# School-based outdoor learning in Alberta:

# Examining K-9 teachers' success through mixed methods research

By

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## Abstract

While Western Canada's landscape is diverse in outdoor teaching environments (Henderson & Potter, 2001; Ho et al., 2017), there is a lack of data identifying school-based outdoor learning (OL) experiences (Fägerstam, 2012; Landy, 2018) in K-9 classrooms. This research examines factors that contribute to successful OL experiences among teachers. For this research, a school-based OL location is defined as a space where teachers and students have experiences that would not usually occur indoors (Dillon et al., 2005), such as school grounds, natural environments in close proximity to the school, and outside classrooms (Fägerstam, 2012). This research contributes to a broader community of practice, including informing future professional development of outdoor teaching strategies among teachers. Using the works of Dewey (1938) and Kolb (2015) as theoretical frameworks establishes a pragmatic and fundamental understanding that OL is based on real-life experiences. Students regularly exposed to outdoor experiences encounter numerous benefits (Benefield, 2006; Fiennes et al., 2015; Foran, 2006; Harper et al., 2019; Louv, 2008). Methodologically, an explanatory sequential mixed methods research (MMR) design (Creswell & Plano Clark, 2018; Poth, 2018; Tashakkori & Creswell, 2007) was used, which involved first collecting quantitative data and then explaining the quantitative results with in-depth qualitative data. In the first quantitative phase of the study, an online questionnaire collected data from voluntary participant K-9 teachers (N=140) in Alberta that was assessed with Statistical Product and Service Solutions (SPSS) data analysis. The data was established through bivariate correlations, of which a single-tailed Pearson Correlation proved statistically significant results (P=<.001 to .035). The second qualitative phase was conducted using semi-structured interviews and analyzed using Nvivo Data analysis software as a follow-up to the quantitative results to help explain, in more depth, teachers' experiences (N=6) with OL. Nine themes and 24 sub-themes emerged from the data. As integration is fundamental to the MMR design (Uprichard & Dawney, 2019), data strands

from both the quantitative and qualitative data were analyzed via a side-by-side joint data display diagram. This data integration helped to confirm and explain aspects of the collected data (Guetterman et al., 2015), including six key factors for successful OL. The key factors for successful OL are (1) believing that OL has benefits, (2) having the needed resources, (3) feeling comfortable with students' behaviours when outside, (4) feeling comfortable teaching outside, (5) having had positive outdoor experiences during childhood, and (6) having school administrators who support OL. These six key factors are the foundation of my draft framework aimed at increasing the success of K-9 teachers' OL experiences.

*Keywords*: outside classroom, school-based outdoor learning, data integration, mixed methods research

## Preface

This thesis is an original work by Kevin Kiers. This research project, of which this thesis is a part, received research ethics approval from the University of Alberta Research Ethics Board. Project name: School-based outdoor learning in Alberta: Examining K-9 teachers' success through mixed methods research, Id. No. Pro00114580, March 2, 2022.

**Dedication**

This thesis is dedicated to teachers
who are committed to successful
outdoor learning experiences.

## Acknowledgments

I am very thankful to Lynae, Barbara, and Bethany for being part of all the outdoor adventures that we've had: backpacking, canoeing, snorkeling, scuba diving, mountain biking, winter camping, voyageur canoeing, snowshoeing, cross-country skiing, fishing, rock climbing, rappelling, river expeditions, skiing/snowboarding, international travel, ten years of leading summer camps, 20 years of leading grade 5-6 outdoor school together, and much more. Each experience helped me push the boundaries of using outdoor spaces to teach. Our family's adventures highlighted the need for this research project.

To the Sackett family — thank you for joining our family in many outdoor activities. Scott, you've been a critical influencer in my outdoor teaching experiences, including co-leading outdoor school for so long. Thank you for exploring outdoor learning with me. This research reflects both of our experiences.

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Dr. Lessard, thank you for reminding me of our spiritual connection to the land. Engaging in land-based learning ignites a spark inside that connects us with those who came before us and creates space for meaningful discussions focused on Indigenous ways of knowing and our spiritual connectedness to each other and nature. I am inspired by the words of Kimmerer (2022) which state, "I hope to inspire an authentic revitalization of a relationship with the land, not by borrowing it from someone else but by finding your roots and remembering how to grow your own" (p. 293).

Dr. Foran, thank you for asking the hard questions that made me think about my research through different lenses. Your work provides a smooth path for future outdoor educators.

To my research participants (pilot study groups, survey respondents, and interviewees), thank you for sharing your experiences. You are at the heart of this research, and I have learned more from you than you will ever know. Your experiences will inform countless others.

Burman University administration, thank you for providing the time and means to complete my PhD. You demonstrated that investing in others is essential. I hope to do the same for my students.

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## Glossary of Terms

| | |
|---|---|
| Attitudes | Ways of thinking or feeling that can be indicators of behaviours, but are not always equated with behaviours (Bilton, 2020). |
| Central Alberta | For this study, Central Alberta refers to the area south of Edmonton and north of Calgary. |
| Data integration | A process central to mixed methods research (Creswell & Plano Clark, 2018, p. 220). Integration is a critical element of the mixed methods research design to "create novel inferences that draw on these collective data contributions to address the purpose of the mixed methods study" (Poth, 2018, p. 35). |
| Data strand | Data collections from either the quantitative or qualitative study, providing relevant information to the research (Creswell & Plano Clark, 2018). |
| Ecological restoration education (ERE) | An educational approach in which students have direct experiences with their immediate environment in an ecological restoration of degraded ecosystems to promote the importance of a positive human-nature connection (Hansen and Sandberg, 2020). |
| Environmental education (EE) | A form of OE that focuses on increasing awareness of environmental activity, with both positive and negative impacts, and develops the needed attitudes for solving environmental problems while promoting pro-environmental attitudes (Farmer et al., 2007; Liefländer & Bogner, 2014; Steg & Vlek, 2009; Uyanık, 2016). |
| Experiential learning theory (ELT) | A learning theory where learning results from concrete experiences, reflective observation, abstract conceptualizations, and active experimentation (Kolb, 2015). |
| Greenwashing | An action that has a misleading claim of environmental care, when in fact it is only an appearance of environmental care in order to have an outward show of environmental vigilance (Ng-A-Fook, 2010). |
| Joint display data integration | A visual chart that displays the types of data (quantitative and qualitative) to discuss integration and represents mixed methods analysis and discussion (Guetterman et al., 2015). |

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|---|---|
| Mixed methods research (MMR) | Research that involves quantitative and qualitative data collection and integration or mixing to mitigate inherent weaknesses in either type of data (Poth, 2018). |
| Outdoor education (OE) | For the broad purpose of this research, OE is defined as "experiential learning in, for, or about the outdoors" (Ford, 1986; Gomez, 2014; Yen, 2009). This study considers OE as an umbrella term that refers to all outdoor learning including environmental education, environmental interpretation, nature education, nature recreation, place-based education, adventure education, adventure programming, wilderness education, overnight outdoor education, conservation education, nature education, outdoor pursuits, outdoor school, resident outdoor school, and outside classroom. |
| Outside classroom | A space in which teachers and students experience familiar and unfamiliar phenomena that would not normally take place indoors (Dillon et al., 2005). |
| Place-based education (PBE) | A form of OE that utilizes the local area, both natural and human, as a foundation of study. PBE encourages authentic opportunities about current issues in the local environment (Ferreira, 2020). |
| Pro-environmental attitude | Attitudes that lead to actions that prevent or reduce harm to the environment or benefit the environment (Steg & Vlek, 2009; Liefländer & Bogner, 2014). |
| School-based outdoor learning | OL is learning in an outside setting or an outdoor classroom (Arianti & Aminatun, 2019; Dillon et al., 2005) while covering required curriculum. A school-based OL location is a space where teachers and students have experiences that would not usually occur indoors (Dillon et al., 2005), such as on school grounds, in natural environments in close proximity to the school, and in outside classrooms (Fägerstam, 2012). |
| Self-efficacy belief (SEB) | An attitudinal measure that evaluates a teacher's perception about whether they can teach effectively (Hovey et al., 2020; Moseley et al., 2002). |

## Acronyms

| | |
|---|---|
| DV | Dependent Variable |
| EE | Environmental education |
| ERE | Ecological restoration education |
| FNMI | First Nations, Métis, and Inuit |
| MMR | Mixed methods research |
| OE | Outdoor education |
| OL | Outdoor learning |
| OOE | Overnight outdoor education |
| PBE | Place-based education |
| SEB | Self-efficacy belief |
| SD | Standard deviation |
| SPSS | Statistical product and service solutions |

## Chapter 1: Introduction to the Study

*"We have to summon the nerve to believe that we can make the future what we want and better prepare children to deal with it." (Egan, 2003, p. 16)*

This research emerges from a lifetime of outdoor learning experiences, teaching, and consulting in schools regarding outdoor education[1] (OE) programs and outdoor learning[2] experiences. OL officially began for me between the ages of 10-14 when I spent many days at the Taquanyah Nature Centre in Cayuga, Ontario, learning from Mr. Duncan, the on-site environmental educator. He mentored me and allowed me to assist him in rehabilitating injured or displaced animals and teaching educational programs to visitors. Additionally, when I was eleven I purchased my first kayak. I began to take numerous multi-day solo river trips where I experimented with eating wild edible plants, developed outdoor living skills, and began understanding my connection with the natural world. I continued making overnight solo-trips until I was fifteen and became very comfortable with my emerging environmental awareness. I attribute my positive attitude towards OL to this critical developmental period of my life. My choice to research this particular topic springs from more than twenty-five years of teaching OE and providing OL experiences, from leading over three hundred multi-night backcountry trips, and from my experience as an OE, EE, and OL presenter at teacher conventions.

As an OE consultant, I understand the vital connection between a teacher's positive attitude towards teaching outdoors, their outdoor experiences as a child, and their level of involvement with teaching outside. As I listened to teachers describe their experiences with

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[1] For the broad purpose of this research, OE is defined as "experiential learning in, for, or about the outdoors" (Ford, 1986; Gomez, 2014; Yen, 2009).

[2] Outdoor learning is defined as learning in an outside setting or outdoor classroom (Arianti & Aminatun, 2019; Dillon et al., 2005) while covering required curriculum.

teaching outdoors, I was inspired to begin this research and I realized that a mixed methods research[3] approach (Tashakkori & Creswell, 2007) to this study was ideal. I wanted to understand the level of teacher involvement in OL experiences, listen to teachers share their experiences, and examine factors contributing to successful OL experiences.

Recently, I was an assistant professor and chair of the Outdoor Leadership Department at Burman University in Lacombe, Alberta. I now serve as an assistant professor in Burman's School of Education. Working with pre-service teachers and emerging OE professionals helps me understand the array of OL experiences and the fears associated with taking kids outdoors for meaningful learning. From my experience, many teachers feel unqualified or uncomfortable when asked to teach a curriculum-based lesson outdoors. As there was no clear picture of K-9 teachers' experiences with OL in Alberta, nor key factors for successful OL experiences, I have broadened this field of knowledge through this research project. I focused on Central Alberta as it provides a geographic region that reflects rural and urban populations and contains small and large schools. Central Alberta is rich in OL spaces that can be used for educative experiences (Dewey, 1938) and is big enough to provide an adequate number of responses to assess OL. My research goals were to examine teachers' experiences with school-based OL in K-9 schools, and to explore factors contributing to successful OL experiences.

**Research Purpose**

The objectives of this study were:

a) to identify the current state of OL experiences with K-9 teachers in Alberta;

b) to examine factors that contributed to successful OL experiences among teachers who

[3] A research method defined as "research in which the investigator collects and analyzes data, integrates the findings, and draws inferences using both qualitative and quantitative approaches or methods in a single study or a program of inquiry" (Tashakkori & Creswell, 2007).

were involved in teaching outside; and

c) to construct a draft framework to improve the quality of OL experiences in K-9 classrooms.

**Research Questions**

The main question for my research was:

- What are the experiences of K-9 teachers with outdoor learning in Alberta?

The sub-questions for my research were:

- What do teachers identify as key factors for successful OL?
- How can teachers ensure the quality of OL experiences in K-9 classrooms?

**Significance and Rationale**

Much has been written about the importance of utilizing outdoor areas for teaching and learning (Alberta Education, 1990; Alberta Learning, 2000; Braun & Dierkes, 2017; Farmer et al., 2007; Hansen & Sandberg, 2020; Landy, 2018; Louv, 2008; Moseley et al., 2002), yet there is very little research that discusses the experiences of K-9 teachers' involvement and success in OL. That being said, many researchers have identified that students regularly exposed to outdoor experiences encounter significant benefits (Benefield, 2006; Fiennes et al., 2015; Foran, 2006; Harper et al., 2019; Landy, 2018; Louv, 2008). These benefits include improved academic performance (Landy, 2018; Louv, 2008), self-confidence and self-control (Fiennes et al., 2015), improved ability in knowledge development (Benfield, 2006), and numerous health benefits (Fiennes et al., 2015; Landy, 2018; Louv, 2008). In light of these many benefits, it became clear that more research was needed to identify what was taking place with school-based OL and the factors contributing to teachers' success in teaching outdoors. Additionally, though MMR in OL has seldom been used, this study will encourage and promote an MMR approach among OL

researchers.

This research adds to our understanding of school-based OL and provides data needed to inform pre-service and in-service OL educational programs. Moreover, this research explores factors that affect why a teacher incorporates OL environments as part of the learning process for their students and what training opportunities are needed to equip teachers with the skills to teach effectively outdoors. Since Alberta is diverse in OL environments, teachers could easily access high-quality OL spaces that provide considerable educational opportunities. The results of this research add to the field of school-based OL and provide an Albertan perspective focused on quantitative and qualitative data.

In a study of English Language Teachers' (ELT) attitudes toward environmental education (EE), Gursoy and Saglam (2011) state that "less than half of the participants think they possess the necessary and adequate knowledge to provide environmental education (EE)." Further to that point, Hansen and Sandberg (2020) express their concern about children's reduced contact with nature from their observations in Scandinavian countries. Hansen and Sandberg describe it as, "an awakening concern." As I surveyed and interviewed K-9 teachers to determine the level at which they use outdoor spaces to teach, I found that it was equally important to examine factors that contribute to positive teacher experiences in relation to teaching outside. This created an understanding of teachers' comfort and skill level with OL. Determining factors contributing to positive curriculum-based OL experiences among teachers promoted the development of a draft framework for improving the quality of OL experiences in K-9 classrooms. This research contributes to a broader community of practice, including informing future professional development of outdoor teaching strategies among teachers.

## Chapter 2: Review of the Literature

*"A primary responsibility of educators is that they not only be aware of the general principle of the shaping of actual experience by environing conditions, but that they also recognize in the concrete what surroundings are conducive to having experiences that lead to growth" (Dewey, 1938, p. 40)*

### What is School-based Outdoor Learning?

True to its name, school-based OL is learning in an outside setting or outdoor classroom (Arianti & Aminatun, 2019; Dillon et al., 2005) while covering the required curriculum. For this research, the "outside classroom" was defined as a space where teachers and students experience familiar and unfamiliar phenomena that would not usually occur indoors (Dillon et al., 2005). Typical settings for school-based OL were the school grounds and natural environments in close proximity to the school (Fägerstam, 2012). In a practical sense, OL can be situated as fieldwork, outdoor adventure education, and school ground or local community-based projects (Dyment, 2005; Pleasants, 2009). This broadens the school-based OL experience to include sites beyond the physical school grounds while promoting an environment of learning.

School-based OL aims to integrate OL opportunities with the required curriculum by employing curricular, cross-curricular, and/or extra-curricular nature connections (Dillon et al., 2005). This allows educators to be purposeful in choosing activities that enhance learner outcomes while making meaningful curricular connections among content areas.

### Outdoor Education and Outdoor Learning

School-based OL is associated with traditional OE; however, the distinction between the two is sometimes unclear (Fägerstam, 2012). In fact, the term "school-based outdoor teaching and learning" (Fägerstam, 2012, p.6) is used by some to avoid the confusion associated with

topics and methodologies of traditional OE experiences. To add to the plethora of terminology, there are numerous definitions for OE based on context, philosophy, and local conditions (Global, Environmental & Outdoor Education Council, 2017). Many researchers define OE as experiential learning in, for, or about the outdoors (Ford, 1986; Gomez, 2014; Yen, 2009). To be clear, OE is associated with OL experiences; however, there may be confusion about the type of experiences that students have (Fägerstam, 2012).

In North America, OE is often used in reference to team building and leadership development (Thomas, Potter & Allison, 2009; Taylor, Power & Rees, 2010). Activities include team-building initiatives, technical skills development (e.g., survival skills and rock climbing), high ropes challenge courses, and extended field trips (Henderson & Potter, 2001). In these OE activities, learning experiences hinge on realizing one's abilities, shortcomings, and potentials (Priest & Gass, 2018; Taniguchi & Freeman, 2004). In contrast, some Scandinavian researchers refer to OE as educative experiences that involve school-based learning outside the classroom, usually in nature, often with a cross-curricular approach (Bentsen et al., 2010; Fägerstam, 2014). Thus, a transferable term between both contexts is "school-based outdoor learning" (Fägerstam, 2014; Thorburn & Allison, 2010).

Other standard OE designations include adventure education, adventure programming, environmental education (EE), wilderness education, overnight outdoor education (OOE) (Donaldson, 2019), place-based education (PBE) (Ferreira, 2020), conservation education, outdoor pursuits, environmental interpretation, nature education, nature recreation, outdoor school, resident outdoor school, and outdoor classroom (Carter & Simmons, 2010). Some researchers suggest that OE refers to the combination of theoretical knowledge and practice in both natural and outdoor environments (Yildirim & Akamca, 2017) beyond the school classroom

(Rickinson et al., 2004). However, this too sounds like an OL experience. In contrast to OE, "school-based OL" has been used by some to avoid confusion with associated topics and methodologies of the more traditional OE experiences. The term "school-based OL" puts the focus on using the outdoors to teach and experience required curriculum within a school context.

## Benefits of Outdoor Learning Experiences

A significant theme throughout the literature was that there were numerous benefits to OL (Dettweiler et al., 2015; Fiennes et al., 2015; Gookin & Swisher, 2015; Landy, 2018; Purc-Stephenson et al., 2019; Tuuling et al., 2019). For simplicity, I will organize my findings under three headings: individual benefits, academic benefits, and environmental benefits.

### *Individual Benefits*

The literature shows that benefits resulting from OL experiences could be found among all participants (Nedovic & Morrissey, 2013). Nature connectedness and pro-environmental attitudes in adults could often be traced back to childhood experiences involving natural environments (Fiennes et al., 2015). Research done by Braun & Dierkes (2017) found that seven to nine-year-olds demonstrated the highest positive benefit after direct nature experiences, and older age groups responded stronger after full-day nature programs. Children should be exposed often to OL experiences to strengthen their learning experience, social development, and environmental attitudes (Blair, 2009; Braun & Dierkes, 2017; Harris & Bilton, 2019).

The act of learning outside promotes a sense of joy for learners as teachers strive to make learning experiences meaningful, fun, and relevant (Arianti & Aminatun, 2019; Landy 2018). This claim is further supported by Nedovic & Morrissey (2013) as they indicate that learners overwhelmingly prefer outdoor settings in which to study. There is a dispute in the field of education, however, around whether the enjoyment of OL experiences results in positive learning

outcomes (Waite, 2011).

It is easy to understand that there are health benefits resulting from spending time outdoors in nature. Teachers realize that movement outdoors, fresh air, and creative learning opportunities promote the all-round healthy development of children, both mentally and physically, and promote a healthy lifestyle (Fiennes et al., 2015; Landy, 2018; Tuuling et al., 2019; Widada et al., 2019). As well, students who were enrolled in forest schools or involved in environmental conservation efforts showed signs of improved psychosocial health (Fiennes et al., 2015). A meta-analysis by Fiennes et al. (2015) shows that merely living near green spaces is associated with increased physical activity, and that kids involved in school gardening projects have healthier eating habits. Mygind (2007) also indicates that inactive or overweight children would benefit from the inherent activity involved with OL.

***Academic Benefits***

In line with Deweyan influences on education, teachers connect theory with practice, which can align the learning process with qualities of the natural world in experiential learning methodologies (Thorburn & Marshall, 2014). Well-developed lessons facilitated outdoors (Dyment, 2005) present evidence of increased student understanding of environmental sustainability (Khan et al., 2020), even in developing countries (Bilton, 2010; Dillon et al., 2006). Most evidence points to scholastic learning in authentic learning environments, using both indoor and outdoor spaces such as museums and natural parks, which increases positive student learning outcomes (Arianti & Aminatun, 2019).

There are also positive effects of strategically implementing OL pedagogies in specific content areas. For example, studies have found that using OL techniques with ethnomathematical approaches improved students' mathematical critical thinking and problem-solving skills

(Widada et al., 2019). In a study of OL's effect on geography students, test results showed that spatial intelligence increased in students involved in OL experiences (Fayanto et al., 2019). Additionally, OL experiences could help students understand the historical significance of a location and provide a biological connection to the sciences (Purc-Stephenson et al., 2019).

By taking science outdoors, students are offered unique experiences that positively affect cognitive, affective, social, and behavioural skills (Rickinson et al., 2004). These outdoor experiences have other effects on the day-to-day experiences of students. It was found that outdoor fieldwork adds complementary value to classroom experiences (Arianti & Aminatun, 2019; Benefield, 2006; Dhanapal & Lim, 2013). This hands-on and on-site informal learning in science plays a crucial role in students' understandings during formal, in-class learning (Soh & Meerah, 2013).

***Nature Connection Benefits***

While spending time outdoors contributes to an awareness and respect for self, others, and the environment (Mannion & Lynch, 2015), it is also known that OL experiences could develop students' positive connection to nature (Braun & Dierkes, 2017). This positive nature connection could aid in creating diverse and meaningful learning experiences as students learn to explain concepts using nature (Arianti & Aminatun, 2019). Through the creation of a positive attitude toward environmental sustainability, students are more prepared for future interactions with their biotic and abiotic environments in their ecological responsibilities. A practical example of a school-based program that engages students outdoors is a forest school. Forest schools encourage student participation in outdoor activities, such as gardening, as they improve self-control, self-awareness, self-confidence, social skills, and environmental knowledge (Fiennes et al., 2015).

