriers to outdoor learning in schools. Text retrievals were then performed on hierarchical codes and contents were interpreted and summarized into themes. Relationships between themes were identified and discussed and pathways (see Figure 1) were tested for consistency across focus groups. Decisions at each step of the thematic analysis were discussed, revised and finalized during group meetings; all decisions were made consensually between the authors. While we used an inductive approach to generate codes, our previous knowledge of outdoor learning and school structures and policies in BC and Canada shaped the development of codes and relationships between themes.

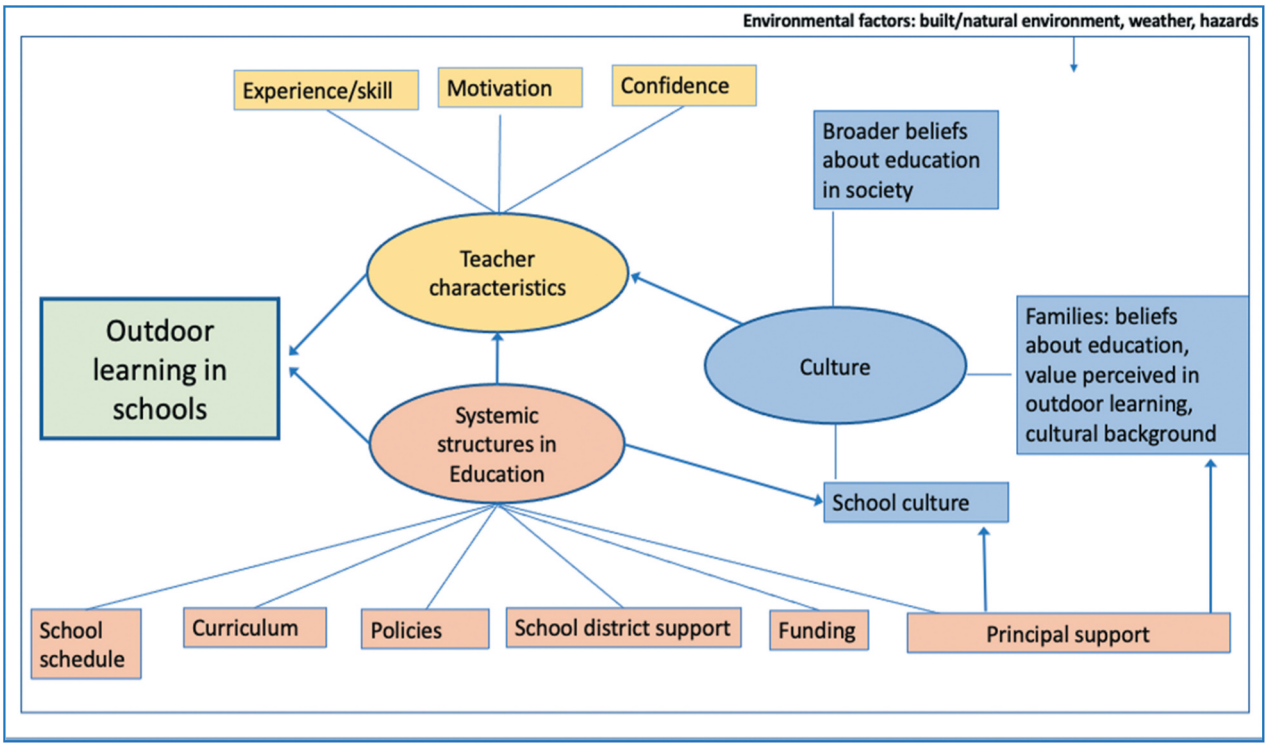


**Figure 1.** Pathway model of barriers and supports shaping outdoor learning in schools.

## Results

Analyses revealed four major themes regarding barriers and supports for outdoor learning in schools: (1) "Teacher characteristics," (2) "Systemic factors in the education system," (3) "Culture," and (4) "Environment." Most themes included multiple sub-themes. Each theme was experienced as a support factor for outdoor learning by some teachers (e.g., the presence of an attribute; such as walkable access to safe and quality nature spaces around the school) and as a barrier by other teachers (e.g., the absence of an attribute; such as poor access to safe and quality nature spaces). Table 1 summarizes the four themes, sub-themes, and examples for how they could manifest as barriers or support factors for outdoor learning. Figure 1 illustrates key relationships among the themes and sub-themes and identifies core pathways through which different factors were perceived to shape outdoor learning in schools. Findings were consistent across all focus groups. Quotes include reference to the participant identification (PID) number in the study, whether teachers worked full time (FT) or part time (PT), which grades they taught, and whether they taught in a small or large district.

### *Teacher characteristics*

Teachers understood themselves as key initiators for outdoor learning. They agreed that whether and how often teachers implement outdoor learning depends on their interest, skills and preparedness. They acknowledged that outdoor learning *"is not everyone's cup of tea"* (PID 1027, FT, KG, large district). However, teachers also noted that interest in and commitment to outdoor learning depends on the larger context, such as the support for outdoor learning in the education system, the quality of the natural and built environment around school, and support and buy-in from families, colleagues, and school administrators (see Figure 1).