Forming personal connections with natural environments helps students to develop a sense of environmental care and a desire to protect nature. Braun & Dierkes (2017) suggest that even a moderate nature connection could move an individual into more robust nature connectivity. This supports OL ideals in that outdoor experiences could stimulate interest in academic content areas, such as science, especially in less motivated students (Dettweiler et al., 2015).

## Approaches to Outdoor Learning

There are many approaches to instructing OL among educators, school districts, and regions. When students are engaged in OL, they develop skills that are practical. These new skills are transferable to other learning experiences with multiple curricular outcomes (Fayanto et al., 2019). By using OL as a teaching method, teachers have an opportunity to expand students' learning capabilities and learning experiences. According to Mygind (2007), however, OL should not be utilized to replace traditional classrooms but rather to complement student learning as both contexts are essential to children's learning experiences. In this section, I will consider the curriculum, place, and processes of OL.

### *Curriculum*

Many vital components of student learning could be approached using outdoor environments. In fact, OL could be used across all subject areas. For example, Alberta Learning (2000) states that, "The aim of the kindergarten to grade 12 physical education program is to enable individuals to develop the knowledge, skills, and attitudes necessary to lead an active, healthy lifestyle" (p. 1). Further, the same document presents the need for developmentally appropriate movement, including "alternate environments like outdoor pursuits" (p. 5). Alberta's new Physical Education K-12 curriculum (LearnAlberta, 2023) shares a similar viewpoint and

states, "… students have meaningful learning opportunities to develop personal and social skills and behaviours as they interact respectfully within various indoor, outdoor, and alternative environments." The terms "outdoor pursuits" and "outdoor and alternative environments" indicate that OL activities can be part of a school's physical education program. In fact, studies show that OL contributes to the cognitive, linguistic, motor, and social-emotional development of preschool students (Yildirim & Akamca, 2017). In a more direct approach to OL, the Alberta Education (1990) Junior High Environmental and Outdoor Education program of study indicates that outdoor education is a tool for integrating personal experiences with formal learning to be in harmony with the earth.

Some teachers feel that the school curriculum is so crowded with all the governmental requirements from the content areas that there is no room or time for OL. Reading (2005) suggests that a fresh approach to the curriculum should be considered in which OL is incorporated in the current program of studies, across all grades and all curricular areas. Teaching outside provides a natural fit for land-based learning in which Indigenous ways of knowing, learning, and being can be taught. In the book, *Braiding Sweetgrass for Young Adults*, Indigenous author Robin Wall Kimmerer (2022) states, "I hope to inspire an authentic revitalization of a relationship with the land, not by borrowing it from someone else but by finding your roots and remembering how to grow your own" (p. 293). OL teacher education, in both pre-service and in-service training opportunities, would assist teachers to incorporate OL in educational content areas (Yildirim & Akamca, 2017), including Indigenous ways of knowing.

Another OL curricular integration approach is Ecological Restoration Education (ERE). Students have direct experiences with their immediate environment in ecological restoration of degraded ecosystems to promote the importance of a positive human-nature connection (Hansen

and Sandberg, 2020). ERE uses a curriculum integration approach to address children's disconnect with nature. This approach has connections to place-based-learning (Ferreira, 2020) in which students learn about natural areas in and around their school's community.

***Place***

Canada's diverse environmental landscape, along with its broad social, cultural, and historical diversity, provides rich opportunities for school-based OL (Ho et al., 2017). Environmental landscapes to which educators have access include urban green spaces, forest schools, school developed outdoor classrooms, rural farmland, city parks, forested areas, grassy slopes, school gardens, ponds, and lakes. Along with this diversity is students' natural curiosity that makes them want to explore and discover (Foran, 2006; Landy, 2018; Louv, 2008). In some areas, efforts have been made to redesign urban schools in an attempt to make them green, or more learner-friendly in relation to the environment (Louv, 2008). It is important to recognize that if teachers do not use available green spaces for curricular connections, key learning opportunities are lost, and students are left to create their own nature connections (Dyment, 2005).

In 2007, Canada's first forest school, Carp Ridge Preschool, opened in Ontario. By 2012, enough of these schools had been opened that Forest School Canada began (Ho et al., 2017). Forest schools emphasize a place-based environmental education which encourages holistic learning as it promotes critical thinking in OL environments (Ferreira, 2020). This form of OL enables connections to nature and communities and encourages a carry-over of information learned from books or in traditional classrooms to the outdoor classroom (Spalie et al., 2011).

***Process***

OL is not a new learning process, but it has gained renewed interest due to a rise in

environmental awareness. In fact, Mannion & Lynch (2015) suggest that in the last fifty years, experience in nature has gained a renewed significance. In education, carefully planned OL experiences with thoughtful curricular connections offer learners an increased value to their everyday classroom experiences (Benefield, 2006). This includes directed experimentation in which students are engaged physically and mentally. Montessori (2017/1912) states that, "… so nature, through the mechanism of the experiment, gives us an infinite series of revelations, unfolding for us her secrets" (p. 23). These nature secrets stay hidden unless revealed through intentional and pensive planning with intent placed on the learning process.

There are various forms of OL strategies in which the learner engages nature in the context of any content area. In one case, students record their nature observations on a worksheet. The worksheet becomes a tool to measure the OL that took place (Arianti & Aminatun, 2019). This type of nature engagement, according to Arianti and Aminatun's research, allows the subject matter to be more concrete and tangible and makes learning meaningful. As well, it allows the teacher to process the collected information later, during indoor classroom time.

In a longitudinal study, Tal & Morag (2013) found that teachers feel that EE has become a separate knowledge of study that requires an environmental specialist, thus contributing to teachers' resistance to incorporate it into the learning process. Their goal was to understand ways that elementary schools could support EE as a critical part of the science and language arts education program. A weakness of EE, which is a part of OL, is that there are longitudinal research gaps regarding evidence on EE practices related to school curriculum integration (Tal & Morag, 2013).

**Barriers to Outdoor Learning**

In my experience, outdoor educators are very open to sharing OL's many positive outcomes. It is also vital to note the barriers to OL. From the literature, I've identified four major barriers: fear of litigation, teachers' self-efficacy belief (SEB), a crowded curriculum, and a lack of time to prepare for OL activities.

The first barrier to OL is a fear of litigation due to the inherent risks associated with outdoor environments (Dillon et al., 2006; Dyment, 2005; Maynard and Waters, 2007; Priest & Gass, 2018; Ruether, 2018; Sandseter et al., 2020; Waite, 2009). Sandseter et al. (2020) suggest that insurance companies have placed pressure on schools to avoid injuries and litigation. The fear of being sued is a real concern and may contribute to teachers wanting to stay indoors to maintain a controlled environment.

The second barrier relates to teachers' SEB and confidence in teaching and learning outdoors (Aaron, 2009; Dillon et al., 2006; Dyment, 2005; Glackin, 2016; Saribas et al., 2017; van Dijk-Wesselius et al., 2020). SEB is an attitudinal measure that evaluates a teacher's perception that they could teach effectively (Hovey et al., 2020; Moseley et al., 2002). Low SEB toward OL results from a lack of teacher training and few personal outdoor experiences (van Dijk-Wesselius et al., 2020). As well, negative attitudes toward OL from other teachers and school administrators adversely affect teachers who use OL strategies (Bilton, 2020; Coe, 2016; Dyment, 2005; Ruether, 2018).

The next barrier to teaching outdoors is that of an already crowded curriculum (Dillon et al., 2006; Dyment, 2005; Inwood, 2005; Kim & Fortner, 2006). Some teachers suggest that a lack of instructional time is a significant factor in an already overcrowded curriculum (Inwood, 2005). Adding OL activities is not a welcoming idea for teachers who feel the curriculum is

already too busy. As Dyment (2005) discusses, there is a strong emphasis on teaching important "back to the basics" content and removing educational items like OL that take up too much time.

The final barrier is the lack of time that teachers have to prepare to teach outdoor experiences (Dillon et al., 2006; Dyment, 2005; Goff, 2018; van Dijk-Wesselius et al., 2020). Schools and teachers have hectic schedules and small budgets. The perception of adding OL to the list of things to accomplish or purchase supplies for creates a barrier.

**Support for Further Research in Outdoor Learning**

Much has been said about the benefits of OL (Dettweiler et al., 2015; Fiennes et al., 2015; Gookin & Swisher, 2015; Purc-Stephenson et al., 2019; Tuuling et al., 2019). In fact, an overwhelming theme emerging from the literature review on OL was that OL is beneficial for learning in schools. As well, the literature provides ample understanding of school-based OL with regard to pedagogy, OL spaces, and barriers to OL.

Even though Alberta is diverse in outdoor teaching environments (Henderson & Potter, 2001; Ho et al., 2017), there is a lack of data regarding school-based OL in elementary schools. This Alberta-based research fills that gap by identifying what is taking place with school-based OL identifies. With beautiful outdoor spaces and diverse natural areas with historical and cultural significance, Alberta schools should have more focus on OL. A research study, focused on Alberta, adds to our understanding of school-based OL and provides both quantitative and qualitative data to inform pre-service and in-service OL programs. As well, the results of this research add to the field of school-based OL by providing a Western Canadian perspective focused on both data and teacher-experiences.

## Chapter 3: Theoretical Framework

*"What we want and need is education pure and simple, and we shall make surer and faster progress when we devote ourselves to finding out just what education is and what conditions have to be satisfied in order that education may be a reality and not a name or a slogan. It is for this reason alone that I have emphasized the need for a sound philosophy of experience."*

*(Dewey, 1938, p. 91)*

After reviewing research already done in the field, it was clear that OL has the potential to play an integral role in school-based learning experiences. Moreover, based on the work of Dewey (1939) and Kolb (2015), these educative experiences are crucial to learning and formulating knowledge. Using a Deweyan (1938) theoretical framework, along with Kolb's (2015) Experiential Learning Theory (ELT), this research can be viewed through the lens of practical experience and therefore was positioned epistemologically within pragmatic subjectivism (Goldstein, 2006) to interpret experiences relevant to teaching and learning. Moreover, Dewey and Kolb's models of learning provide a concrete foundation for OL by addressing the importance of internal conditions, external conditions, reflective observation, and abstract thinking during and after OL experiences with students. These actions provide grounds to form new knowledge beyond just the learner's experience and provide a basis for the learner to grow from the continuity of life events with connections to abstract concepts.

### John Dewey

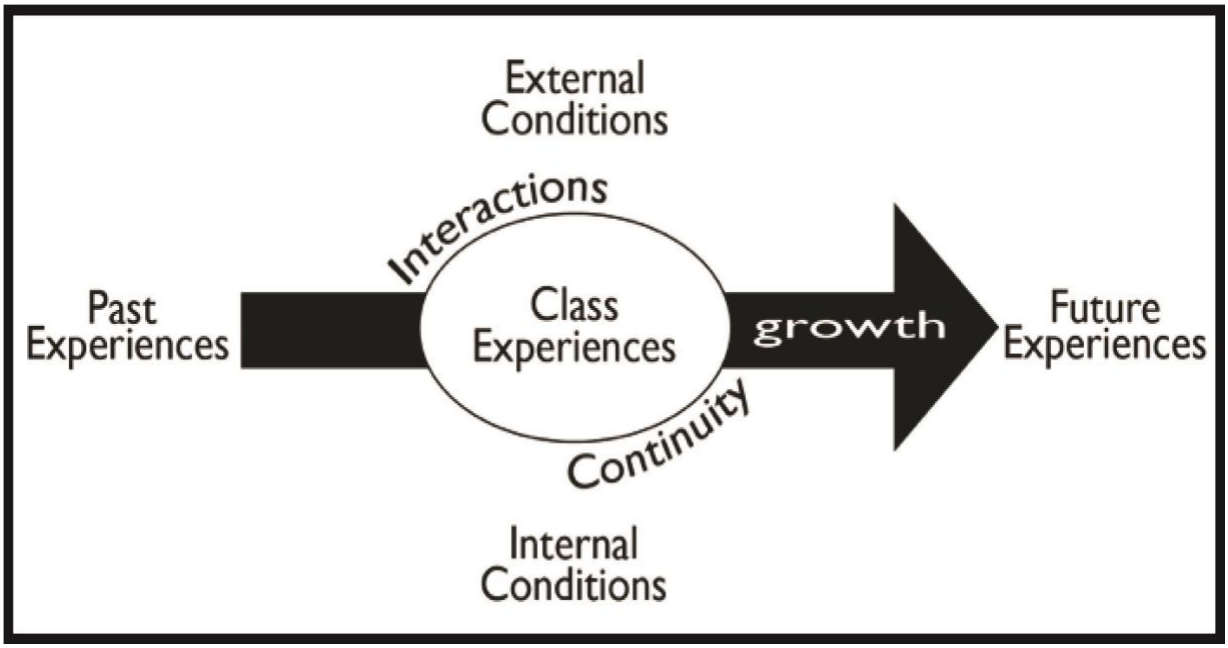
As an iconic leader of educational philosophy and the father of pragmatism, John Dewey was a driving force behind the progressive movement and experiential education through his book, *Experience and Education*, published in 1938. Dewey (1938) states that "… in order to accomplish its ends both for the individual learner and for society, [education] must be based

upon experiences - which is always the actual life-experience of some individual" (p. 89). He is clear and concise: experiences should be integral to the educational curriculum.

Dewey was a firm believer that educative lessons should be student-focused, with students' interests in mind, and be active and experimental in nature. Experiences with continuity and interactions are instrumental in the formation of knowledge. Dewey's (1938) concept of continuity (see Figure 1) explains how current and future experiences are affected by the learners' past experiences (Krutka et al., 2017). For example, in an OL activity, a student's previous experience affects how the learner will make meaning of current experiences. In turn, it will affect the development of future experiences. Along with the continuity of experiences, OL is affected by external conditions (i.e., culture, weather, social norms, curriculum) and internal conditions (i.e., fears, interests, ability, confidence), which shape the experience and promote learning (Dewey, 1938; Krutka et al., 2017).

**Figure 1**

*Dewey's Theory of Experience (Krutka et al., 2017)*



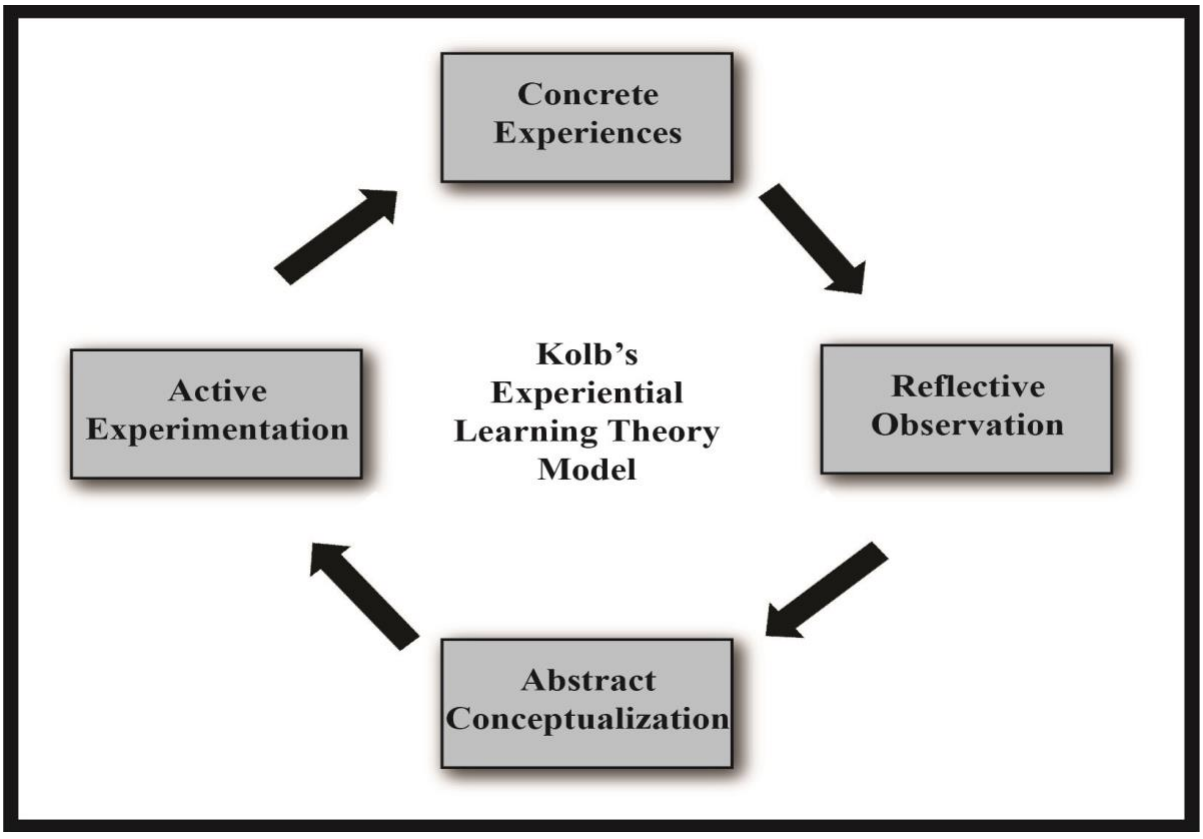
In this learning process, students should be active and interactive with their classmates and teacher. School-based OL aligns with Dewey (1938) and helps students make sense of the natural world through active learning.

**David Kolb**

The work of Kolb is recent, and as an educational philosopher, he was rooted in the same experiential learning foundations as John Dewey. Kolb stresses that he is rooted in pragmatism (Kolb, 2015) and expresses that, "Knowledge results from the combination of grasping and transforming experience" (p. 51). Kolb (2015) further states that, "Grasping experience refers to the process of taking in information, and transforming experience is how individuals interpret and act on that information" (p. 51). Kolb's Experiential Learning Theory (ELT) (see Figure 2)

**Figure 2**

*Kolb's Experiential Learning Theory Model (Kolb, 2015)*



moves beyond experience as a basis for transformative educative experiences and persuades learners to use the experience to explore abstract concepts to broaden their knowledge and understanding. This critical step allows the learner to interpret the experience, contributing to abstract thinking and learning.

Kolb (2015) believes that learning occurs through concrete experiences, reflective observation, abstract conceptualization, and active experimentation. Moreover, it is through the interactions and tensions of all four of these learning domains that individuals broaden their knowledge. Therefore, according to Kolb, an essential component of knowledge is experience. Kolb believes that the basis of understanding begins with concrete experiences. With experience, the learner actively reflects on what is experienced and soon contributes to their knowledge and understanding. These concepts are expanded through this increased knowledge and are furthered by actively experimenting to test the new information and concepts.

Dewey (1938) and Kolb (2015) provide a fundamental understanding that OL is highly experiential and should be based on real-life experiences. Dewey's theory of experience helps educators examine their OL experiences relating to success through the principles of continuity and interactions. Kolb's experiential learning theory (ELT) broadens this and includes viewing experiences through reflective observations and abstract conceptualization (Kolb, 2015).

OL supports an epistemological foundation of pragmatic subjectivism (Goldstein, 2006) in which the learner is involved in practical and realistic experiences to develop their knowledge based on their reflection of what took place (Dewey, 1938; Kolb, 2015). The learner is placed in a position to interpret their experience individually. Pragmatics, like Dewey and Kolb, place the learner at the centre of the educative process while they interact with their environment. They form their understanding and knowledge based on their experience (Dewey, 1938; Kolb, 2015).

The experience is influenced internally by the learner's values, cultures, and beliefs while also being compared to previous experiences. Evaluating information and experiences this way is subjective. Each learner brings with them their collection of values, past experiences, cultural backgrounds, and beliefs and uses these as a foundation to interpreting their experience (Kolb, 2015).

As stated earlier, pragmatic subjectivism (Goldstein, 2006) provides a solid grounding to my methodological choice and research topic. The research questions were viewed through practical experiences, internal and external influences, and reflective observation. The sequential mixed methods research methodology aids in developing new knowledge based on learning experiences. Pragmatic subjectivism allows the methods and data to be viewed extensively through experience, as outlined by Dewey (1939) and Kolb (2015).

# Chapter 4: Mixed Methods Research Methodology & Methods

*"The core assumption of this [mixed methods research] form of inquiry is that the integration of qualitative and quantitative data yields additional insight beyond the information provided by either the quantitative or qualitative data alone." (Creswell & Creswell, 2018, p. 4)*

## MMR: Methodology

Interest in Mixed Methods Research (MMR) has grown over the past 40 years and it continues to rise in popularity among researchers, with more growth predicted in the future (Poth, 2018). My investigation of OL clearly shows an MMR methodological gap, as few OL researchers have chosen to integrate data from multiple sources to address their research questions. According to Green (2007), MMR provides "multiple ways of seeing" (p. 20) that address research inquiries from various angles in order to broaden and deepen the data. My research questions were interpreted and investigated through multiple data lenses to increase research rigor and validity.

For this research, I used an explanatory sequential MMR approach (Almalki, 2016; Creswell & Plano Clark, 2018; Poth, 2018). MMR provides "a cohesive approach to ethical and rigorous research where qualitative and quantitative data are collected, analyzed, and integrated to generate novel inferences that draw on these collective data contributions" (Poth, 2018, p. 35). The data collected from the qualitative and quantitative studies, known as data strands, provided relevant information to the research (Creswell & Plano Clark, 2018). These data strands were used at points of interface, which "refers to any point in the study where two or more data sets are mixed or connected in some way" (Guest, 2013, p. 146). Mixing of the data, known as "integration," is "central to MMR" (Creswell & Plano Clark, 2018, p. 220). Therefore, integration is a critical element of MMR to address the purpose of the mixed methods study

(Poth, 2018). The integration procedures guide the research as the insights from mixing provided novel contributions to the research questions. (Poth, 2018).