One teacher reflected on her own history of teaching outdoors and noted initial challenges: *"When I first started, yeah, I was nervous about going outside every day. I was afraid of going outside. What are we going to do? You know, do I have to have a plan every day? And I didn't, I didn't have to have a plan every day. . . . I have said to other people, it takes 21 days to form a habit, and so if you are going out for 21 days in a row, by the end of September you have formed a habit and the kids have formed a habit."* (PID 1034, FT, KG/1, large district). There was agreement among teachers that professional development, mentoring, and training in outdoor learning are critical to help teachers build a repertoire of outdoor teaching skills, gain expertise, and build confidence in teaching outdoors.

In addition to skill and preparedness, teachers in all focus groups emphasized individual differences in risk tolerance. One teacher recalled a heated conversation

**Table 1.** Themes and sub-themes representing perceived barriers and support factors for outdoor learning (OL).

| What influences OL in schools? | Category | Barriers (factors hindering OL in schools) | Support factors (facilitators of OL in schools) |
|---|---|---|---|
| Teacher characteristics | Skill, experience, and confidence | - Teacher feels unexperienced and lacks skills and confidence in implementing OL<br>- Teacher is uncomfortable with managing potential risks involved during OL<br>- Teacher has had little exposure/lived experience with learning outdoors | - Teacher feels prepared and is confident about managing potential risks<br>- Teacher has self-taught outdoor teaching skills or has participated in professional development<br>- Teacher has professional and lived experience with OL<br>- Teacher receives mentorship for OL |
| | Motivation and commitment | - Teacher is unclear to which extent they would like to implement OL<br>- Teacher is hesitant in light of perceived barriers | - OL is a part of core teaching philosophy<br>- Teacher is committed to overcome barriers and implement OL regularly |
| Systemic Factors in the Education System | School administrator/ principal | - Lack of principal buy-in for OL<br>- Principal opposes or doesn't support OL (e.g., views OL as risky, shows preference for indoor education, restricts time for OL) | - Principal supports OL (e.g., gives teachers autonomy over their time/schedule)<br>- Principal communicates benefits of OL to families and acts as advocate<br>- Principal allocates resources to facilitate OL on-site and off-site |
| | School-schedule | - School schedule requires students to be in certain places at certain times (e.g., recess, lunch, special programs), making it difficult to leave school grounds | - Teacher has autonomy and flexibility over their schedule<br>- Spontaneous implementation of OL is possible |
| | School district | - Teachers have little or no support in the school system to prepare for implementing OL | - Professional development and training in OL is available in the school district<br>- District has a designated staff position that supports OL |
| | Policies | - OL off school grounds is considered a field trip where adult-child ratios apply<br>- Requirement for parent volunteers or school staff to accompany teachers and students<br>- Schools/districts require parent consent forms for each OL session off school grounds | - Schools/districts allow a consent form where parent can provide year-long consent for OL to take place flexibly |
| | Curriculum | - Curricular demands are perceived to take up most of the instructional hours, making it difficult to fit in OL | - Preparing a day-to-day learning schedule through an OL lens;<br>- When creating a learning plan, teacher considers whether/how lessons can be taught outside |
| | Funding and resources | - Lack of funds for gear (e.g., rain gear), tools (e.g., loose parts), and transportation | - Specific funds and other resources (e.g., rain gear and clothes donations donations) are allocated for OL (e.g., gear lending library, loose parts tool shed, nature-walk backpacks) |
| Culture | Family culture and background | - Families have little experience with outdoor play and learning<br>- Families do not perceive OL as valuable for academic learning<br>- Families are unfamiliar with OL<br>- Families are concerned for children's safety during OL<br>- Families do not want their children to get dirty/muddy at school<br>- Children are not appropriately dressed for OL<br>- Children have little experience with unstructured play and learning outdoors<br>- Children have little experience with risky play outside (e.g., climbing trees) | - Families advocate for OL and create a strong support culture for OL in the classroom/ school/community<br>- Families provide appropriate attire for OL<br>- Families support the school's gear lending library once items are outgrown<br>- Clear benefits (social, emotional, behavioral, academic) are noticed in children after OL units, encouraging all stakeholders (e.g., parents, teachers) to support OL |
| | School culture | - No colleagues in the school implement OL<br>- Teachers question the appropriateness of OL (e.g., value, safety)<br>- Little flexibility to accommodate OL | - Community of practice around OL in the school<br>- Teacher colleagues collaborate in planning OL lessons, and share experiences and best practices |
| | Beliefs about education in society | - Belief that education should take place indoors, at desks, and with a predominate academic focus;<br>- Feeling unwelcome with students in public spaces in the community | - Community supports OL by sharing public spaces (e.g., parks, forests, beaches) in a welcoming and friendly manner<br>- Community organizations collaborate with schools in OL |
| Environment | Built and natural space on and near schoolgrounds | - Lack of access to nature<br>- Urban and natural hazards (e.g., traffic, needles in parks, wildlife)<br>- No transport to outdoor spaces available | - School grounds and school neighborhood environment are available (access) and afford OL (quality of the space)<br>- Outdoor space is as safe as necessary<br>- School bus or public transit are available to access outdoor spaces further away |
| | Weather | - Extreme temperatures;<br>- No sheltered outdoor areas during extreme weather conditions | |

among colleagues at her school about whether classes should be able to regularly access a hilly area behind the school for outdoor learning, raising the concern of limited visibility that interferes with supervision. She recalled her colleague's worries: *"Well, what if they fall, what if they are laying, broken leg, or knocked unconscious. Who is responsible, whose risk is that? I can't see them if they are standing on the side of the shed, what if they're abducted?"*; her reflection on this situation was *"I was quite stunned. There is no greater risk in being in an outdoor classroom than, you know, walking outside of your house. In the end, I lost the argument"* (PID 1023, FT teacher, multiple classrooms, large district). The teacher explained that she subsequently left the school because there was a dominant culture of concern about outdoor safety among teachers and leadership and little support for her outdoor learning pedagogy. Another teacher acknowledged individual differences in risk tolerance: *"Each teacher has their different expectations of how their kids will engage outside. Some of them are comfortable having conversations about risky play and rough-and-tumble play, whereas other teachers aren't as comfortable to manage those kinds of situations"* (PID 1018, FT, KG, large district). Teachers agreed that hesitations and discomfort are often rooted in teachers' limited lived experience with outdoor learning.

While there was consensus that perceptions of risk, safety and liability concerns significantly contribute to teachers' commitment for outdoor learning, participants also consistently emphasized that the presence of systemic support for outdoor learning – and in particular a supportive principal who "had their back" – can alleviate these concerns and help teachers feel more confident in implementing outdoor learning regularly.

## Systemic factors in the education system

The most dominant theme that emerged in all focus groups reflected teachers' perceptions of systemic support for and systemic barriers to outdoor learning in schools. Six interrelated sub-themes were identified: 1) principal support; 2) school schedule; 3) support in the school district; 4) curriculum; 5) policies; and 6) funding and resources.

### Principal support: "will my principal have my back?"

Teachers perceived principals as unsupportive and hindering when they did not endorse outdoor learning, were risk-focused, and limited teachers' time, flexibility, and locations for outdoor learning. Teachers felt supported when principals advocated for outdoor learning in the school community, protected teachers during unforeseen challenges, allowed flexible scheduling, and provided designated resources and funding.

Several teachers noted that they felt hesitant to teach outdoors if they could not count on their principal to vouch for them. This teacher noted: *"That fear of, oh if I take a child out and they're climbing a tree and they fall, am I going to get sued? Or am I the one held responsible? Will my administrator back me up? So, I think that administrative support is very important"* (PID 1021, FT, multiple classrooms, large district). A supportive principal was perceived as reassuring and helping teachers feel confident in their outdoor learning approach, as indicated by this teacher: *"I have an amazing set of admin, so I was able to do things that are slightly more risky"* (PID 1019, FT, KG-3, small district). A principal was perceived as "having your back" when they were willing to step up for teachers when complaints were raised by families, as described by these two teachers: *" . . . if I go to the principal and say I'd really like to try this, she's like, 'okay, just let me know when, so I can expect when the parents start to phone, I know what's going on, and I'm prepared to respond'"* (PID 1021, FT, multiple classrooms, large district); and *"I think that I feel more confident because I know that it bumps up the chain. I have the support of my superiors, so I know that if the parent is feeling uncomfortable about something I'm doing, and then feel the need to overstep me and go somewhere higher, I have that support"* (PID 1005, FT, KG, small district).

Teachers emphasized the importance for school principals to advocate for outdoor learning and communicate its value for learning to the larger school community. This teacher said: *"There's actually a school in my School Board where the principal sent out a letter to all the parents explaining the importance of outdoor play and what they would need to benefit, fully benefit from the outdoor play and learning, meaning, you know, their outfit, their outdoor gear. And I think that kind of stopped criticism from parents, in regards to coming in at a certain time, or having wet shoes, or wet boots"* (PID 1022, FT, KG/1, small district). Overall, a principal who was seen as a champion created a strong and positive culture around outdoor learning in schools, as summarized by this teacher: *"When we have administrators walking the walk and talking the talk, and giving us the opportunities to try those new things, it makes a huge difference"* (PID 1019, FT, K-3, small district).

Teachers consistently noted the requirement for principal approval to schedule and plan outdoor learning. Principals who tended to be restrictive around scheduling were seen as hindering flexibility and spontaneity in teaching outdoors. One teacher said *"A big barrier that I faced this year was administration. I was taking my students outside mostly in the afternoons and some parent*

*complained because I had them outside to almost dismissal, we'd be outside for a long time. And parents, if they were early to pick up their kid, . . . one parent complained to them saying, 'why are the kids just outside running around?' And so, now my administration said, all kids need to be inside by 2:15. And we dismiss at 2:55. So that's a big chunk of time where we could be outside"* (PID 1025, FT, KG, large district). Further, teachers highlighted the principal's role in approving what space they could access during outdoor learning, as reflected in this teacher's comment *"In our school, we're really fortunate in that we have a forest directly behind our school. However, we're not allowed to go whenever we want. We have to have permission from the principal"* (PID 1011, FT, Grade 2, large district).

Teachers also highlighted the principal's role in allocating funds and resources to overcome barriers to outdoor learning. Most commonly mentioned were resources to address the lack of appropriate gear among students (e.g., rain gear, warm jacket): *"They even purchased some ponchos. So, if kids come and are not dressed appropriately, they're like, here's a poncho, go outside"* (PID 1016, PT, Grade 3, large district). A teacher in a school with no walkable access to safe and high-quality outdoor spaces said the principal was a key facilitator for outdoor learning by *"giving us bus money to take the bus once a week, so . . . he's been very supportive"* (PID 1024, FT, KG, small district).