The MMR design (Creswell & Plano Clark, 2018; Poth, 2018; Tashakkori & Creswell, 2007) was most suited to answer my research inquiries as it allowed me to first collect data from a broad range of teachers (N=140) to assess the extent of OL that was taking place in Alberta. I also developed an in-depth explanation of teachers' experiences through semi-structured interviews of select K-9 teachers (N=6) from the same test group. My research then mixed numeric data with the narratives of the K-9 teachers and created a comprehensive picture of OL within the test area. Combining numeric data with the narratives from the semi-structured interviews increases the research complexity, resulting in a better understanding of OL.

Using Dewey's (1938) Theory of Experience Model (Krutka et al., 2017) and Kolb's (2017) Experiential Learning Theory Model as integral parts of my theoretical framework, an MMR design provided a strong basis to integrate quantitative and qualitative data to explore OL in Alberta. Using MMR allowed me to mix data strands that detail internal and external conditions (Krutka et al., 2017) affecting the OL experience, as described by Dewey. Additionally, an MMR design provided data strands that reflect teachers' experiences and observations as outlined in Kolb's (2015) learning model. These data strands, collected both in the questionnaire and during interviews, were viewed independently and as an integrated collection through the MMR design. Given the research purpose and questions, literature review, and objectives, an MMR approach provided the best opportunity to understand OL in depth. Exploring OL in terms of teachers' experiences positioned me to assess the quantity of OL experiences and to identify the quality of these experiences through personal interviews.

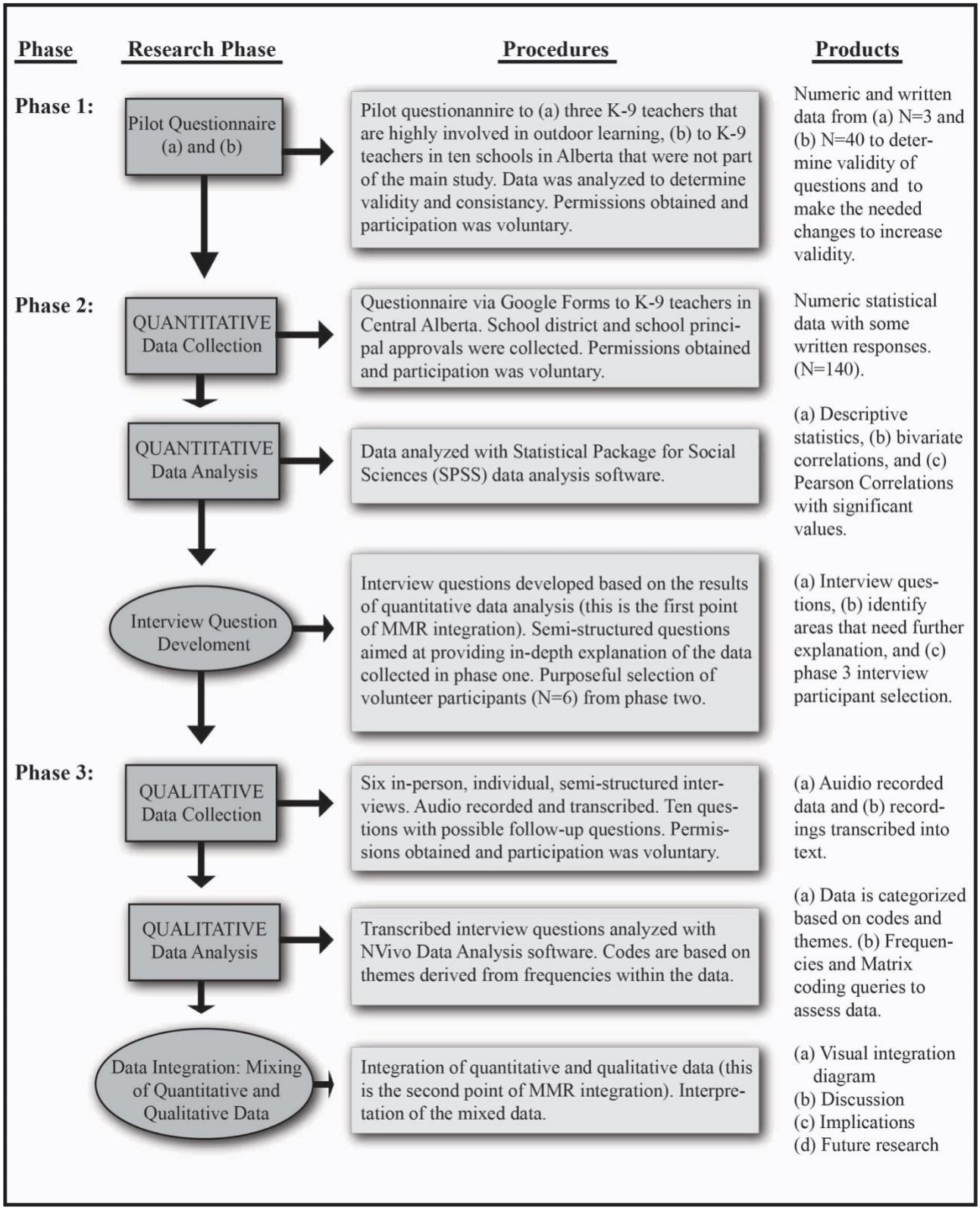
## MMR: Methods

### *Study Design*

This research has three objectives: a) to identify the current state of OL experiences with K-9 teachers in Alberta, b) to examine factors that contribute to successful OL experiences for teachers who are involved in teaching outside, and c) to construct a draft framework for improving the quality of OL experiences in K-9 classrooms. The following research design and procedural representation chart (see Figure 3) shows how I accomplished these objectives and outlines the three phases of my research.

**Figure 3**

*Research Design and Procedural Representation*



***Research Phase 1***

The first research phase involved two pilot studies to determine the questionnaire's quality and validity. This questionnaire was a mixture of researcher-developed questions and a few edited questions from a related study titled "The state of OE in Northeast Tennessee: Preschool teacher attitudes toward outdoor education" (Landy, 2018). Landy's (2018) study focused on preschool; however, related areas included the OL environments and curricular content areas associated with OL. Using a questionnaire sent electronically via Google Forms allowed my research to cast a wide net and establish a clear understanding of what OL experiences were taking place in K-9 classrooms. For example, the survey contained questions that identified specific curricular content areas in which teachers utilize outdoor resources to enhance their teaching and students' learning experiences. The survey also identified the frequency of OL for these content areas, including the seasons during which OL took place more regularly.

For Pilot Study A, I sent a copy the questionnaire to three experienced outdoor educators in Alberta who were not part of the main study. I requested they complete the questionnaire and send me written feedback regarding the instructions, questions, and topics. They made three suggestions. One respondent recommended that I reorder the responses to the question regarding outdoor features to help teachers make more informed choices. Second, there was a recommendation to clarify the perspective needed for the question requesting personal experiences. Furthermore, one respondent wanted to include an additional question about what challenges teachers face when teaching in outdoor areas. All suggestions were considered and adjustments and additions were made to respond to each suggestion. Additionally, I narrowed the choice options on two questions to provide results that could be more easily compared.

For Pilot Study B, I invited ten schools in Alberta, from one school district, to participate in a pilot study intended to simulate the main study in every sense. I chose this school division because it represents urban and rural settings, is spread out within Alberta, has diverse ethnic demographics, and is outside of my research group because it is a private school division. My main goal for Pilot Study B was to ensure the survey was easily accessed, understood, and filled out. I also wanted to analyze the collected data to determine if any question was consistently skipped and if the questionnaire provided consistent data.

With permission from the University of Alberta Ethics Board, I received joint ethics approval for Pilot Study B. This joint ethics approval was with Burman University's Ethics Committee with the purpose of also using the data from Pilot Study B in a separate research study, unrelated to this research study. I wanted to have the option to use the data to analyze OL experiences among teachers in an Alberta private school division.

Research approvals were requested and received by the private school district superintendent, and teachers gave consent before completing the survey. Out of a possible 60 K-9 teachers, 40 responded to the questionnaire. The respondents consistently answered all the questions, and the data provided stable evidence of teachers' experiences with OL. In the process of reviewing responses to each question, I viewed the data using a variety of visual representations and looked at the data's mean and standard deviations to identify unusual patterns. The data appeared stable and consistent. After completing Pilot Study B, I corrected a grammatical error identified on question 12.

***Research Phase 2***

In Research Phase 2, after approval by school district superintendents and school principals, K-9 teachers in the defined geographical research study area received a request to

participate in an online survey via Google Forms. Research participant recruitment was via an emailed letter to the School Division Superintendent requesting permission to send the questionnaire to teachers in the division. This initial letter was followed by a school division-approved Application to Conduct Research form. If the division approved the research to be conducted, then the division office sent a request to school principals to allow my research to be conducted. At this point, if the school principals agreed to allow the research to be conducted in their school, then the principal sent an email to their teachers with my research questionnaire link. Teachers could then choose whether they wanted to participate. Participation was voluntary and confidential, adhering to the approved University of Alberta Research Ethics Board application (see Appendix A).

A sample size of 140 survey participants (N=140) was collected. According to Creswell & Creswell (2018), the stability and consistency of the data is more important than the sample size. 140 participants provided a broad sampling of what was happening in the field of OL in Alberta. This was a more substantial number than the sample size in Landy's (2018) MMR study of outdoor education in Northeast Tennessee (N=81) which had some similarities, including the MMR study design.

The participants in this study included K-9 teachers from eight school divisions in Central Alberta. The years of teaching experience of the participants ranged one to 39 years and had a mean of 15 with a standard deviation (SD) of 9.7. For this study, I use the term "Central Alberta" to reflect the school divisions south of Edmonton and North of Calgary. This broad population represents both urban and rural school settings, varied OL settings in various ecological landscapes, mixed social groups, and wide cultural diversity.

As teachers completed the questionnaire, the data was automatically entered onto a

Google Sheets document. The names and email addresses of participants were not collected, unless teachers volunteered to participate in an interview. 27 teachers volunteered to further participate in an interview.

The data gathered from the questionnaires was analyzed using SPSS Statistical data analysis software under the guidance of Dr. Darren George. He is the co-author of the 16th edition of *IBM SPSS Statistics 23 Step by Step: A Simple Guide and Reference* (George & Mallery, 2020). The dependent variable of this study reflects the total number of OL activities in which teachers were involved. Further to this point, I viewed the data through the lens of bivariate correlations, of which I used a single-tailed Pearson Correlation to engage with statistically significant results (P=<.001 to .035).

The development of interview questions was informed by the results of the quantitative data to provide an in-depth explanation of data collected during Research Phase 1of the research. This was due to the convergent MMR design (Creswell & Plano Clark, 2018), where the first point of integration occurs.

> There are two points where integration occurs in an explanatory sequential design. First, integration occurs between the quantitative data analysis in the first phase of the research and qualitative data collection in the second phase. Second, once the qualitative phase is complete, the researcher then integrates the two sets of connected results and draws integrated conclusions about how the qualitative results explain and extend specific quantitative results. (Creswell and Plano Clark, 2018, p. 80)

Therefore, the semi-structured interview questions (see Appendix F) were developed post-questionnaire assessment. It was significant that the development of interview questions linked to the quantitative data collection for side-by-side data analysis was based on related data

strands (see Figure 3). This allowed for similar data strands to be mixed or integrated.

***Research Phase 3***

Six interview participants were selected based on their high level of OL involvement. They were identified based on the data gathered in Research Phase 2 of the questionnaire, and by their willingness to participate voluntarily in an interview, as indicated on the questionnaire. Six was a manageable number of interviews that adequately explained, in more depth, the experiences of teachers involved in using OL experiences with their students. Open-ended interview questions provided space for teachers to elaborate on their own experiences and provided depth to this study. Interviews were conducted in person and audio-recorded, with only the researcher and the teacher-interviewee present.

The aim of interviewing teachers was to provide an explanatory follow-up to the questionnaire in which teachers' personal experiences were shared. Each recorded interview was transcribed before being analyzed using Nvivo data analysis software. Data was coded based on themes that emerged from the transcribed data. After analyzing the transcripts numerous times, nine themes/codes and 24 sub-themes/codes emerged from the data. Since the interview questions were developed from the questionnaire, there were direct parallels between the two data sets. Word frequency searches and document queries were instrumental in developing coded data.

As integration is fundamental to the MMR design (Uprichard & Dawney, 2019), data strands from both the quantitative and qualitative data were analyzed via a side-by-side joint data display diagram (Creswell & Creswell, 2008) (see Figure 4). This data integration helped to confirm and expand new aspects of the collected data (Guetterman et al., 2015). The combined data helped explain the quantitative data while providing a final analysis of each domain studied.

**Figure 4**

*Integration Diagram Sample: Side-by-Side Joint Display (Creswell & Creswell, 2008)*

| Resarch Data Domains | Quantitative Survey Data | Qualitative Interview Explanatory Data | Analysis |
|---|---|---|---|
| A) | | | |
| B) | | | |
| C) | | | |
| D) | | | |

By thoroughly viewing the integrated data, I moved the research process from simply linking the data strands to meaningfully combining the data strands for analysis. This provided a more explicit mixing purpose concerning MMR. The side-by-side joint data display diagram is a standard method of presenting and analyzing data in this convergent explanatory MMR (Creswell & Plano Clark, 2018). This allows the quantitative and qualitative investigation data results to be viewed and assessed together and enables a search for more profound integrated meanings.

Post-study, I constructed a draft framework (see Appendix G) for improving the quality of OL experiences in K-9 classrooms. This framework was developed from the results of this research and was designed to be a resource applicable to teachers from any school setting or school district. The goals are to promote successful OL in K-9 classrooms, to identify ways that teachers can address the six key factors for successful OL, and to increase the ease of OL for teachers.

### *Ethical Research*

While preparing for this research, I found it essential to regularly assess the study for vulnerabilities. This reflexive action enabled me to ensure research quality and rigour. Two areas of vulnerability that I had to consider were (a) the effects of the COVID-19 pandemic on data

collection, and (b) the total anticipated survey numbers (N=100). By using a contactless online survey, I addressed concerns about the potential spread of the virus related to the pandemic. To address the possibility of excess pandemic-related screen fatigue among K-9 teachers, I surveyed a broad geographic population of voluntary participants to achieve 140 responses. Superintendents and school principals indicated to me that pandemic stress was undoubtedly a concern. For this reason, some school districts and numerous principals chose not to participate in this research.

There were several ethical considerations incorporated into a reflexive view of this research. These considerations applied to the quantitative and qualitative aspects of the research and included cost, timelines for completing the research, safe handling of personal data, and research procedures (Creswell & Plano Clark, 2018). I addressed these concerns in the planning stages before the study began, which increased my ability to deal with ethical issues in advance of the research. This final dissertation examines the procedural, practical, and relational ethics involved with the quantitative and qualitative data collections and during the data integration process.

To ensure rigour and validity in this MMR, Dr. Darren George provided assistance in developing the questionnaire. Later, he taught me how to analyze the quantitative data and view the statistical significances related to success in OL. He recently taught research methodology and statistics at Burman University and was a valuable resource in my research. The validity of this research was also established through the process of integration of the two data sources, with the qualitative data validating the quantitative data.

# Chapter 5: Overall Findings

*"The first question is, 'Are you fairly certain that the strength of relationship tested by this statistic is real instead of random?' As with most other statistical procedures, a significance or probability (or p value) is computed to determine the likelihood that a particular correlation could occur by chance. A significance less than .05 ($p < .05$) means that there is less than a 5% probability this relationship occurred by chance." (George & Mallery, 2020, p. 141)*

The purposes of this study were to (a) identify the current state of OL experiences with K-9 teachers in Alberta, (b) examine factors that contribute to successful OL, and (c) construct a draft framework to increase the quality of OL experiences in K-9 classrooms. Using MMR with an epistemological foundation of pragmatic subjectivism (Goldstein, 2006) was ideal because the research participants reflected on actual learning experiences in the questionnaire and during the semi-structured interviews. From the collected data strands, I developed new knowledge in the OL field, founded on teachers' experiences with their students.

This chapter is divided into two sections: (a) quantitative data findings, and (b) qualitative data findings. This division allowed separate analysis of the two data types collected to understand them fully. A final analysis can be found in Chapter 6.

The research validity and ethical methods were continually considered throughout the research process, beginning during the initial planning stages. A reflexive research approach was practiced with the goal of high research rigour. Through this approach, I constantly evaluated research decisions and actions and made changes as needed. The credibility of the data was established when the number of participants in the questionnaire exceeded the minimum anticipated. Additionally, data credibility was reached during the interview process when the interviewees reported similar experiences and outcomes with their OL practices.

A request to modify the original approved Arise Ethics application (see Appendix A) was completed on May 3, 2022. Changes were made to Section 1.5 Research Locations and Other Approvals. I added six more school divisions to include in the quantitative research section as I was initially short on responses to meet the goal of 100 participants. This slight modification to the ethics application allowed me to surpass the minimum number of research participants.

## Quantitative Data Findings

After receiving ethics approval from the University of Alberta Ethics Board and completing both pilot studies, I requested approval to conduct research from fifteen school division superintendents in Central Alberta. Eight approved the request, three denied the request, and four failed to respond.

In the school divisions that provided approvals, the superintendents forwarded their agreement to conduct research and the research questionnaire to their school principals. Each principal decided individually if they would send the research questionnaire to their teachers to participate. These procedures were in accordance with each school division's administrative research procedures. Therefore, the total number of teachers invited to participate is unknown, and a response bias was unachievable. All three school division superintendents that did not approve the study indicated that teachers were fatigued due to COVID-19 pandemic-related workload increases and stress. Three school principals sent similar responses. The number of completed questionnaires from each school division ranged from two to 49.

### *Questionnaire Participants*

The participants of this study were volunteer K-9 teachers within the defined study area of Alberta (see Table 1). Teachers were asked to identify themselves within six age groups for the purpose of correlating certain data points with teachers' age. According to a study done by

Hohd Ismail et al. (2018), "Teachers' age and experience significantly influences their effectiveness. As for the younger teachers with less experience, they can definitely learn from the experiences of the older ones." For my study, teaching experience (range 1-40 years) resulted in a mean of 15.23 years teaching. Teachers reported that they taught in a wide variety of school settings, ranging from extremely rural to extremely urban. The data (scored on a 7-point Likert scale) resulted in a value of 4.25 (slight tilt toward urban) with a standard deviation of 2.09. The gender distribution of the participants was 102 women (74.45%), 34 men (24.81%), and one non-binary. For more participant demographic data, refer to Table 1.

**Table 1**

*Quantitative Respondent Descriptive Statistics*

| | N | Range | Min. | Max. | Mean | Std. deviation |
|---|---|---|---|---|---|---|
| Age range of participants [a] | 137 | 4 | 1 | 5 | 2.73 | 1.081 |
| Years of teaching | 136 | 39 | 1 | 40 | 15.23 | 9.709 |
| School setting [b] | 140 | 6 | 1 | 7 | 4.25 | 2.092 |

[a] Age range: 1=20-29 yrs.; 2=30-39 yrs.; 3=40-49 yrs.; 4=50-59 yrs.; 5=60-69 yrs.; 6=70-79yrs.
[b] 1-7 range codes: 1=extremely rural setting; 4=outskirts of town; 7=extremely Urban setting

### *Questionnaire Protocols*

From the entire questionnaire of 8540 data points, 45 were missing values (<.5%). The highest number of missing values from any question was 4 (see Appendix E). The small number of missing values indicates that the questions were comprehensible and teachers found the questions worthwhile to answer voluntarily. In addition, the questionnaire was an appropriate length with no signs of survey fatigue from this study. As there was such a small number of

missing values, they were not replaced since the smallest N for any variable was 136.

Some data was transposed to numeric values for interpretation and analysis in SPSS (George & Mallery, 2020). For example, the age range of teachers was changed to numeric values when using the SPSS data analysis (see Table 1), and genders were changed to women=1 and men=2. Additionally, some data strands were reverse coded to provide comparable values for this study.

### *Questionnaire Results*

The following section details the quantitative results of the questionnaire for this study. The first step was to check for the psychometric validity of all composite or individual variables used. Skewness[4] and Kurtosis[5] values indicated that all variables were acceptable for further analysis (Skewness and Kurtosis between ±2); in fact, all but two variables fell in the excellent range (Skewness and Kurtosis between ±1) (George & Mallory, 2022).

Composite variables were created based on question similarity and used for internal consistency measures (Coefficient $\alpha$) to combine variables that were highly correlated. Table 2 identifies composite variables used in this study, the indicators used in creating these composites, and the internal consistency (Coefficient $\alpha$) of all composites that involved more than two indicators.

[4] "In a Distribution of values, this is a measure of deviation from symmetry" (George & Mallory, 2020, p. 375).

[5] "A measure of deviation from normality that measures the peakedness or flatness of a distribution of values" (George & Mallory, 2020, p. 375).

**Table 2**

*Composite Variables for Quantitative Study*

| Composite Variables | Independent Variables | Coefficient α |
|---|---|---|
| Perceived benefits of OL | - Academic benefits<br>- Mental health benefits<br>- Academic achievement benefits<br>- Physical health benefits<br>- Social interaction benefits<br>- Problem solving benefits | .83 |
| Resources | - Number of outdoor teaching features<br>- School area conducive to OL<br>- School area has potential spaces for OL<br>- School grounds have OL facilities | .79 |
| Comfortable with student behaviour when teaching outside | - OL behaviours<br>- Students willing to engage in OL | NA<br>(only 2 variables) |
| Comfortable teaching outside | - Teaching outdoors comfort level<br>- Knowing what to do with teaching outside<br>- Has outdoor teaching training | .81 |
| Positive childhood outdoor experiences | - Childhood experiences: nature walks<br>- Childhood experiences: outdoor play (structured)<br>- Childhood experiences: camping<br>- Childhood experiences: gardening | .72 |
| Administration support of OL | - Has administration support for outdoor teaching<br>- Other course conflict with outdoor teaching | NA<br>(only 2 variables) |
| Positive outdoor teaching experiences | - Age range of teacher<br>- Number of years of teaching experience | NA<br>(only 2 variables) |

*Note.* Acceptable alpha value (Coefficient α) is α= >.9-excellent, α= .8-good, α= .7-acceptable, α= .6-questionable, α=.5-poor, α= <.5-unacceptable (George & Mallory, 2020).