Overall, school principals were described as key figures who could drive or hinder outdoor learning. Teachers emphasized that a supportive principal could have wide-reaching impact; their position toward outdoor learning contributes to a school culture that promotes outdoor learning, shapes teachers' confidence, motivation, and enthusiasm for teaching outside, and communicates the benefits of outdoor learning to families (see Figure 1).

### School schedule: "I often feel restricted by the schedule of the day"

Teachers agreed that the daily schedule at their schools did not support flexibility and spontaneity in outdoor learning. They noted that students are required to be in proximity to the classroom at specific times to transition to other pre-scheduled activities and programs (e.g., students receiving English language support, students scheduled to meet with a resource teacher, music class). One teacher described her experiences as follows: *"The LST* [learning support team], *the music, and all the other things that we have to go to, make it harder to schedule going outside, especially the LST. If students are all getting pulled at different times, trying to find a time when they can all participate and not have someone left inside doing LST while we're outside, is hard. It's finding a chunk of time to actually go out and have everybody be able to participate, and then also have an extra adult, an EA* [educational assistant] *or somebody that can be there – it's hard to schedule"* (PID 1026, FT, Grade 1/2, large district). Another teacher described: *"I feel often restricted by the schedule of the day. Now we must have recess, now we must go for our prep. Sometimes those systemic structures of a scheduled day get in the way of authentic experience and learning outdoors. Just when the kids are on to something and they've got a project going on, sometimes we have to cut those off just because of the natural rhythms of a school day"* (PID 1018, FT, KG, large district). Several teachers explained that pre-scheduling outdoor learning throughout the school year is an effective strategy to ensure consistency and continuity.

### Curriculum: "why isn't my kid doing multiplication?"

In all focus groups, teachers stressed that the demands of the educational curriculum interfered with outdoor learning. One teacher described feeling *"stuck on trying to get through the curriculum"* (PID 1016, PT, Grade 3, large district). Curricular expectations were perceived as being conveyed by school administrators and families, as reflected here: *"As a teacher, we have to fulfill different parts of the curriculum, the expectations that maybe the admin has for us, and expectations that parents have, like, the students need to be doing this, this and this. Why isn't my kid doing multiplication? These can all be barriers for us to getting our kids outdoors"* (PID 1020, FT, Grade 3, large district). There was consensus among teachers that families and some colleagues questioned the educational value of outdoor learning in the curriculum, and perceived it as "just play." Teachers felt that the frequent need to justify the legitimacy of outdoor learning was discouraging. Yet, they also agreed that the educational curriculum is, in fact, compatible with outdoor learning, as reflected in this comment *"I just find that if you really look at the curriculum, I would almost argue all of it can be done in an outdoor play setting"* (PID 1035, FT, KG, large district). Teachers noted that planning curricular activities through an outdoor learning lens in the beginning of the school year allowed them to use the curriculum as a spring board for outdoor learning: *"In my yearly plan of my curriculum, I highlight in green everything I'm going to do outside, so, even before my year starts, I have my curriculum items that I want to teach outside. I have that for each month and I know ahead of time what I'm doing outside. That gives me accountability that, like, this must be taught anyway and it was planned for outside, so it's easier to keep it in my schedule"* (PID 1006, FT, Grade 3, large district).

Overall, there was consensus that the educational curriculum often presented a barrier to outdoor learning, and that this barrier could be overcome by intentionally planning to teach aspects of the curriculum outdoors.

### Supportive structures in school districts: "you need to start from the top"

Teachers noted a general absence of supportive structures for outdoor learning in their school districts. Outdoor learning was predominately perceived as a pedagogy of choice that needed to be pursued on teachers' own accounts. Teachers agreed that scaling outdoor learning in public schools required district-level support in the form of educational values that endorse outdoor learning, professional development and training opportunities, supportive policies, and dedicated district staff that are mentors for outdoor learning. There was strong consensus that support for outdoor learning needs to begin with buy-in at the higher levels of educational leadership: *"My feeling is, you start from the top, and you trickle it down"* (PID 1019, FT, K-3, small district). Specifically, teachers wished for more professional development and mentorship in school districts: *"Building a community of outdoor educators that are not experts to begin with but led by mentorship is going to bring people forward and make them feel them more comfortable, hopefully"* (PID 1008, FT, Grade 3, small district).

Teachers also agreed that endorsing outdoor learning at higher levels in the education system is critical to shape perceptions about the educational values of outdoor learning among educators: *"So, I think it's important to have direction, maybe coming from admin or from district office saying 'let's go outside and do learning outside'"* (PID 1024, FT, KG, small district).

### Policy: "some policies make it almost impossible to take the kids outside regularly"

Policies about adult-to-child ratios during off-site learning and guardian consent procedures were perceived as policy-related barrier: *"In our school district, they recently came up with new guidelines around ratios of students to adults when you leave the school grounds. Before, you could wander to the closest park, or in our case, to the river or to a nearby wooded area – that would have been included in a walking field trip form that parents sign at the beginning of the year, and you could go with your class. Maybe two years ago, or maybe one year ago, that really changed, and now you have to have additional adults. Which is . . . who is that? Who is the additional adult? So, it really stopped people from being able to explore farther away from the school grounds"* (PID 1015, FT, multiple classrooms, large district). Options for additional supervisory adults were described to be parent/family volunteers or school staff (e.g., educational assistant). Teachers noted the challenge that additional adults needed to be confirmed ahead of time, jeopardizing spontaneous off-site outdoor learning.

School staff were perceived as unreliable support because they hold multiple responsibilities in school, their availability is often limited to short time periods, and their allocation to support outdoor learning needs to be approved by the principal. One teacher summarized this as *"sometimes you get EA* [educational assistant] *time and sometimes you don't"* (PID 1023, PT, KG, large district). Regarding the number of adults required to leave school grounds, teachers explained that ratios are suggested by the district; the final decision, however, is at the discretion of the principal and depends on the multiple circumstances (e.g., outdoor location; student age, characteristics and needs).

Teachers emphasized variability in parents' availability to volunteer. Whereas in some schools, recruiting parent volunteers for outdoor learning was easy, in other schools, parents were less available due to their own work schedules or other responsibilities. They highlighted the importance of positive and strong relationships between families and teachers, and families' buy-in for outdoor learning. This teacher noted that a foundation for her outdoor learning program is that she had *"parent volunteers, consistently volunteering,"* also adding that volunteers could include other adult family members: *" . . . I've had a grandparent that comes out every week, and he volunteers with us, which has been fantastic"* (PID 1008, FT, Grade 3, small district). Several teachers noted the need to identify multiple adult volunteers, because *"sometimes, it was a situation where parent volunteers canceled, and we needed to have a ratio to go off of our school grounds"* (PID 1001, FT, multiple classrooms, small district).

Three types of guardian consent procedures were described; first, outdoor learning is considered a "walking field trip" and year-long consent can be obtained in the beginning of the school year; second, parents can provide consent in the beginning of the school year but all dates for outdoor learning have to be pre-scheduled for the year; third – which presented the largest barrier – teachers must obtain consent from guardians each time they want to leave the school grounds. While teachers described the consent form policy as determined by the school district, they noted that it is at the discretion of school principals to determine what type of consent form could be used to obtain guardian approval. One teacher said: *"We're a really large district, and you can go from the school next door to you and they have different expectations on what the permission form looks like and what you can be granted permission to do"*

(PID 1012, FT, Grade 2/3, large district). Another teacher noted: "*. . . I was just going to add the paperwork issue, like permission forms and getting that set up so that it's not too prohibitive when we want the spontaneity. The forest that we use is not on the school property, it is just across the street and we use also a park that's in our neighborhood. But producing permission forms for parents each time we go, it's not really realistic, and so working around that and trying to get permission forms that will work for the year, in different ways, can be quite tricky if we don't have super support from the admin*" (PID 1025, FT, Grade 1, large district).

Overall, while policies for adult-to-child ratios and guardian consent were perceived as procedural barriers, teachers agreed that principal support and strong relationships with families and buy-in for outdoor learning are effective ways to manage these policies and implement outdoor learning in schools. However, the concern remained that the lack of school staff to support outdoor learning and the reliance on family volunteers may create inequities in outdoor learning based on families' cultural and socioeconomic backgrounds. Schools in which families are familiar with and value outdoor learning, and are available to volunteer on a regular basis were perceived as ideally positioned for outdoor learning.

### Funds/resources: "without proper gear, kids get soaking wet and freezing cold"

Teachers identified a need for funding to implement outdoor learning. Funding needs were highlighted to make outdoor gear/clothes available to students, to provide transportation to outdoor spaces, and to purchase learning resources and participate in community-based outdoor learning programs. Teachers noted that children often come to school unsuitably dressed for the weather, making it problematic to take them outside for learning. They acknowledged a variety of reasons for this, including the high cost of appropriate gear: "*Gear has been an issue. I have a 20 USD limit of my personal money, that I spend on used gear*" (PID 1008, FT, Grade 3, small district). Several teachers noted that this barrier was addressed in their schools by establishing a gear lending library: "*We've started a collection of spare clothes that parents have donated or that we've gotten from second hand stores so, yeah, then sometimes if they don't come with snow pants or appropriate boots or whatever, then we provide that for them*" (PID 1005, FT, KG, small district).

Further, some teachers taught in schools with no walkable access to safe and quality outdoor learning spaces, and emphasized the need for funding to organize transportation. One teacher noted: "*So, we can only use the bus. And it costs us, what is it – 180 USD per trip? We've applied for quite a few grants and we've managed to get a few. But it still hasn't fully covered the full cost of bussing. So, we have to beg*" (PID 1004, FT, KG/1, small district). Participants also desired additional funding for specific learning materials (e.g., outdoor learning tool boxes including lenses, shovels, clipboards, etc.) and structured outdoor learning programs (e.g., external programs/facilitators). Teachers consistently described the principal as the gatekeeper of school funds.

### Culture

Culture emerged as a central theme in all focus groups. It consisted of three sub-themes, including families' lifestyles and cultural beliefs about education, school culture, and broader cultural understandings about education in the community and in society. Teachers agreed that many children spend no or limited time in unstructured outdoor activities outside of school hours and are used to structured forms of learning. An open-ended, explorative, play-based and self-directed learning format – as commonly pursued in outdoor learning – was noted as an initial challenge to many children: "*I think you see kids that aren't familiar with being outside. There's kids every year that are my inside play, TV, technology kids. And they are the ones that complain the most about going outside and they feel lost outside, and I find that doing that weekly and going to the same familiar forest or whatever, they become more relaxed and more confident, and they actually start to enjoy where we are and what we are doing. But in the beginning, it's a real struggle for some kids that are never playing outside*" (PID 1028, FT, KG/1, large district). A teacher from an inner-city school noted that despite access to vast outdoor spaces in the neighborhood "*some of the kids have never been to their park, have never explored beyond their little community*" (PID 1010, FT, Grade 3, large district). In addition to children's and families' lifestyles, teachers agreed that many families hold a traditional view of education, and understand learning to be indoors in a structured setting.