For this study, the dependent variable (DV) was the number of outdoor activities teachers were involved in. Teachers were asked if they were involved in the following outdoor activities: reading, writing, planting or gardening, teaching camping or survival skills, observing weather/sky, studying forest ecology/life, completing a nature project, physical education, nature walks, observing/collecting wildlife/soil/habitats/rocks, supervised play/recess, studying pond ecology/wetlands, studying fossils, and learning about cultures (see Figure 2). The dependent variable was simply the sum of the 14 outdoor activities in which each teacher involved their class. The potential range of values was 0 to 14; the actual range was 0 (five teachers did no outdoor activities) to 13.

The correlations between the primary dependent variable (number of outdoor activities during the school year) and all other individual predictors (composite predictors are considered in the next paragraph) was the starting point to determine their impact on the dependent variable. For these analyses, the Pearson Correlation[6] was employed with 1-tailed test of significance. All correlations higher than .25 are identified in the text that follows. All correlations, ranked in order from the highest correlation to the lowest, are summarized in Table 3.

The greatest individual predictors of the DV (number of outdoor activities) follow. The significance is <.001 for all correlations and N varies from 138-140. The greatest single predictor of number of outdoor activities was the number of available outdoor features (r = .466), and the next was that their school was conducive to outdoor learning (r = .303). Negatively associated were the lack of resources for outdoor learning (r = -.301), teachers' comfort with teaching outdoors (r = .285), students' behaviour when teaching outside (r = .276), teachers' belief that problem solving skills were enhanced by OL (r = .271), teachers' childhood outdoor experiences

[6] Pearson Correlation measures the strength of the relationship between variables and ranges between -1 to +1 (George & Mallery, 2020)

(r = .268), and teachers not knowing what to do when teaching outside (r = -.255). Notice that the three greatest predictors are associated with available resources. This is a critically important finding as it identifies that resources for OL are central to successfully teaching outdoors. Table 3 identifies the correlations with the primary DV for all independent variables.

The significance of the p-value was best described using the Pearson Correlation, which shows the strength of these data associations. This bivariate correlation measures the relationship between two phenomena (George & Mallery, 2020) and was important when determining the statistical significance or probability that the data is reliable and did not occur by chance. P-values ≤.05 were considered significant and assisted in determining the probability that the relationship did not occur by chance (George & Mallory, 2020).

**Table 3**

*Pearson Correlation of Dependent Variable: Number of Outdoor Activities*

| Independent Variables | Pearson Correlation | Significance (1-tailed) p-value | N |
|---|---|---|---|
| Number of outdoor teaching features | .466 | <.001** | 140 |
| OL conducive | .303 | <.001** | 139 |
| No location for OL | -.301 | <.001** | 139 |
| OL comfort level | .285 | <.001** | 140 |
| OL behaviour | .276 | <.001** | 139 |
| Benefits: problem solving skills | .271 | <.001** | 139 |
| Childhood experiences: nature walks | .268 | <.001** | 140 |
| Teachers knowing what to do: OL | -.255 | .001** | 138 |
| Benefits: academics | .247 | .002** | 138 |
| Benefits: mental health | .233 | .003** | 139 |
| Age range of teachers | .230 | .003** | 137 |
| Benefits: academic achievement | .225 | .004** | 139 |
| Benefits: physical health | .211 | .006** | 140 |
| Childhood experiences: structured outdoor play | .195 | .010* | 140 |
| Lack of OL facilities | -.181 | .017* | 139 |
| Childhood experiences: camping | .178 | .018* | 140 |

| Independent Variables | Pearson Correlation | Significance (1-tailed) p-value | N |
|---|---|---|---|
| Childhood experiences: gardening | .172 | .021* | 140 |
| Benefits: social interactions | .169 | .023* | 139 |
| No OL training: teachers | -.169 | .024* | 139 |
| Challenge: students not willing to participate in OL | -.159 | .032* | 137 |
| Number of teaching years | .152 | .038* | 136 |
| Challenge: lack of administration support for OL | -.146 | .043* | 139 |
| Challenge: other courses conflict with OL | -.141 | .050* | 137 |
| Childhood experiences: non-structured outdoor play | .127 | .067 | 140 |
| School location: rural/urban | -.117 | .084 | 140 |
| Benefits: spiritual | .114 | .090 | 139 |
| Challenge: lack of time for OL | -.092 | .139 | 140 |
| Challenge: safety concerns | -.092 | .141 | 139 |
| How close: distance of OL sites to school | -.083 | .166 | 137 |
| Childhood experiences: summer camp | .082 | .167 | 140 |
| Gender | .077 | .187 | 136 |
| Lack of funds for OL | .003 | .488 | 139 |

** Correlation is highly significant, $p \leq 0.01$ (1-tailed).
* Correlation is significant, $p \leq 0.05$ (1-tailed).

Next, I focused on the impact of primary composite variables on the dependent variable. Included in Table 4 are the variable names and a brief description of the variables. The make-up of these composites and measures of internal consistency (Coefficient $\alpha$) was described earlier (see Table 2).

The following were the greatest predictors of DV (number of outdoor activities) with all significance values < .001 and N=140 for all correlations. As suggested by the individual variables, the greatest predictor of the DV was resources and features that make OL easy (r= .399), followed by perceived benefits of OL (r = .300), teachers' childhood experiences with OL (r = .282), students' behaviour when teaching outside (r = .266), and finally, teachers' comfort with OL (r = .262). All variables were significantly correlated; complete results are shown in Table 4.

**Table 4**

*Pearson Correlation of Composites and P-Values*

| Composite Variable | N | Pearson Correlation: Number of Outdoor Activities | Significance (1-tailed) (p-values) |
|---|---|---|---|
| RES: Resources and features that make OL easy | 140 | .399 | <.001** |
| BEN: Perceived benefits of OL | 140 | .300 | <.001** |
| CHILD: Teachers' childhood experiences | 140 | .282 | <.001** |
| STU: Student behaviours | 140 | .266 | <.001** |
| COM: Comfort with OL | 140 | .262 | <.001** |
| ADM: Administrative support | 140 | -.192 | .012* |
| EXP: Teaching experience | 140 | .154 | .035* |

** Correlation is highly significant, $p \leq 0.01$ (1-tailed).
* Correlation is significant, $p \leq 0.05$ (1-tailed).

In any study that involves human subjects, collinearity (a strong correlation) between variables almost always occurs. For this reason, multiple regression[7] was used to sort out the unique impact of the composite variable on the dependent variable (number of activities used in OL). Predictors included each of the composite variables described in Table 4. Stepwise regression[8] only allowed significant predictors to be included; significance was set at .05 for entry into the final regression equation.

Three variables entered the final regression equation. Multiple R was .499; $R^2$ was .249,

[7] "Multiple regression analysis shows the influence of two or more variables on the designated dependent variable." (George & Mallery, 2020, p. 208).
[8] Stepwise regression has been defined in the following way: "Sometimes a variable that qualified to enter loses some of its predictive validity when other variables enter. If this takes place, the stepwise method will remove the 'weakened' variable. Stepwise is probably the most frequently used of the regression methods" (George & Mallery, 2020, p. 213).

indicating that 24.9% of the variance in the DV was explained by the three predictors. The three significant predictors are listed below, along with the Beta (β) value. The Beta (β) value identifies the unique impact of each variable on the DV after all other variables have been accounted for. Another way to describe Beta (β) value is that it is the partial correlation between each predictor and the DV after controlling for all other variables (George & Mallery, 2020).

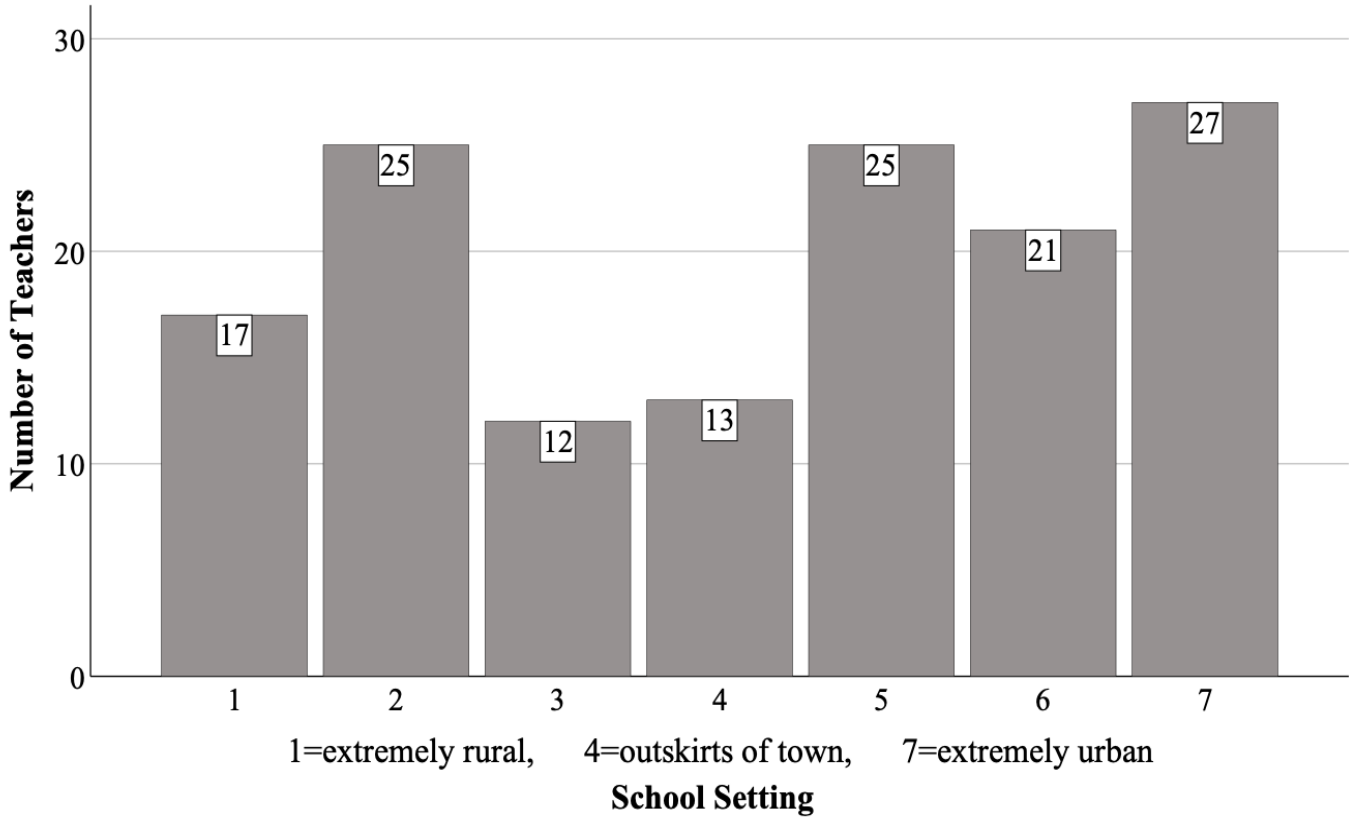
The greatest predictors of the DV were available resources for OL (β = .282), the belief that outdoor learning has benefits (β = .222), and teachers' childhood outdoor experiences (β = .208). None of the other variables were even close to achieving significance. The picture is powerful in its simplicity: teacher engagement in OL is based on (a) available resources for OL, (b) their belief that OL has benefits, and (c) their childhood outdoor experiences. The first two variables are subject to enhancements from school board and administrative directives. The last one (childhood experiences) is not subject to change, but if a school board is eager to make outdoor learning a significant part of their curriculum they might emphasize questions about childhood outdoor experiences and belief in the benefits of OL when they interview for new positions.

***Distribution of Responses for Key Variables***

For this study, the school's location or setting varied among respondents. The teachers surveyed (N=140) came from rural and urban regions or settings, with more responses from slightly urban to extremely urban areas (see Figure 5). My research design was purposeful in selecting school divisions that would provide a broad scope of data to represent rural and urban teachers' experiences. Each school division that was asked to participate in this study had schools located in various regions.

**Figure 5**

*Description of Schools' Physical Setting*



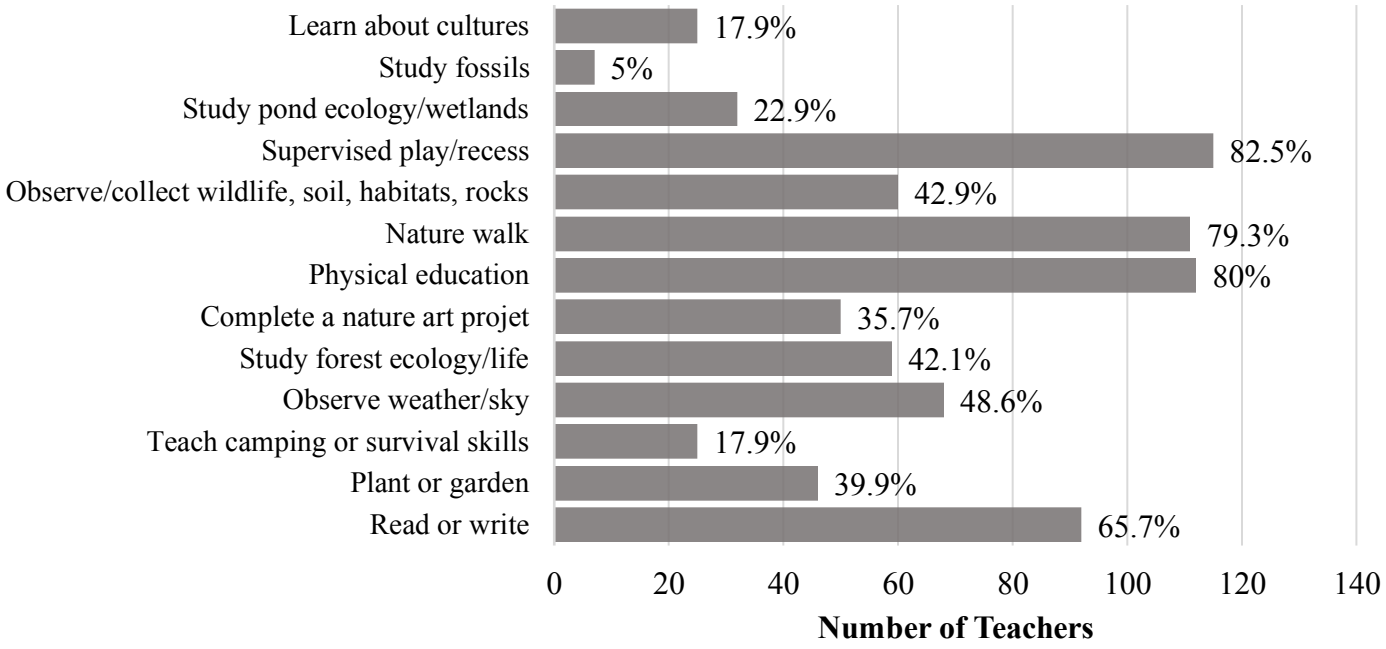

Teachers reported participating in various activities when they take students outside to learn (see Figure 6). This research did not focus on a particular field of study or curriculum topic but rather cast a wide net to determine all possible curriculum-based learning actions that were done outside. Respondents could also report on other activities not listed in the survey. The list of other activities included orienteering (2 responses), snowshoeing, cross-country skiing (2 responses), downhill skiing/snowboarding (2 responses), tobogganing, canoeing, mountain biking (3 responses), archery, litter collecting (2 responses), photography, bird watching, music with drums, music games, and participation in events like Take Me Outside Day,[9] Winter Walk

[9] Take Me Outside. (2019). Take Me Outside Day. https://takemeoutside.ca/tmoday/

Day,[10] and Wheel Week.[11]

**Figure 6**

*OL Activities Done in Schools*



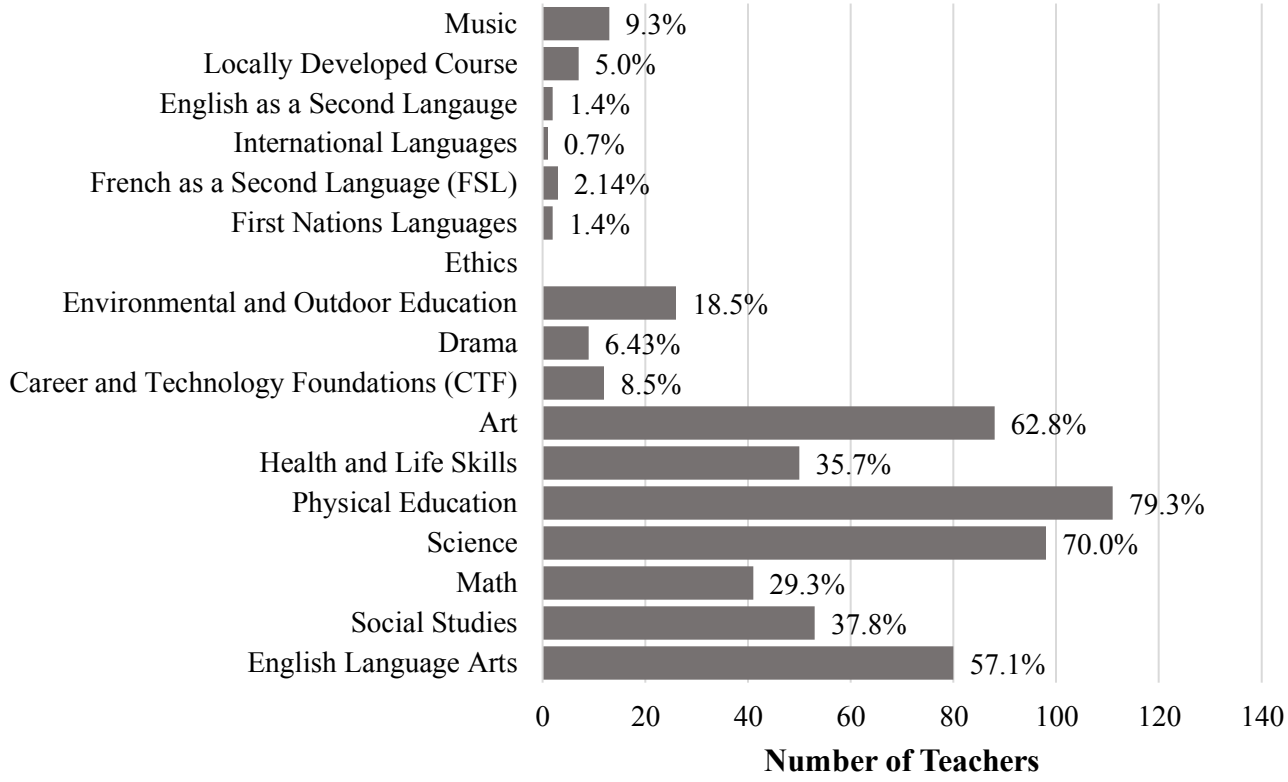

*Note.* The percentages indicate the portion of teachers, of the 140 respondents, who teach students using each OL activity. The data is organized in the order the activities were listed in the questionnaire.

The courses or curriculum content areas that teachers have taken their students outside to learn or experience are listed in Figure 7. This graph further explains why the activities listed in Figure 6 were being used by teachers, as provincial curriculum requirements guide learning outcomes. Curriculum-based OL was fundamental to this research, and Figure 7 portrays the current content areas that teachers take students outside to learn. Respondents could also report on other courses that they teach outdoors. The other areas that teachers listed were leadership (2 responses) and First Nations, Métis, and Inuit (FNMI) (1 response).