Teachers also agreed that within the wider school system, there is a common preference for structured classroom-based learning activities. They noted that many colleagues and school staff perceive outdoor learning as play and question its educational value: "*I think it's just the perception maybe of some, some teachers think if you are outside you are not teaching the curriculum*" (PID 1024, FT, KG, small district). To integrate outdoor learning in schools, teachers emphasized the need to change educational culture, and to educate families, teachers, administrators and the general public about its value in education: "*I think people think, oh you went out . . . oh, that's like a nice field trip. And you're like, no, no, no, like, it's important we do this all the time.*

*The barrier would be, I think the support for the consistency, ensuring that people see the value of it happening constantly. There's value in outdoor learning all the time, this is just a normalized part of education"* (PID 1023, PT, KG, large district).

A number of teachers reported that their current school culture endorsed outdoor learning, which was perceived as a motivator and spring board. They expressed excitement about colleagues who also implement outdoor learning as part of their pedagogy, and noted the benefits of a supportive and inspiring community of educators that collaborates in outdoor learning. Some teachers had further extended their collaboration to the community to form school-community partnerships: *"I think partnership with City is also really important. I did this wonderful program with the kids in my Grade 3 class, for a few years. It's called the Releaf Program, where we got to remove invasive species. The kids just love that. We got the tools, we got everything we need. We got the education"* (PID 1007, FT, Grade 3, large district). One teacher collaborated with another school to teach Indigenous ways of knowing to students through collaborative outdoor learning: *"We also connected ourselves with the local Indigenous Nation school, so we would go there on a school bus and do outdoor education with them as well, and learn games that they play. And so, we have so many different wonderful facilitators in our community"* (PID 1008, FT, Grade 3, small district). Notably, while teachers agreed that the acceptance of outdoor learning was shaped by the learning culture in the public school system, they also emphasized the potential to shape and change the culture around education, as noted in this comment: *"For building comfortability, skills and knowledge and increasing positive attitudes toward outdoor learning and play, both M* [a colleague] *and I did the Child and Nature Alliance Forest and Nature Schools Practitioner course. Then you're trained to help the school in that way, to be a personal resource onsite that could answer questions, that could model lessons"* (PID 1005, FT, KG, small district).

### *Environment*

Teachers in all focus groups perceived outdoor learning as embedded into broader environmental characteristics, including the local weather, the built and natural environment near the school, and the presence of urban and natural hazards at outdoor learning sites. While cold and rainy weather was described as a common barrier, it related to students' inappropriate gear, with a gear/clothes lending library being an effective way to address this issue.

Limited access to safe and quality outdoor spaces within walking distance was seen as a barrier: *"I think if we were close to a stream or kind of a forest, I would just go. And because we don't have that, I have to really think about, what are we going to do … it takes time to organize, you know, the magnifying glasses and the tools to interact with the dirt and interact with that, so I haven't just gone as much as I think if we were right next door to the things that already have lots of things happening within that"* (PID 1030, PT, KG/1, large district). Teachers agreed that this barrier could be overcome with a system for transportation in place (e.g., availability of public transit, or funds for a school bus). Access to natural spaces within walkable distance from the school (e.g., park, forest, river, beach) was seen as a driver for outdoor learning: *"We often utilize the space that's just across the street from us, and is a beautiful park and there is a bit of a hiking trail that can go to a waterfall, which is, like, very accessible for kindergarten students, we like to use that space. It's so close to our school, it's no transportation cost, we don't need busing, but we do need a ratio to go down there"* (PID 1005, FT, KG, small district).

Several teachers expressed concern over urban or natural hazards, such as wildlife: *"Our outdoor learning is within the school grounds but it's a forested area, and we have bears and coyotes that come through,"* (PID 1036, FT, KG, large district) and *"All of a sudden, kids are screaming, and running past us back, down the sidewalk to get back to the school. We're like, okay, what's going on? Wasps were clinging to them, stinging them multiple times. I got stung multiple times"* (PID 1028, FT, KG/1, large district). Urban hazards included needles and other unsafe objects: *"And the next day we were out on the trail and we saw these guys cleaning up in HAZMAT suits. And they said, 'yeah, don't play in the stream at all. Because they found a gazillion needles.'"* (PID 1031, FT, KG-2, small district).

## Discussion

Our study examining elementary school teachers' perceptions of barriers and supports for outdoor learning in school uncovered four domains: *teacher characteristics* (teacher skills, experience and confidence, motivation and commitment), *systemic support* in schools and school districts (principal support, school schedule, school district support, policies, curriculum, funding and resources), *culture* (family culture and background, school culture, cultural beliefs about education in society) and *environment* (weather, access to built and natural outdoor spaces). Most of these barriers and supports align with those identified in previous European studies.[23,25,30,31,34,41] Our findings add to the limited

research on barriers and supports for outdoor learning in public schools in Canada. They further provide guidance for systemic change in education to integrate outdoor learning as a formal approach to teaching in schools. Moreover, our study contributes to research and practice of outdoor learning by providing a holistic perspective on barriers and supports across different contexts in the education system, illustrating that outdoor learning can be understood through a socio-ecological perspective.

## Socio-ecological model of outdoor learning in schools

Consistent with a socio-ecological model for program implementation,[42,43] our findings emphasize that the implementation of outdoor learning in schools is influenced by an interplay of individual/personal factors (i.e., teacher characteristics), institutional factors (i.e., school, district), policies (i.e., adult-to-child ratios, guardian consent process), and larger factors in communities/society (i.e., culture, beliefs and values about education). Our findings also support a socio-ecological perspective since the barriers and supports were interconnected and created pathways that determined whether and to what extent teachers implemented outdoor learning in schools (see Figure 1). For instance, teachers' confidence and commitment for outdoor learning were identified as personal teacher characteristics that determined whether they implemented outdoor learning on a regular basis; however, confidence and commitment were further shaped by the level of support teachers received from their principal, whether they had received professional development for outdoor learning, and whether they experienced a supportive culture at school and in the community that endorsed and legitimized outdoor learning as an approach to education.

Moreover, teachers noted that family volunteers were critical to support outdoor learning outside of school grounds; whether families volunteered, however, was influenced by additional factors, such as advocacy for outdoor learning by the school principal to enhance family buy-in for outdoor learning. While pro-active and positive communication through the school principal was found to be important to generate family support for outdoor learning, it was also evident that larger socio-economic factors determined families' ability to support outdoor learning, including their availabilities to volunteer and to equip children for outdoor learning. This finding is consistent with previous research that emphasizes that socio-economic factors (e.g., educational attainment, income, employment position) impact families' involvement and engagement in their child's education through multiple factors, including work schedules, transportation issues, and knowledge and familiarity with the education system.[44]

A final pathway in our findings that exemplifies the dynamic and interactive nature of factors determining outdoor learning in schools includes policies in education. Teachers in our study consistently noted that adult-to-child ratios and guardian consent form procedures posed significant restrictions to outdoor learning. However, they also acknowledged that the final decision about policy implementation (e.g., type of consent form, final adult-to-children ratio) was at the discretion of the school principal. The principal's decision further depended on whether they believed that the teacher could successfully manage students in an outdoor setting, which was further influenced by multiple factors including the environment in which outdoor learning took place (e.g., likelihood of urban and natural hazards) and class composition (e.g., student's age, students with special support needs).

## Strategies for strengthening systemic support for outdoor learning in schools

Embracing a socio-ecological model of outdoor learning in schools has great potential for informing educational practice. It recognizes the complex interconnectedness of factors that drive outdoor learning and provides a platform for multi-level integration of outdoor learning in schools.[45,46] Below, we outline strategies for systemic integration of outdoor learning into schools, based on what can be learned from an ongoing systemic integration of social-emotional learning into BC's K-12 education system over the past decade.[47–51]

### How can larger governing sectors support outdoor learning?

At the larger governing level (i.e., province, state), outdoor learning needs to be endorsed as a learning approach in K-12 education with strategic funding allocated for professional learning for teachers and staff and for supplies to support the success of outdoor learning. Provincial endorsement legitimizes outdoor learning as a formal approach in public education, shapes public perception about the value of outdoor learning, and raises a need for teacher preparation to implement outdoor learning in schools. Teacher preparation entails continuous access to professional development through schools and school districts and incorporating outdoor learning into preservice teacher education programs. An upstream approach of incorporating outdoor learning into preservice teacher education ensures that teachers gain lived experience with outdoor learning, embrace outdoor learning as part of their pedagogy from an early stage, and develop habits and skills for teaching outdoors.

### How can school districts support outdoor learning?

At the district level, there is a need for dedicated support positions (e.g., district mentor teacher who supports outdoor learning) to guide, support and mentor teachers, staff and principals, and to ensure continuous access to professional development. Schools and districts can further benefit from collaboration with their surrounding communities (e.g., the local park board) by building partnerships that support outdoor learning and extend program implementation in schools (e.g., access to specific outdoor learning programs and events, access to community outdoor spaces).[4] In fact, previous findings from community-education partnerships that were formed to promote social-emotional learning in schools in BC[47] have shown that collaboration and partnerships with the community can spark new networks through which educators, researchers, and community organizations come together with the joint purpose of advancing a common goal (i.e., outdoor learning) in schools.

### How can schools support outdoor learning?

At the school level, outdoor learning can be incorporated into the vision and mission of schools. Previous research has shown that school visions and missions inform leadership in schools, guide decision making, help schools to define goals and monitor progress for achieving goals, and are fundamental for school improvement.[52] Based on an overarching vision, specific actions can be taken to support outdoor learning in schools, including building supportive policies, school structures and practices that facilitate outdoor learning. Supportive policies include year-long parental consent forms for outdoor learning trips[31] and recommending a minimum amount of time classes spend in outdoor learning every week.[53] Supportive school structures include a dedicated position in the school (e.g., non-enrolling prep teacher, relief teacher) who provides leadership for teaching outdoors, organizes schoolwide programs, initiatives and special events (e.g., green team leadership, school garden program, outdoor classroom day, local community-partnerships), and supports knowledge sharing and communication about outdoor learning with families. School leaders play a fundamental role in communicating the benefits of outdoor learning for children's physical, social-emotional, cognitive and academic development to families. Schools' advocacy for outdoor learning is important to enhance the public perception of outdoor learning, obtain family buy-in (e.g., support through positive messaging and fundraising by Parent Advisory Councils in schools), and to encourage families to further extend schools efforts during out-of-school hours (e.g., by supporting outdoor free play). Importantly, given that many families lack resources to prepare their children for outdoor learning in schools, it is critical that schools create equitable access to outdoor learning (e.g., by making outdoor gear available to all students through a gear lending library) (Edwards-Jones et al., 2018).