[10] Shape. (2018). Winter Walk Day. https://shapeab.ca/winter-walk-day/
[11] Shape. (2018). Wheel Week. https://shapeab.ca/wheel-week/

**Figure 7**

*Curriculum Content Taught Outside*

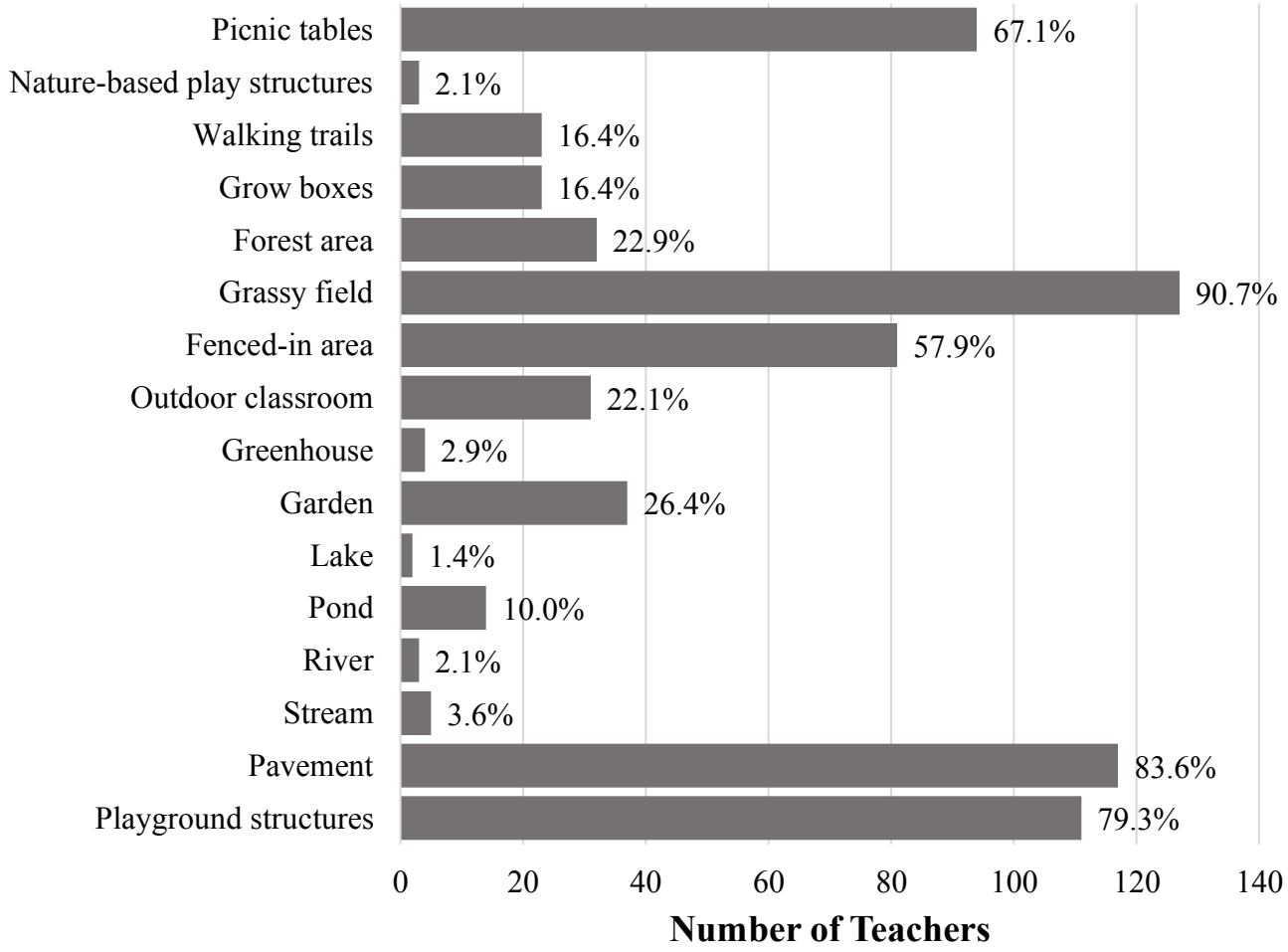



*Note.* The percentages indicate the portion of teachers, of the 140 respondents, who use outdoor space to teach each curriculum area. The data is organized in the order listed in the questionnaire.

Teachers reported on the OL features within their school property that they use to teach outside (see Figure 8). Responses included a list of other features not listed in the questionnaire. These include chicken coop, solar panels, flowerbeds, outdoor town area with trees and hills, football field, wetland with trees, nearby trails with stream and wildlife, protected natural area, a nearby park, bird houses, courtyard, hockey rink, baseball field, soccer field, and Wilson-ball pits. One response indicated they had access to an outdoor classroom, but it was not ideal because it required repairs.

**Figure 8**

*Schools' Outdoor Learning Features*




*Note.* The data is organized in the order listed in the questionnaire.

Along with using the school property for OL, teachers could access nearby parks and natural areas. Teachers were asked how close their school was to a natural area or park they could use for outdoor teaching. Responses (N=137) varied (see Table 5), with 72.9 % of teachers reporting that they were 1 km or less away from a park or natural area that they could use for teaching outdoors.

**Table 5**

*Distance From School to Nearest Natural Area for OL*

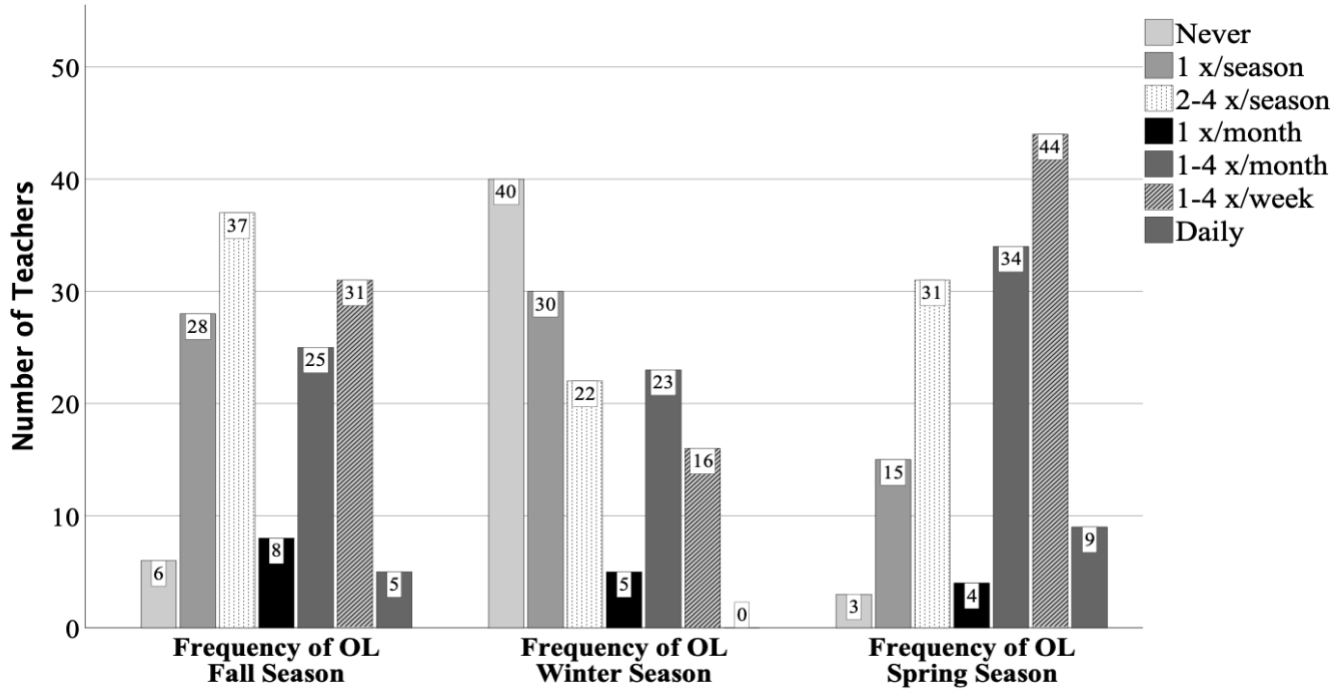
| Distance | Number of Teachers | Percent |
|---|---|---|
| <.5 km | 63 | 45.0 |
| .6-1 km | 39 | 27.9 |
| 1.1-1.5 km | 7 | 5.0 |
| 1.6-2 km | 5 | 3.6 |
| >2 km | 23 | 16.4 |

Table 5 shows the distance to OL areas that could be used for teaching. Teachers may not be limited to the use of their school grounds as the only source for OL features and may potentially use spaces in proximity to the school grounds. The majority of teachers (72.9%) were within 1 km of a natural area that they could use to teach. This proximity could overcome some challenges teachers expressed about their school grounds not being conducive to (see Figure 10).

Different seasons also impacted the frequency of OL experiences by teachers (see Figure 9). Winter had the lowest number of OL experiences, followed by fall. The highest frequency of OL experiences that teachers reported was in the spring; 44 teachers reported taking students to OL areas 1-4 times per week, compared to 31 in the fall and 16 in the winter.

**Figure 9**

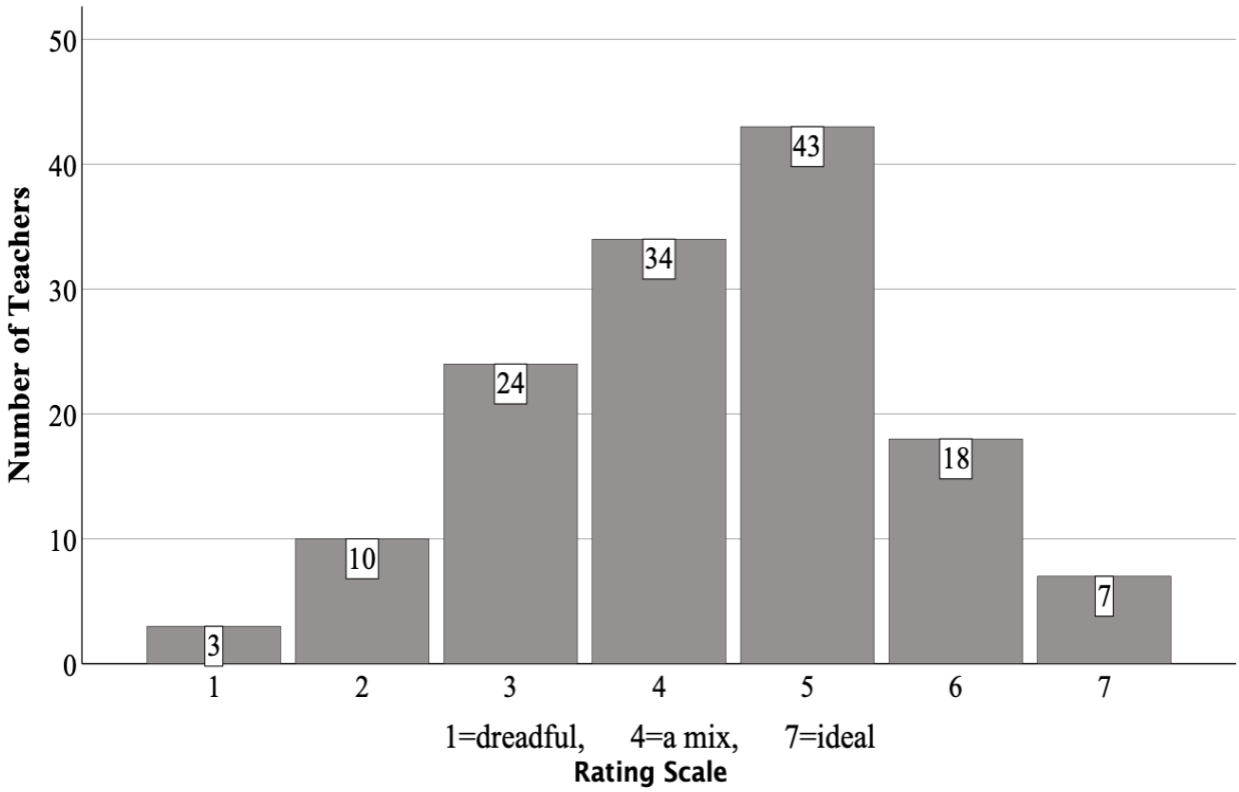
*Seasonal Frequency of OL*




An essential aspect of teaching outdoors is having outdoor space conducive to teaching and learning. Each respondent (N=139) provided a general sense of their school property's conduciveness to OL (see Figure 10) that sheds light on their ability to teach outside. Thirteen teachers indicated that their school grounds were "dreadful" or "near dreadful" for OL. Twenty-five teachers reported that their school grounds were "ideal" or "near ideal" for OL. Most of the data lies in the middle, indicating a mix of "ideal" and "less ideal" school grounds for teaching outdoors.

**Figure 10**

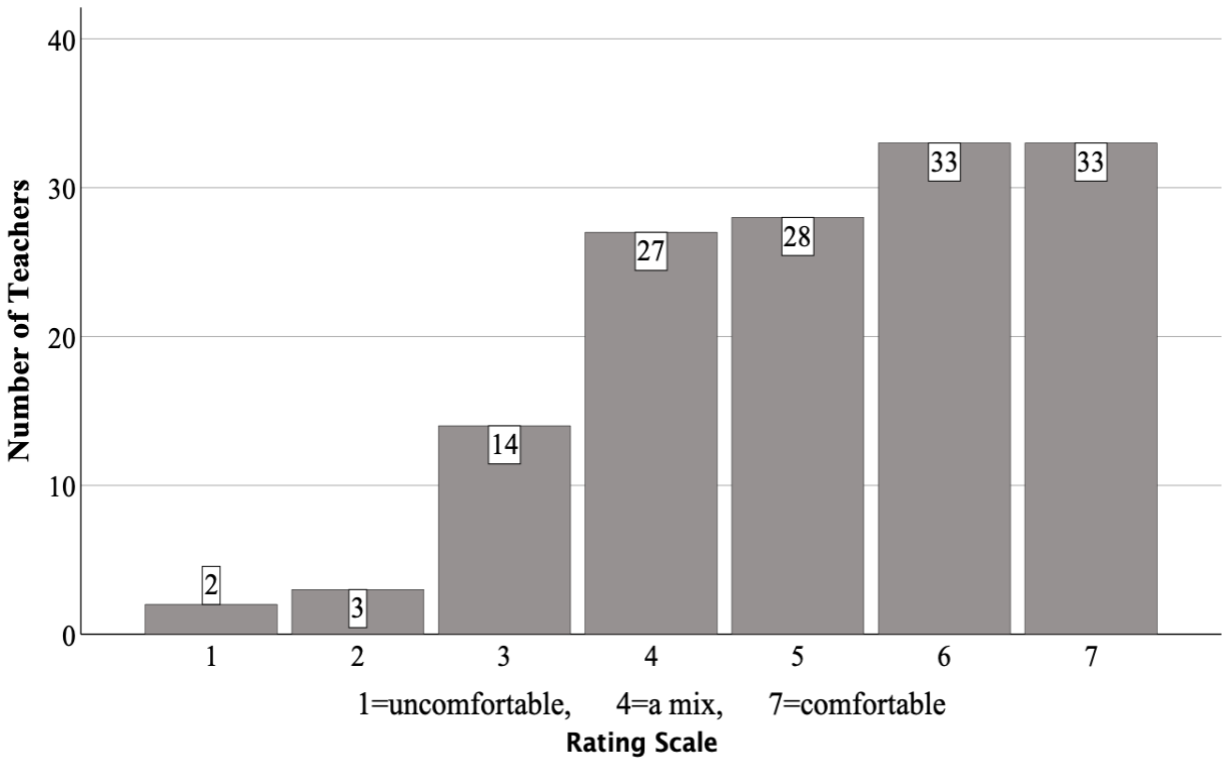
*School Grounds Conducive to OL*




Teachers reported (N=140) their comfort level with teaching outside (see Figure 11). This question aimed to identify how comfortable teachers were with OL, as increased levels of comfort were associated with successful outdoor teaching. Successful outdoor teachers were identified as having a higher frequency of outdoor teaching experiences and were, therefore, more comfortable using outdoor areas to teach. Figure 11 indicates that 94 teachers were "somewhat comfortable" to "comfortable" with teaching outdoors.

**Figure 11**

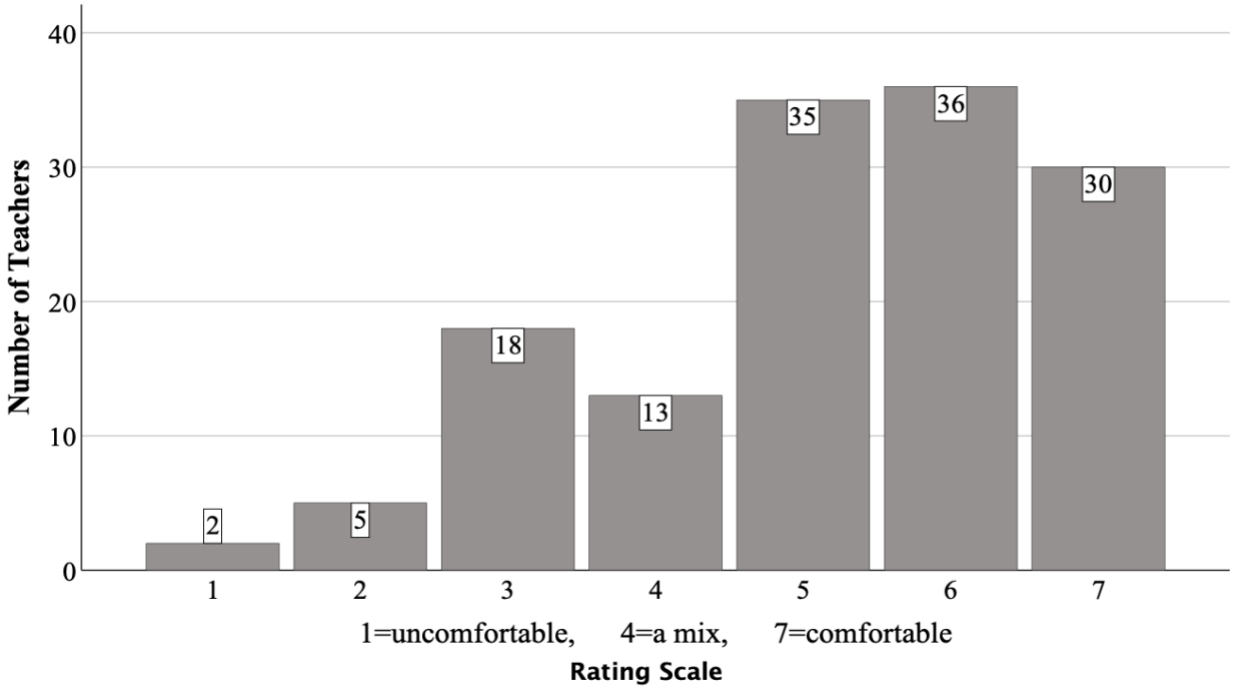
*Teachers' Comfort Level with Outdoor Teaching*




When rating their comfort level with behaviour management of students, 101 teachers reported a range of "somewhat comfortable" to "comfortable" (see Figure 12). Of the 139 responses to this question, only two teachers were "utterly uncomfortable" with behaviour management when teaching outside.

**Figure 12**

*Teachers' Comfort Level with Behaviour Management Outside*

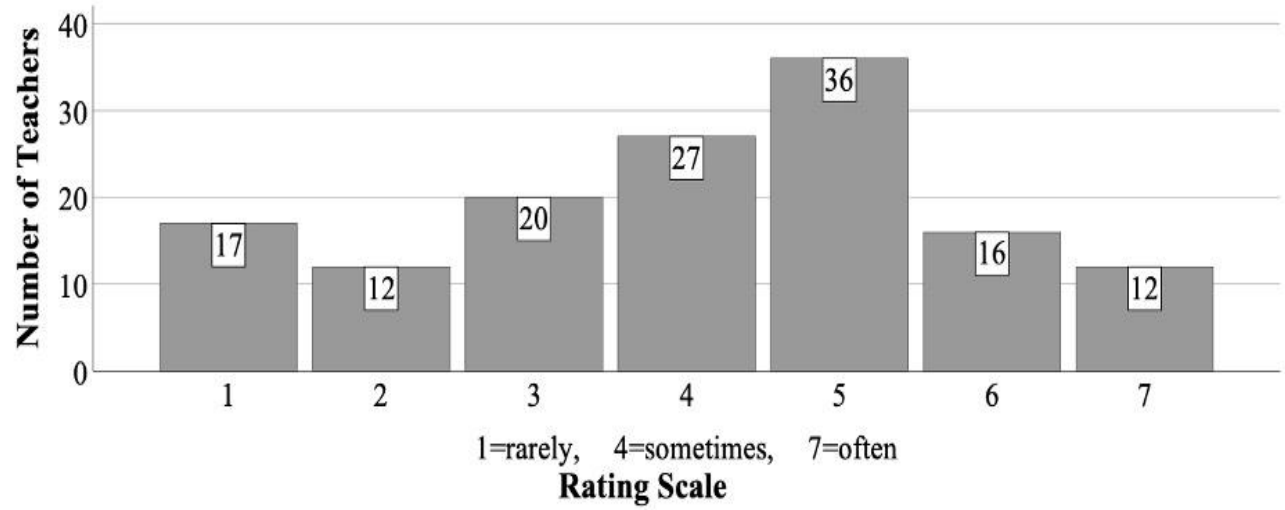



The following ten figures (see Figures 13-22) depict data sets describing teachers' challenges with OL. These potential limiting factors were critical in understanding teachers' views of OL. Teachers have different experiences with their school, school administration, students, and personal abilities and interests. These challenges provide valuable data on teachers' experiences and potential limiting factors to OL.

As OL can involve significant preparation time, teachers were asked if this was a challenge to them (see Figure 13). The responses were spread, with 49 responses on the side of "rarely-less challenging," 27 as a mix, and 64 responses on the side of "more-often challenging."

**Figure 13**

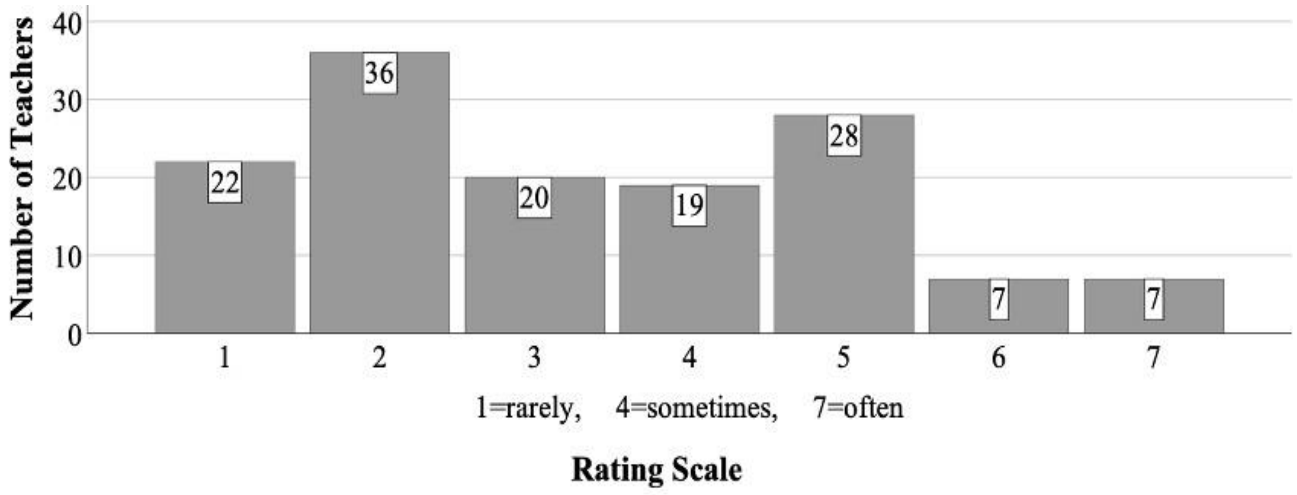
*Challenge: Lack of Preparation Time for OL*




Safety was a concern for schools, and teachers were asked to rate challenges regarding safety when they take their students outside to learn (see Figure 14). Of the 139 responses to this question, more data fell on the side of "rarely to sometimes a concern," with seven teachers reporting that it was "often a concern."

**Figure 14**

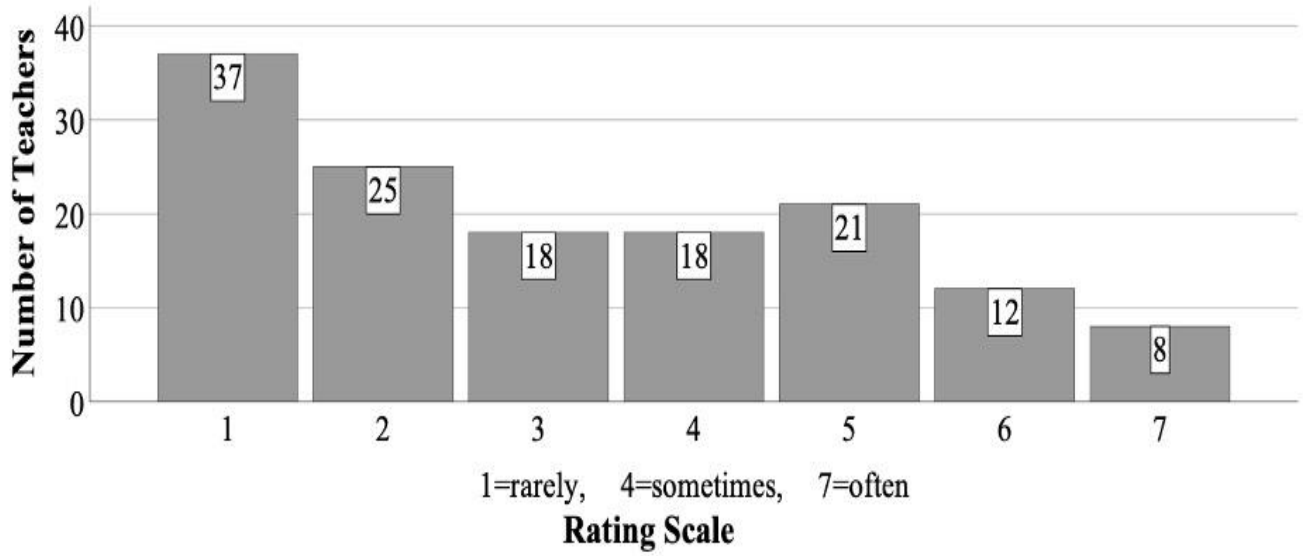
*Challenge: Safety Concerns with OL*



Teachers were asked if a lack of money for OL was challenging for them (see Figure 15). As the data is spread from “rarely a challenge” to “often a challenge,” more teachers’ responses fell in the “rarely” to “sometimes” range.

**Figure 15**

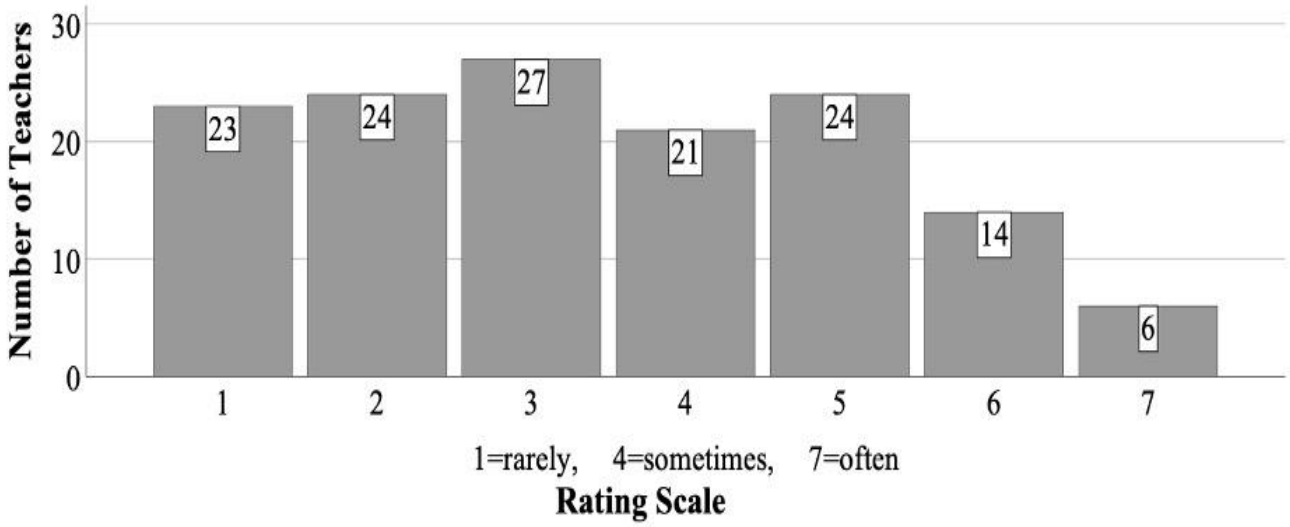
*Challenge: Lack of Finances for OL*




When teachers were asked if a limited background or training in OL was a challenge, 139 responses showed a spread of data between “rarely” and “often,” with slightly more responses falling on the side ranging from “rarely” to “sometimes” (see Figure 16). This data indicates that some teachers would find that OL training would decrease the challenges associated with teaching outdoors.

**Figure 16**

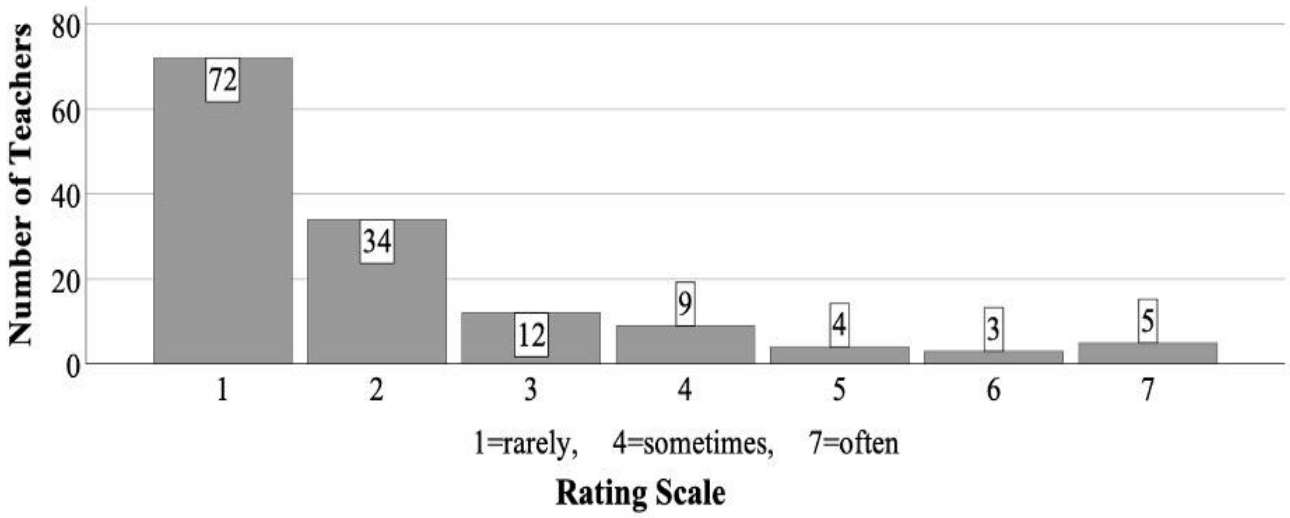
*Challenge: Limited Background or Training in OL*




When asked if lack of support from school administration for OL was a challenge, 91.4% of the teachers' responses (N=139) ranged from "rarely a challenge" to "sometimes a challenge," with a majority indicating "rarely a challenge" (see Figure 17). Support from administration could include financial support, OL training, the provision of planning time, encouragement, etc.

**Figure 17**

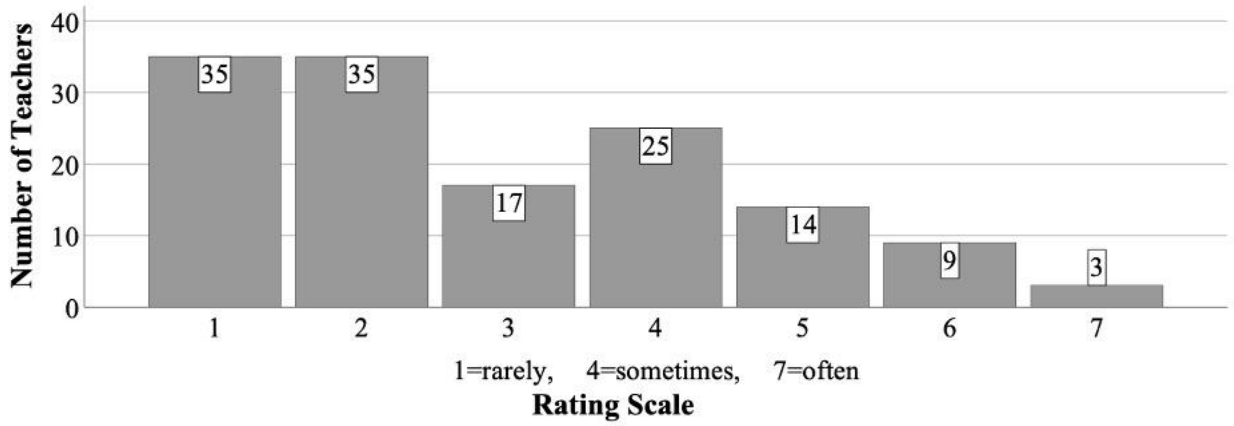
*Challenge: Lack of Support from Administration for OL*



Teachers rated their challenges with knowing what to teach outdoors (see Figure 18), and of the 138 responses, 112 felt that it was “rarely to sometimes” a challenge. A few teachers reported that it was “often” a challenge.

**Figure 18**

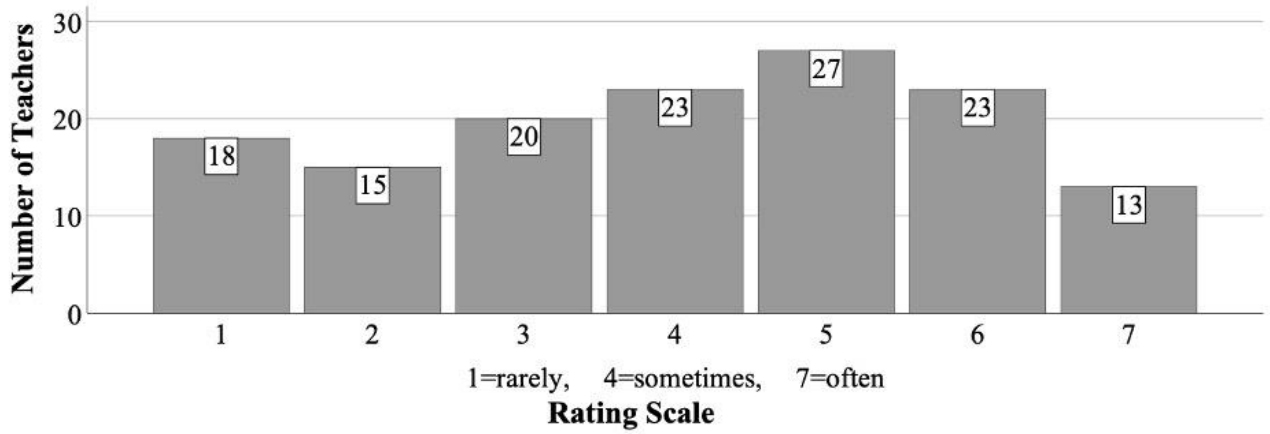
*Challenge: Knowing What to Teach Outdoors*




When reporting on accessibility to suitable OL areas (see Figure 19), the data was spread, with 61.9% of teachers reporting that it was “sometimes” to “often” a challenge. The highest response was 27 teachers reporting that the challenge was “slightly more than sometimes.”

**Figure 19**

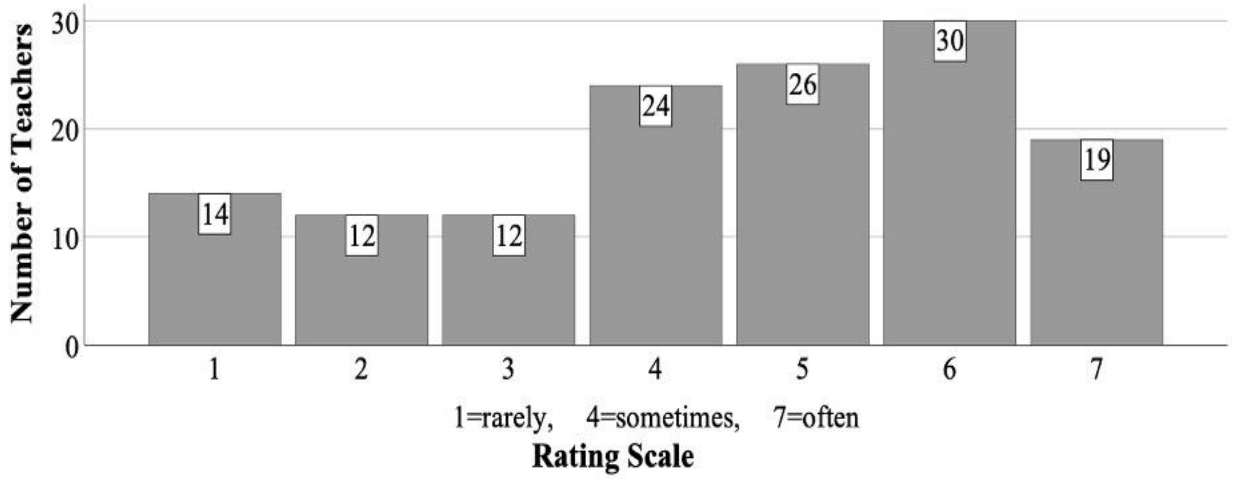
*Challenge: Access to Suitable OL Areas*




Other coursework requirements were reported as a challenge for 72.3% of the teachers in the "sometimes" to "often" range of the Likert Scale (see Figure 20). Only 14 of the 137 responses indicated that it was "rarely" a challenge.

**Figure 20**

*Challenge: Other Coursework Requirements*

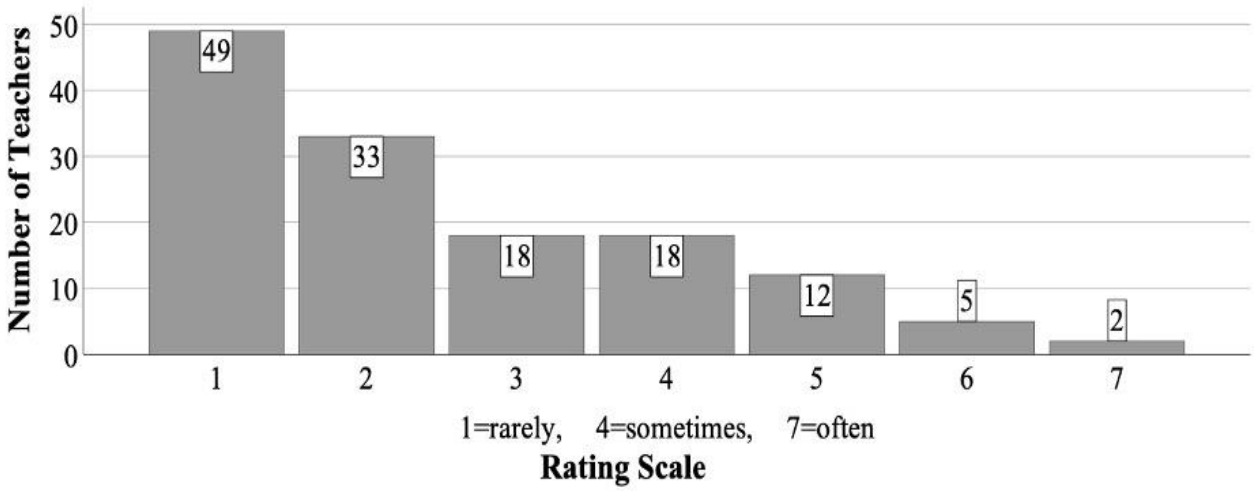



When teachers were asked if they were challenged by students not wanting to learn outside, the majority of teachers' responses were on the "rarely a challenge" side of the Likert

Scale (see Figure 21). Only two of the 137 teacher responses reported “often” having had this challenge. The responses to this question do not take seasons into consideration. Rather, teachers reported their general feeling of being challenged by students not wanting to learn outside.

**Figure 21**

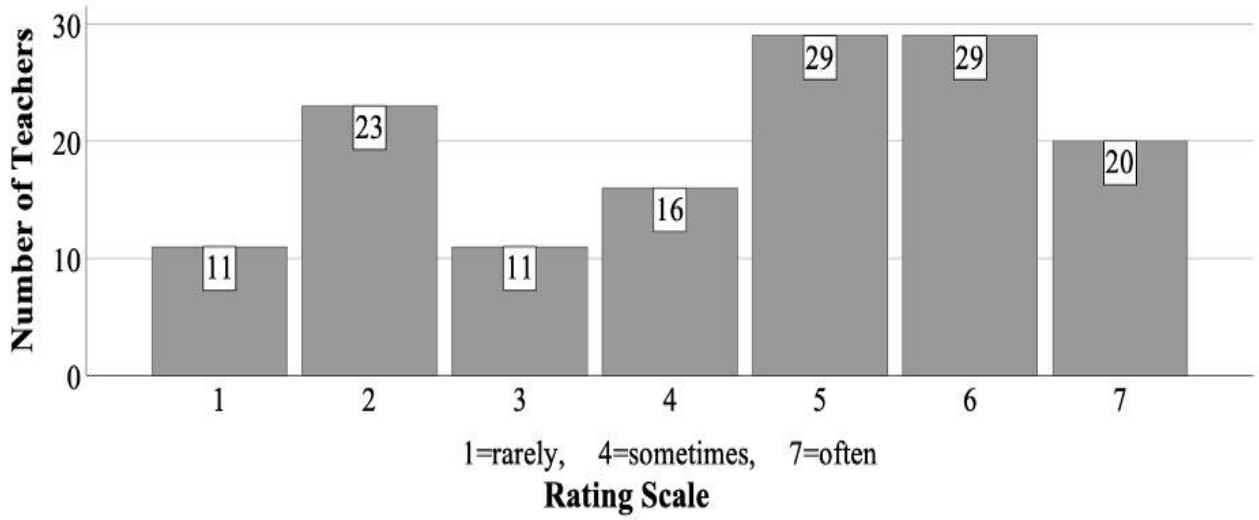
*Challenge: Students Not Wanting to Learn Outside*




More teachers (67.6%) reported that they “sometimes” to “often” had challenges with a lack of tables, seating, and other teaching facilities for OL (see Figure 22). Of the total, 24.5% of teachers “rarely” to “near-rarely” were challenged.

**Figure 22**

*Challenge: Lack of Tables, Seating, and Other Teaching Facilities for OL*

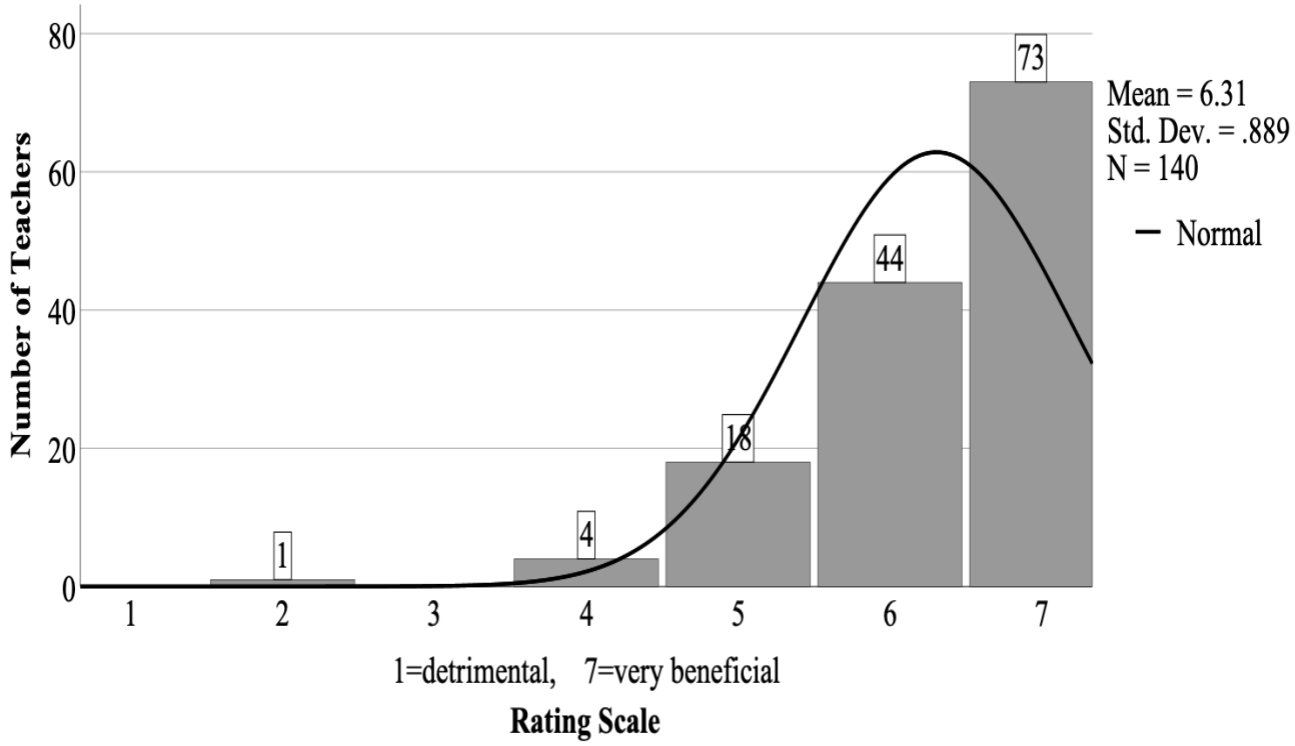



The following seven data histograms describe teachers' beliefs about the benefits of taking students outside to learn (see Figures 23-29). Many of the benefits display a skewed distribution towards a belief that OL was beneficial to students, with few outliers who believe that OL was detrimental. These data points help us to understand teachers' beliefs about the benefits of taking students outside to learn and potentially why they would want to use outdoor spaces to teach.