### How can teachers support outdoor learning?

At an individual level, teachers' implementation of outdoor learning is embedded into the supports and structures for outdoor learning that are provided at the school, district, and higher governing levels. In addition, teachers can use additional strategies to support continuous and sustainable outdoor learning in schools. This includes planning curricular teaching through an outdoor lens (e.g., what part of the curricular content can be taught outside?),[24] creating habits and outdoor learning routines with students (e.g., visiting the same outdoor learning space on a regular basis),[54] and using outdoor learning as a platform for teaching through an emergent curriculum in which learning plans are made flexibly and spontaneously in response to and upon observation of student's interests and needs.[55] Last, teachers can gain ideas and support from joining local, national and international networks that promote outdoor learning in education and create a larger community of learning among educators with the shared interest of outdoor learning.[56]

Overall, implementing outdoor learning in schools through a socio-ecological lens requires that changes are made at all levels of the education system, supporting a systemic shift through which outdoor learning is embraced and supported in multiple contexts. This approach addresses individual barriers and supports, while creating pathways that ensure that outdoor learning is firmly incorporated into education.

### Limitations and future directions in research

All teachers in this study taught in primary grade classrooms. It is likely that the relative importance of barriers and supports differs for students at different grade levels. For instance, perceived student safety in the context urban hazards (e.g., traffic) likely differs depending on the age of the students. Future research needs to identify context-specific barriers and supports depending on personal (e.g., student age, student needs) and contextual characteristics. All teachers in this study were female, reflecting the predominance of women in elementary school education.[57] Possible gender differences in perceived barriers and supports need to be considered in future research. All teachers in this study were interested in outdoor learning, had some experience, and held positive attitudes. This limits our findings to teachers who have already bought into outdoor learning as an approach to education. Future research needs to

examine how outdoor learning can be supported among teachers who are skeptical toward outdoor learning.

## Translation to Health Education Practice

The findings in this study are relevant to health education specialists particularly focused on elementary school education. A goal of Certified Health Education Specialists (The National Commission for Health Education Credentialing Inc., www.nchec.org) is to promote health and wellness in communities, and to support individuals and communities in developing and implementing strategies to improve their health. Hence, supporting outdoor learning in schools as a way to promote physical, social, emotional, and mental health among children[3,14,58] is of clear relevance for the overall goals of the profession.

Almost all of the eight areas of responsibility that have recently been outlined for the profession[59] include strategies through which health education specialists can effectively support outdoor learning in schools. In particular, health education specialists can work with schools and communities in assessing needs and capacity for school-based outdoor learning (Area I), support planning for outdoor learning in schools and districts (Area II), implement specific outdoor learning programs (Area III), advocate for and communicate about outdoor learning to educators, staff, families and others stakeholders in education (Areas V and VI), and support continuous professional development for outdoor learning in schools and districts (Area VII).

The findings in this study highlight that systemic change is needed to integrate outdoor learning into public education. This is of particular relevance for health education specialists during a needs and capacity assessment for outdoor learning. It suggests that stakeholders in all socio-ecological contexts of education need to be involved in supporting outdoor learning, emphasizing the importance of sub-competency 1.1.5 (*Recruit and/or engage priority populations, partners, and stakeholders to participate in all steps in the assessment, planning implementation, and evaluation process*). Furthermore, many schools already have existing resources for outdoor learning of which they may not be aware (e.g., community spaces nearby that afford outdoor learning, outdoor learning programs and interventions that are available in the school district); this emphasize the importance of sub-competency 1.3.4 in a needs and capacity assessment (*Assess existing and available resources, policies, programs, practices, and interventions*). Teachers in this study emphasized the difficulty of implementing outdoor learning when it is not perceived to be compatible with the curriculum; hence, during the planning stage, it is important for health education specialists to work with educators in planning curricular content through an outdoor learning lens, using sub-competency 2.4.5 (*Plan for sustainability*).

As advocates for outdoor learning among educators, staff, families and other stakeholders, health education specialists need to understand the factors that facilitate and/or hinder advocacy efforts (sub-competency 5.1.3) and identify an existing coalition of stakeholders that can be engaged in advocacy efforts (sub-competency 5.1.5), such as principals or educators that are champions for outdoor learning. They further play an important role in developing persuasive messages and materials for the purpose of information and knowledge sharing about outdoor learning (sub-competency 5.2.7). Finally, a need for professional development and preparation of educators and staff for outdoor learning was highlighted in this study. Health education specialists can address this need through the sub-competences outlined under competency 7.2 (*Prepare others to provide health education and promotion*). This includes planning and implementing professional development in schools and school districts, and working with pre-service teacher education programs to integrate outdoor learning into the preservice teacher curriculum.

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## ORCID

Eva Oberle http://orcid.org/0000-0001-7815-2563
Megan Zeni http://orcid.org/0000-0001-9621-6276
Mariana Brussoni http://orcid.org/0000-0002-1495-816X

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