Teachers were asked if taking their students outside to learn provided physical health benefits (see Figure 23). Of the 140 teachers who responded, 94.6% indicated that there was some level of physical health benefit.

**Figure 23**

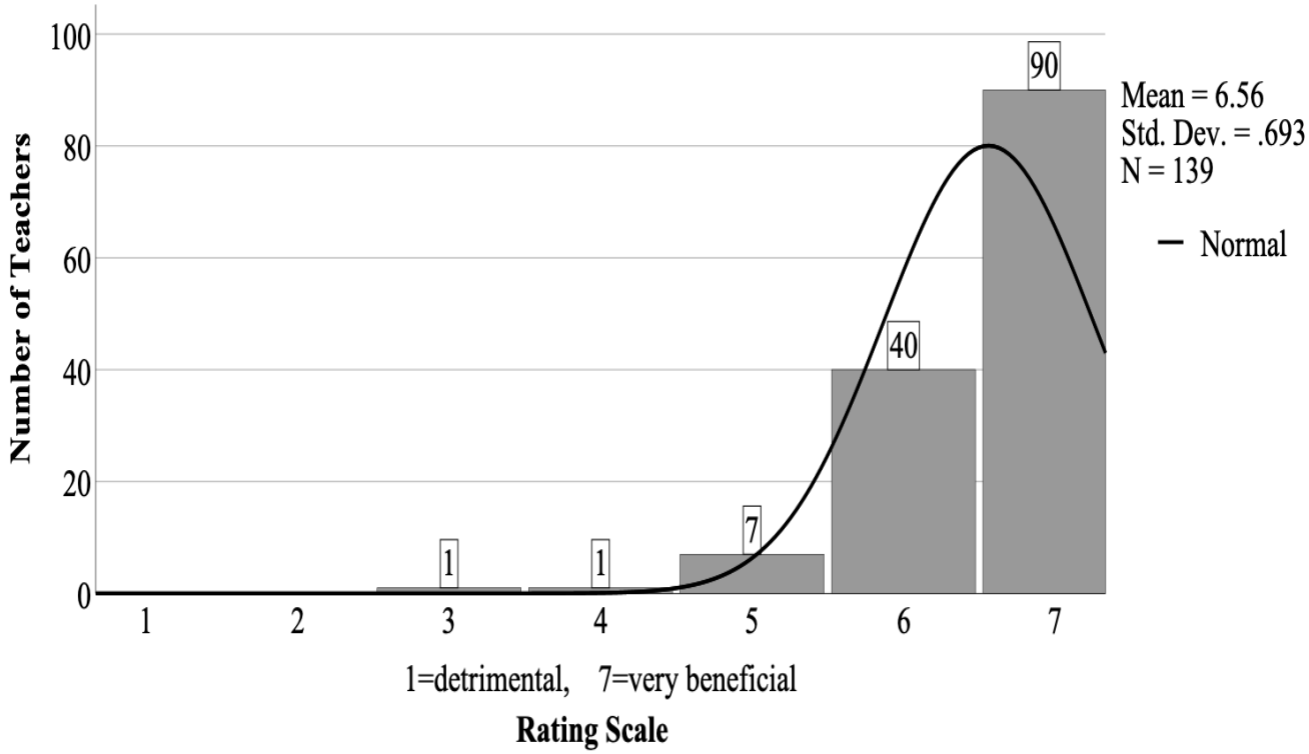
*Benefit: Physical Health*




The mental health of students was a focus in which schools have great concern. Over 98% of teachers indicated that taking students outside to learn has mental health benefits (see Figure 24). This data field is significant as it displays the strongest OL benefits that teachers reported.

**Figure 24**

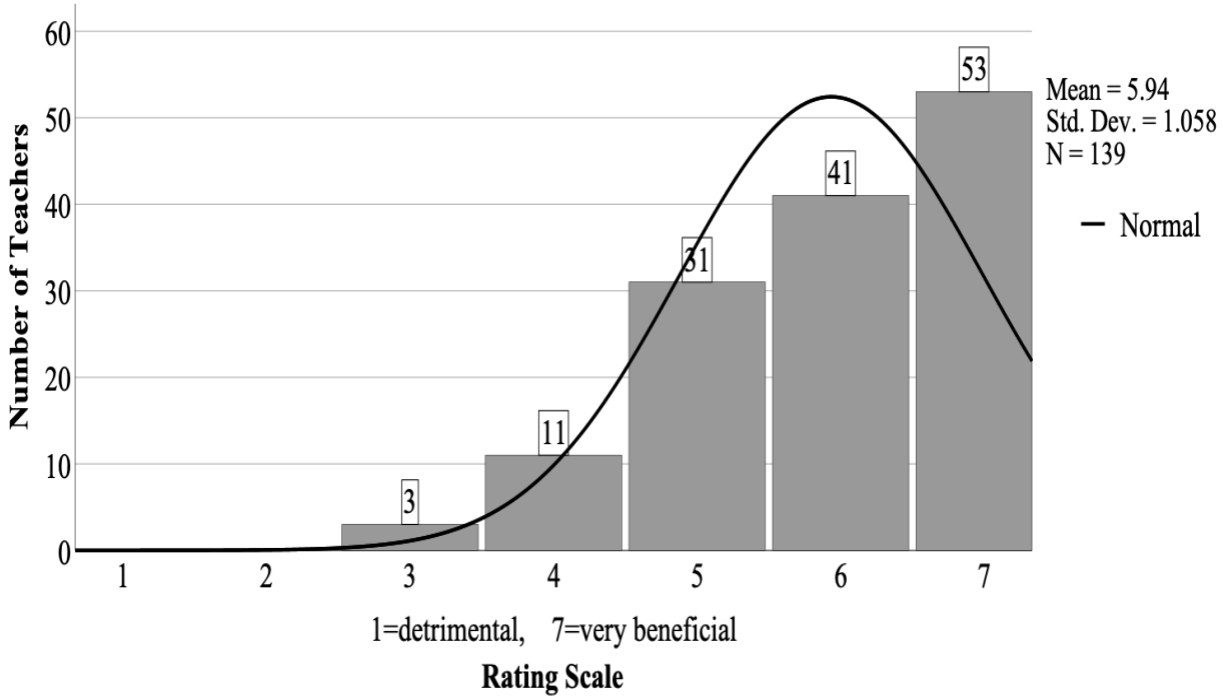
*Benefit: Mental Health*




Teachers were asked if the social interactions between students, when learning outside, benefited students (see Figure 25). Most teachers responded that OL provides the space for students to interact socially in a positive way.

**Figure 25**

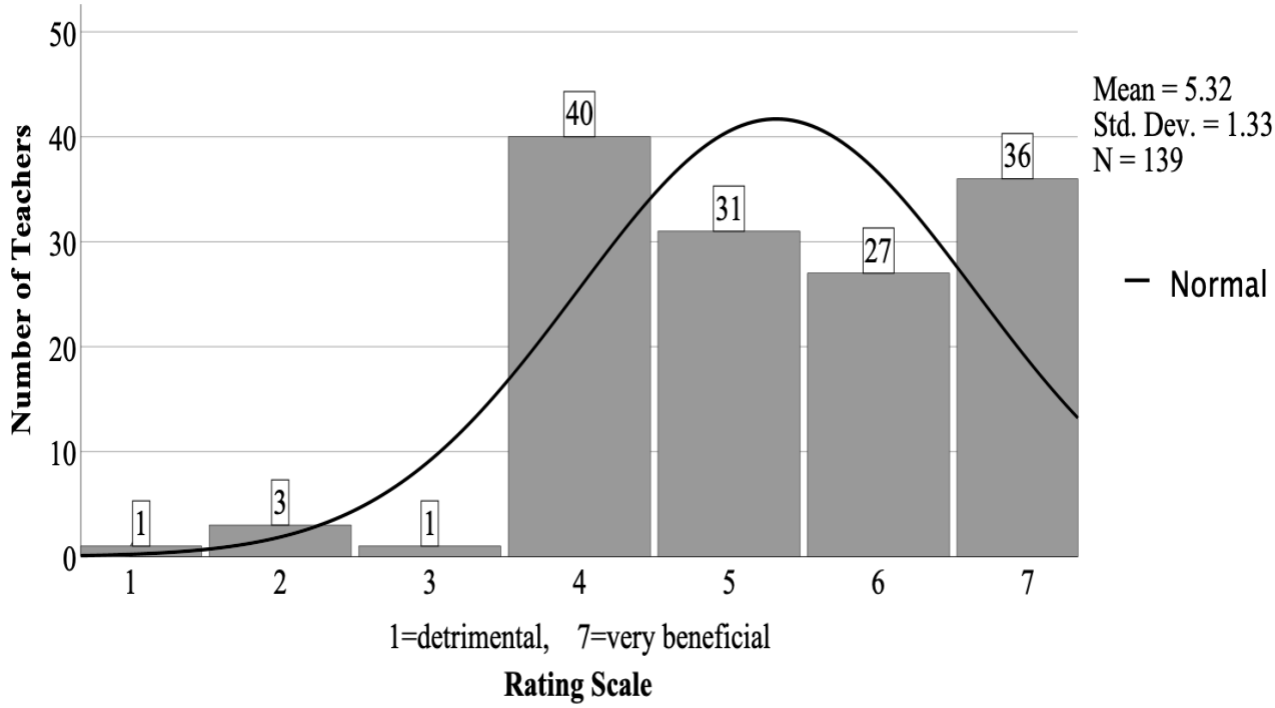
*Benefit: Social Interactions*




When asked if learning outside provided spiritual benefits (see Figure 26), the highest number of teachers (N=40) reported four on the Likert Scale, indicating neither "detrimental" nor "beneficial." Just over 67% of the teachers reported some level of spiritual benefits to students when they learn outside.

**Figure 26**

*Benefit: Spiritual Well-being*




When teachers were asked about students' understanding of curricular content (see Figure 27) and academic achievement (see Figure 28) when learning outside, the normal distribution curve was further to the left than I had predicted. Figure 27 has a mean of 5.12, with 49 teachers reporting a slight benefit. Figure 28 has a similar mean of 5.06, with 52 teachers reporting a slight benefit. Notably, 71.7% of teachers feel that students experience some level of benefits related to understanding curricular content, and 69.8% find some level of academic achievement benefits.

**Figure 27**

*Benefit: Understanding Curricular Content*

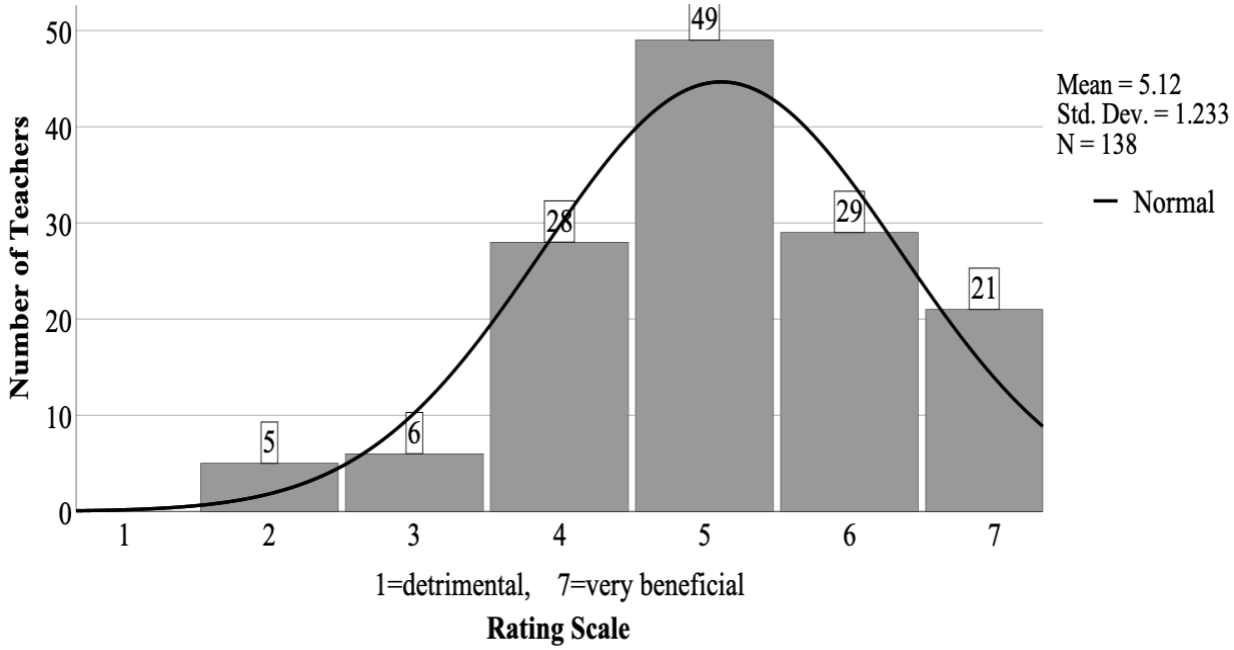
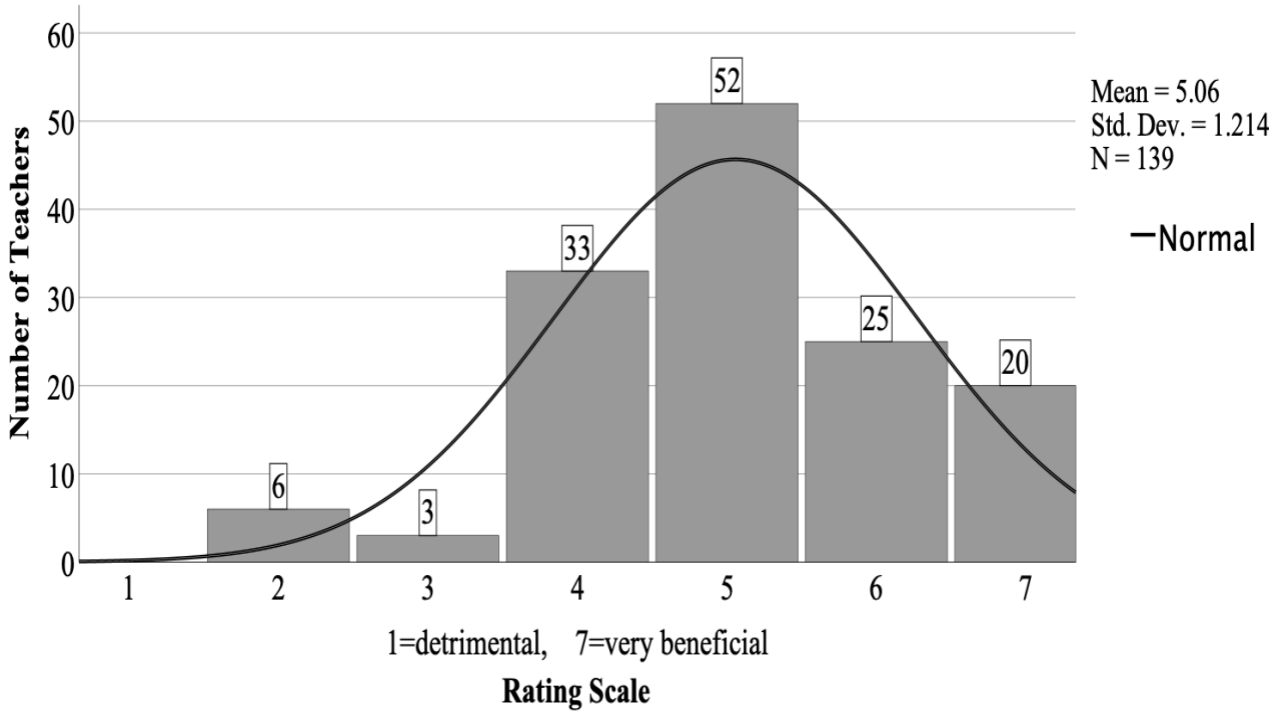



**Figure 28**

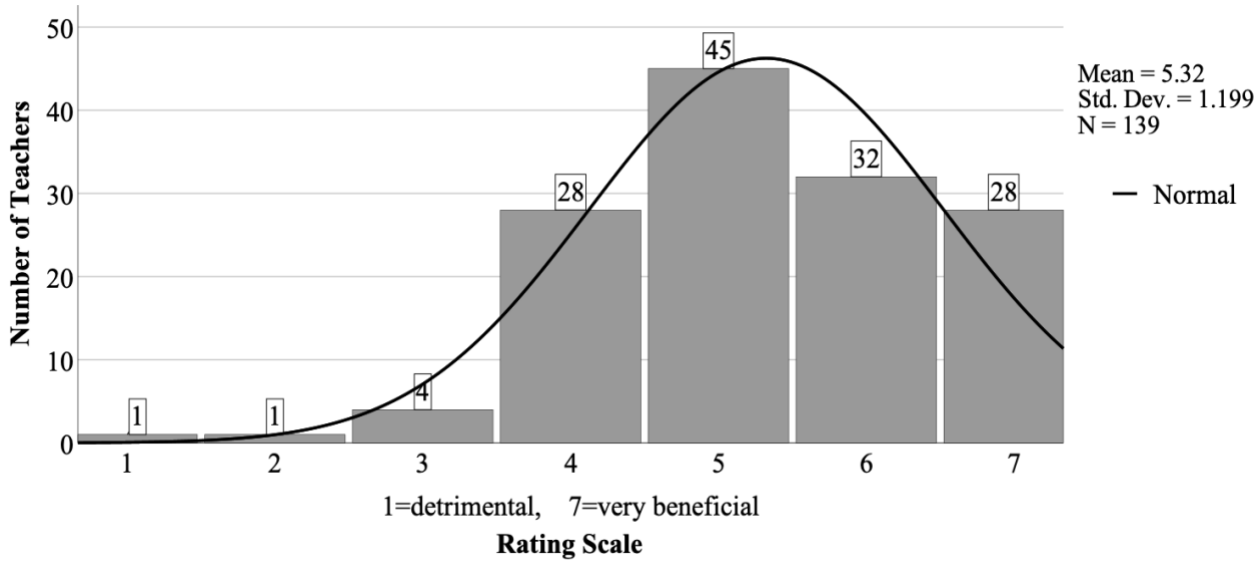
*Benefit: Academic Achievement*



Teachers reported on their belief regarding OL as beneficial or detrimental to students' problem-solving skills (see Figure 29). Just over 75% of teachers responded (5-7 on the Likert Scale) that OL provides students with the opportunity to develop some problem-solving skills.

**Figure 29**

*Benefit: Problem Solving*




Teachers were asked about their outdoor experiences during childhood (see Table 6) to determine if there was a correlation between those experiences and their success with OL in K-9 classrooms. Using the Likert Scale to measure this, all the data had a mean higher than four. Unstructured play had the highest number of responses in the "very often" category, with 70% of teachers indicating that they frequently took part in unstructured play outdoors. Structured play followed, with 60% of responses reporting in the "very often" category. Of the six areas tested, four indicated a significant Pearson Correlation (1-tailed) with the dependent variable (number of OL activities) (see Table 3). These were nature walks (p=<.001), structured outdoor play (p=.010), camping (p=.018), and gardening (p=.021).

**Table 6**

*Teachers' Outdoor Childhood Experiences*

| Childhood Experiences | N | Mean | Std. Dev. | Likert Scale (1-7) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Nature Walks | 140 | 4.73 | 1.91 | 12 | 13 | 10 | 19 | 29 | 26 | 31 |
| Camping | 140 | 4.66 | 2.22 | 24 | 9 | 10 | 12 | 17 | 28 | 40 |
| Summer Camp with Outdoor Activities | 140 | 4.19 | 2.17 | 26 | 14 | 12 | 20 | 23 | 14 | 31 |
| Unstructured Outdoor Play | 140 | 6.40 | 1.14 | 2 | 0 | 1 | 9 | 11 | 19 | 98 |
| Structured Outdoor Play | 140 | 6.35 | 1.05 | 2 | 0 | 0 | 5 | 16 | 32 | 85 |
| Gardening | 140 | 4.48 | 2.03 | 18 | 13 | 9 | 25 | 26 | 17 | 32 |

*Note*. Likert Scale: 1=rarely; 4=a mix; 7=very often

**Qualitative Data Findings**

The purpose of the qualitative portion of this research was to better understand the quantitative data by talking to teachers who are highly involved in OL. This provided evidence to support the explanatory sequential MMR approach (Almalki, 2016; Creswell & Plano Clark, 2018; Poth, 2018). Using this specific MMR design, I employed semi-structured interviews to provide increased clarity and an in-depth understanding of the descriptive statistics gathered using the questionnaire. The participants were six elementary teachers who earlier answered the questionnaire and volunteered to engage further in an interview. The six teachers were interviewed using a researcher-designed, semi-structured, open-ended interview instrument. Questions were developed based on the results of the quantitative data in specific areas where further information was needed to bring clarity. Six interviews were determined to be a

manageable number and adequately explained, in more depth, the experiences of teachers involved in OL experiences (Creswell & Creswell, 2018; Creswell & Plano Clark, 2018; Landy, 2018). In the following section, I will provide information on the participants, interview protocol, questions, and interview results.

### *Interview Participants*

The final question on the research questionnaire asked if teachers would be willing to participate further in an in-person interview. Of the 140 respondents, 36 indicated that they would participate in an interview and provided their name and email address to be contacted. The six interview participants were selected based on their high level of involvement with OL experiences in their classrooms (refer to Table 7 for detailed information on the interview participants). Four teachers were from different schools, and two worked at the same school in different curricular content areas. Three taught in small towns, one in a large city, one in a rural community, and one in a very rural location. Each had access to various OL spaces and indicated that they taught outdoors. Four participants were female and two were male, with a range of teaching experience between six to 22 years (Mean = 9.16). Additionally, the participants' ages were relatively evenly spread out.

**Table 7**

*Qualitative Respondent Descriptive Statistics*

| | N | Range | Min. | Max. | Mean |
|---|---|---|---|---|---|
| Age range of participants [a] | 6 | 4 | 1 | 5 | 2.83 |
| Years of teaching | 6 | 18 | 6 | 22 | 9.16 |
| School setting [b] | 6 | 6 | 1 | 7 | 3.00 |

[a] Age range: 1=20-29 yrs.; 2=30-39 yrs.; 3=40-49 yrs.; 4=50-59 yrs.; 5=60-69 yrs.; 6=70-79yrs.
[b] 1-7 range codes: 1= extremely rural setting; 4= outskirts of town; 7= extremely urban setting

I used pseudonyms for my research participants to protect their identities. The six pseudonyms are Leo, Carl, Mila, Zoey, Sophia, and Amelia. Additionally, I did not refer to the participants' school or school district in any way.

***Interview Protocols***

An interview protocol guided the one-on-one interviews with the six volunteer teachers. Each interview was audio recorded with only the researcher and interviewing-teacher present. Interviews were conducted at the teacher's school at a previously agreed upon date and time. An option for an online Zoom conferencing interview was provided if the participant was uncomfortable meeting in person due to health concerns; however, all six teachers requested to have in-person interviews. Before beginning the interview, I reviewed the Information and Consent Form (see Appendix D) that was emailed to the interviewing teacher prior to arrival. Teachers were asked if they had any questions about the form, including research benefits, risks, confidentiality and anonymity, data storage procedures, voluntary participation, information about the study results, or any other area of clarity needed. Each participant and I signed and dated a paper copy of the consent form, and a copy was made available to the participant. According to the approved ethics protocols, interviews were audio recorded and stored on the

researcher's personal recording device. To begin each interview, I said, "I am going to ask you several questions related to the questionnaire that you already filled out. I want you to explain and provide further depth to some of the survey questions." Each interview ranged between 35-70 minutes to complete.

Handwritten notes were taken during the interview with specific notes to help during the transcription process, to develop any related probing sub-questions, and to increase reliability in the data. Notes included observations of the learning area, the emotions of the interviewee, and any factors contributing to the data collection. I used the method of triangulation to maintain the dependability of the data. This was done to establish research reliability.

***Interview Questions***

Based on the results of the quantitative data, I developed interview questions around areas in the data that I determined needed more detail and understanding. Attention was placed on the seven statistically significant composite variables related to OL (see Table 4, p. 39). Much of the data pointed towards and supported these seven significant themes. The seven focus areas are resources and features that make OL easy, teachers' comfort with OL, student behaviours, perceived benefits of OL, childhood experiences, teaching experiences, and administrative support. Questions were developed to provide additional insights and personal teacher experiences related to these seven focus areas. A list of the interview questions can be found in Appendix F: Semi-Structured Interview Questions.

The following section details the qualitative results of the six interviews for this study. After the third complete read-through of all the interview transcripts, with personal notes taken on common trends and allowing the data to dictate the codes needed to sort the data, I discovered

nine top-level codes, 24 second-level codes, and 20 third-level codes to describe the data (see Table 8).

**Table 8**

*Qualitative Data Codes/Sub-codes References*

| Qualitative Data Codes | N [a] | References [b] |
|---|---|---|
| Code 1: | | |
| Resources for OL | 6 | 61 |
| Equipment used for teaching OL | | |
| Appropriate outdoor clothing | 2 | 5 |
| Clipboards | 2 | 3 |
| Cross country skis | 2 | 2 |
| Natural resources for OL | 3 | 6 |
| Picnic tables | 5 | 7 |
| Simple science equipment | 3 | 13 |
| Snowshoes | 4 | 4 |
| Small whiteboards | 2 | 2 |
| Locations/facilities for OL | | |
| Courtyard | 1 | 1 |
| Farm | 1 | 1 |
| Grassy field | 5 | 8 |
| Fire pit | 2 | 3 |
| Forest | 3 | 5 |
| Garden | 5 | 9 |
| Hill | 2 | 2 |
| Off-site outdoor location | 4 | 6 |
| Outdoor classroom | 4 | 5 |
| Playground | 4 | 5 |
| Walking trail/sidewalk | 4 | 7 |
| Water (pond/lake/swamp/river) | 3 | 5 |
| Code 2: | | |
| Benefits of OL | 6 | 25 |
| Attendance in school | 2 | 2 |
| Community benefits | 2 | 2 |
| Learning benefits | 4 | 16 |
| Mental/emotional health benefits | 6 | 15 |
| Physical health benefits | 5 | 10 |

| Qualitative Data Codes | N [a] | References [b] |
|---|---|---|
| Code 3: | | |
| Behaviour of students when outside | 6 | 20 |
| Behaviours showing a love of being outdoors | 3 | 4 |
| Challenging/disruptive behaviours when outside | 4 | 9 |
| Positive behaviours when outside | 6 | 17 |
| Code 4: | | |
| Feeling comfortable when teaching outdoors | 6 | 120 |
| Positive teaching experiences | 6 | 59 |
| Teaching activities done by teachers that were positive | 6 | 56 |
| Code 5: | | |
| Teachers' childhood outdoor experiences | 6 | 16 |
| Attended summer camp | 2 | 2 |
| Camping experiences | 6 | 7 |
| Fishing experiences | 2 | 3 |
| Grew up in the country | 3 | 5 |
| Played outdoors | 5 | 8 |
| Code 6: | | |
| School administrators' support for OL | 6 | 23 |
| Support from school administrators | 6 | 18 |
| Supports for OL (other than administration) | 5 | 10 |
| Code 7: | | |
| Successful outdoor teaching experiences | 6 | 28 |
| Code 8: | | |
| Challenges with OL | 5 | 44 |
| Classroom management issues | 4 | 13 |
| Cost of travel for OL field trips | 2 | 2 |
| Lack of teaching equipment | 3 | 5 |
| Lack of technology | 1 | 1 |
| Risk/dangers | 5 | 12 |
| Weather issues | 5 | 12 |
| Code 9: | | |
| Indigenous teaching/learning outdoors | 5 | 10 |

[a] N = the number of transcripts, out of six, that mentions each individual code.
[b] Reference numbers represent the frequency with which the transcripts reflect each individual code.

Based on my research method of explanatory sequential MMR design, my questions were developed from, and therefore directly related to, seven specific areas from the analysis of the quantitative portion of this study. However, in analyzing the transcripts, I allowed the data to determine the codes I would use to organize participants' ideas. These codes determined the themes of the qualitative data.

While discovering codes and sub-codes, narrowing and combining related codes, and reading the transcripts, I developed a clear description of the codes. This description guided any need and identification of further codes and sub-codes. Each code description is listed below, followed by the results of this portion of the research study. One exception to the list is that I removed the "challenges with OL" code. Instead, I included challenges in each of the individual sections to which it pertains. Challenges were identified based on the teacher's reference to difficult issues they encountered when teaching outdoors.

***Code 1: Resources for OL***

Resources for OL relate to any type of OL resource the interviewee mentions. This included, but was not limited to, playground structures, pavement, streams, rivers, ponds, lakes, gardens, greenhouses, outdoor classrooms, fenced areas, grassy fields, forested areas, grow boxes, walking trails, nature-based play structures, picnic tables, parks, magnifying glasses, books. Statements were coded based on referencing a physical item that could be used to teach outside. Codes were divided into two sub-themes: equipment for teaching outside and location/facilities for teaching outside. Sub-codes were further divided into 20 more codes based on the data generated during the interviews.

All six interview participants had very accessible OL spaces that they used to teach their students. Along with using school property, Leo, Mila, Sophia, Zoey, and Carl talked about

learning areas adjacent to their school's property that they used regularly. Zoey's school was very rural, and she stated,

> [We have] lots of wildlife too. One year we had a porcupine here that came out in the spring time… so we kind of kept an eye on it and we did a research project on porcupines. And then we looked in the trees… and we found quails and we did a project on that. And they [the students] love that because they can see it.

When engaging students in OL, five of the six interview participants had access to picnic tables for students' learning experiences. Amelia stated, "We have an outdoor classroom in the front that has picnic tables and shade. That's for when students are working on something and have their binders out, and whatever."

Having access, however, did not always provide a conducive OL environment. Mila commented, "There is a table on the far side, but I don't let the kids go over there because it is too close to a busy road." At Sophia's school, there were other challenges with the school-provided outdoor tables. She indicated her OL needs by stating,

> I think [we need] better tables to write on. Like, I took my kids out the other day and we were going to record ideas in our journals for comparing living things. And we were out there on the picnic tables and their fine motor [skills] are weak to begin with. Well then, they are writing on these planks and they have holes on them and it's, like, bumpy.

Leo and Carl agreed that having adequate and useable tables would create an OL place where students could meet. They suggested there was a need for a meeting place or destination where OL always begins or ends. Leo described an ideal OL area by stating, "… they had the logs around and the rocks. It was all set up so we could all be sitting in a circle, and it was like, oh ya, perfect." Amelia described, if money was available, what she would like to have for her

OL area:

> It's almost like we need more spaces that can also have a workspace, but spread out. A little bit more. And I would like to see more places where kids can just chill outside. Not just on the grass, but there might be benches somewhere or, like, just somewhere else for them to be whether it be at lunch or when we go outside to read and they don't have to sit on the ground.

All the teachers interviewed used whatever outdoor space they had available at their school location, as well as other areas adjacent to their school property. Mila described the park adjacent to her school's property by stating, "There is a, like a, pergola with a cement pad. And then, like a bench, and then, that's kind of like our meeting space where they all come back to."

***Code 2: Benefits of OL***

The benefits of OL focuses on any benefit from teaching outdoors that the interviewee referenced. This included, but was not limited to, physical benefits, mental benefits, emotional benefits. Five sub-codes were included based on the interview transcripts.

Four participants described, as a benefit, the joy their students encountered when OL strategies were implemented with their class. The love of learning was discussed as a benefit or effect of OL experiences. Sophia expressed, "I say we're going outside; there's cheering, there's excitement." She further explained, "They [the students] are naturally curious and enjoy exploring." She continued, "… so seeing ants outside, or a bee - that's exciting. Just by observing that one thing blows their mind because they are literally making meaning of the world around them." Carl discussed his students' joy when constructing an OL space on the city's land adjacent to the school property. After building the learning area, Carl stated that "students had a sense of accomplishment and felt good inside because they contributed to their

community in a meaningful and real way."

Emotional benefits connected to OL were discussed by four of the research participants. Mila discussed a challenge she faced, that several of her students have experienced first-hand trauma. She shared that she initially didn't know how to help them. Related to this trauma was poor school attendance. She decided to experiment with teaching them outside with the idea that nature would help with their trauma and improve their attendance. She stated,

> The big thing for me is that it is not only good for social-emotional learning, mental health, from that standpoint. It was, what can I do that is going to be different enough that the kids will want to come to school every day. I'd want to be here every day. Attendance has improved vastly this year as compared to other years.

Mila takes her students to the outdoor classroom for two regularly scheduled times each week and when other opportunities arise. Her students affectionately call their time outside Nature School. She stated, "… this is something I can do. It's good mentally. It's grounding. It's spiritual. And I have noticed it helps the kids. They are calmer. They look forward to it."

Along with teachers reporting on the emotional benefits their students encountered with OL, four teachers used the words "mental health" benefits. Mila stated,

> There is so many benefits to mental health with nature. The mental health piece taking and spending time outside. Some kids don't. They go home, they go to their basements, and whatever. Having that time outside to smell the smells, hear the sounds, and be like, still. Still when they are reading. And for kids to just feel good when they go outside, and to have that positive connection.

Carl shared that kids need time outside, in the green grass and open sky, to level off and balance their mental health. He stated, "More and more, kids are detaching themselves from the

benefits of simply being outside. We have an increase in mental health issues today, and taking kids outside is being overlooked." Leo shared a similar viewpoint: "Those are things that are all outside the curriculum - where you learn to be all right with quiet, you learn to be all right with yourself."

Missing from the data were direct mentions of the academic benefits of OL for students. None of the interview participants clearly stated the benefit of teaching and learning required curriculum from any content area. In an indirectly related comment, Leo discussed unexpected learning opportunities arising from outside teaching. He stated,

> … but then the learning opportunities that come from it, right, is that all of a sudden you're out there and there's something like a bird comes through. If you just happen to be talking about flight… It's those teachable moments where you can suddenly say, 'hey, look'… right?"

I expected that teachers would talk more about the academic benefits of OL. This is an area that could be explored further in future research projects.

***Code 3: Behaviour of Students When Outside***

This code focuses on any comment from participating teachers regarding students' behaviour, and refers to any behaviour, both positive and negative. Three sub-codes were included to better differentiate positive behaviours, negative behaviours, and attitudes.

Teachers were not asked direct questions about students' behaviours when teaching outdoors. Instead, it became a theme based on responses throughout the interview. Five teachers discussed the need to teach behaviours and expectations for OL experiences. Furthermore, four of them referred to the need to develop class routines for all their OL experiences, similar to how they teach indoor classroom routines in September. Amelia stated,

> In the fall, I'm trying to set up so many other norms and routines in this space indoors… when I start in the spring, coming out[side], we have not established norms to be outside. So that can also be a struggle. So I think that's part of what I need to figure out. How do I make both this [indoor] space a learning space and outside a learning space.

Leo spoke at length about teaching behaviours for OL experiences. He stated, "And you have to do some activities that are very geared towards [creating] that structure." He expressed that if he had a clearly defined OL classroom, with defined boundaries, he would have fewer behaviour issues when teaching. Leo further stated, "… they treat, oftentimes, the outdoors like recess… I think that's where, like the logs or the outdoor classroom, creates the boundary naturally." Setting up rules and student procedures in advance was important for the five teachers who discussed student behaviours. Zoey stated, "We would never go in the water; we would have to be careful and set up rules before we go." Carl shared a similar thought: "Students are taught how to be outside. It doesn't happen by accident; it's taught." Leo, Amelia, and Carl expressed a challenge they sometimes encounter with students who need a structured learning environment. Leo explained that learning outside doesn't always provide the needed structure. He stated, "so you go into an unstructured environment with kids that need structure. It's a hard one because they get distracted. And that's a drawback sometimes." He realizes the limitations that some students face with differentiating learning environments.

Two teachers noted that they had fewer behavioural challenges when taking their class outside to learn. Mila stated, "I have less behaviour issues outside with them than I would indoors." Not all teachers shared this thought. Amelia talked about her challenges and stated, "The other day, we went out right here… and there is a little gopher family, and some kids want to just watch that." Additionally, she stated, "Sometimes we go outside, and it does not look

windy, but when we get there it is, and their paper and stuff is blown around… and some kids are allergic to grass, or the ants, or there's a bee, or it's cold, or it's too hot." Teaching outside has the potential to introduce new and unique behaviour management challenges to teachers that can result in them choosing to remain indoors to teach.

***Code 4: Feeling Comfortable When Teaching Outdoors***

This code references teachers' feelings of comfort or ease regarding outdoor teaching. In this study, the teachers' comfort level was related to the frequency and variety of their outdoor teaching experiences. All six teachers talked at length about their recent outdoor teaching experiences. This code includes two sub-codes: positive feelings from teaching experiences and positive teaching lessons/activities.

Leo discussed how he often brought his students outside to read, write, garden, cross-country ski, snowshoe, hike, and to learn art, science lessons, indigenous related studies, and physical education. He stated, "So we sat on the hill, and they are all in front, and I can just read a story to them… they can bring out their writing journals and just write." He continued, stating, "We came out to do some writing and some artwork, and again, we just used the whiteboards as a hard surface." Additionally, he stated, "… we all sit on a big buffalo skin, all around a big buffalo skin. In a circle… and they did FNMI games." In his OL activities, Leo builds fires with his kids as part of his science curriculum.

Zoey rated her school as very rural. It is situated in a farming community, surrounded by farmland and nature. When we talked about taking kids outdoors to learn social studies, Zoey stated, "I think it's great for social studies that has the landforms. So when we're talking about the different landforms, the different provinces… you can take them out and show them." She also takes her students outside to learn lifecycles, gardening, social studies, art, flight, natural

medicines from plants, birding, physical education, indigenous learning, and science. She stated, "they all go out and go in the garden and weed the garden… pick potatoes, sort potatoes, wash potatoes."

Mila and Sophia focus on taking their students outside to learn curriculum related to social studies and science. Sophia stated, "We do field trips to the post office and to the store. And we walk there… we did it in the wintertime; to send off our Santa letters." Mila stated, "We've seen people [city workers] out there planning flowers, and we've tied that in…" Sophia spoke about her science curriculum by stating, "… part of our curriculum is outdoor based. So, it's a lot of comparing living things to each other. So, we'll go outside and do that."

Amelia and Carl discussed how language arts and social studies were incorporated together into outdoor activities. Amelia stated, "… we did a social studies and language arts cross-curricular book novel study about residential schools, and we did a debriefing and briefing sharing circle with our liaison. And we did this outside." Carl also spoke of incorporating social studies into his outdoor education program. He ensured students understood the connections between their outdoor activities, like canoeing, and related social studies content.

Like all the interviewees, Leo indicated he was very comfortable teaching outdoors. He did not claim he knew everything about outdoor teaching, but he was willing to learn while taking his kids outside. He stated, "And so I had to educate myself on the environment and everything… But that became, that was interesting to me. I wanted to learn more. I couldn't learn unless I got out there…"

***Code 5: Teachers' Childhood Outdoor Experiences***

This code references any mention of the teachers' childhood experiences. The inclusion of this code infers that both positive outdoor experiences and a higher frequency of childhood

outdoor experiences could indicate the teachers' desire to teach using outdoor teaching spaces. The higher frequency of teachers' positive childhood experiences could indicate a higher use of outdoor spaces to teach. This code includes five sub-codes to classify teachers' childhood experiences.

All six teacher participants indicated a high level of involvement in childhood outdoor experiences. All encountered very positive outdoor childhood experiences. Five participants believe a strong correlation exists between their positive childhood experiences and their current involvement in taking students outdoors to learn. Mila indicated that her parents were not outdoorsy, but her neighbour always took her camping. Mila stated,

> They introduced me to camping; they took me camping all the time. We played outside lots as kids… there was a little reservoir that we would go and catch fish… and we would construct boats and send them down. We were outside all the time. We were told 'don't come home until dark.'

***Code 6: School Administration Support for OL***

This code references any mention of school administrators and other entities that support OL in the school where the interviewee is employed. The two sub-codes differentiate these two areas of support.

Responses varied when the interviewee was asked if they requested financial support from their school administrators. Mila, Zoey, and Carl responded that their administration strongly supports their OL. Mila stated, "So I emailed the [school principal]; is this [outdoor classroom] a possibility? Can I do this? Would you support this? And she said yes, 100%." Zoey reported that her school administrator supported OL by stating, "Money or support is not a challenge." Carl received similar support when he asked if the school administration would

support a new school initiative focused on outdoor education.

Leo, Sophia, and Amelia all indicated administrative support, but not in terms as strong as the others. Leo stated, “It depends on the vision of the administrator.” He clarified that he does have support but maintained that it could sometimes be conditional. Sophia mildly stated, “Yes, I would say we have support.” And Amelia stated, “I don’t think they said either way,” but she indicated specific supports that she received from her school administration for OL.

***Code 7: Successful Outdoor Teaching Experiences***

The seventh distinctive code refers to successful outdoor teaching experiences mentioned by the interviewees. Determining success was subjective and was based on the interviewee’s viewpoint of what they determined OL success was to them.

Five interview participants used the words “engagement” or “active” to describe successful OL. Leo stated,

> Probably the best way when you talk about it is what it will look like and sound like. Yeah, at least even what it feels like, right? Because the biggest thing is that engagement, right?… Yeah, complete engagement with it. I don’t have kids that are just kind of moping around.

Teachers described that a successful OL experience occurred when students were active in that experience. This includes their ability to verbalize what they were doing and learning. Sophia stated, “I think it’s like a combination of hearing the kids actually verbalizing what they are learning. So, you can hear their interactions between them, and they’re saying, ‘Oh, look at this!’ It’s the observations they’re making.”

Another area of successful OL that teachers identified was the positive emotional state of their students. Teachers viewed OL experiences as successful when students demonstrated

positive emotions. Zoey simply stated, “Success is when the kids are happy.” Sophia stated, “For me, part of it is the excitement. They are excited to learn. They’re inquisitive. They are curious, and they want to keep learning about it.” Sophia later added, “If I say… like the other day… ‘We’re going to work on our letters outside.’ They were excited because they got to sit outside.”

I was surprised that teachers did not identify OL success in terms of measurable curriculum outcomes. According to the teachers, success in OL had more to do with the experience and emotional state of the students than with what they actually learned.

Participants indicated that a challenge related to successful OL was a lack of money to engage students outside. A common theme, with similar responses from four teachers, was a lack of appropriate outdoor clothing. Two teachers reported a lack of funds from the school to provide appropriate weather-related clothing for students, and two other teachers reported a lack of funds from parents to provide suitable outdoor clothing. Leo stated that families “don’t necessarily have the money to be sending their kids with actually proper outdoor wear and gear, and things like that.” Mila stated, “In my school, the biggest concern about going outside is lack of appropriate clothing and outdoor equipment.”

***Code 8: Indigenous Teaching and Learning Outdoors***

This code represents any mention of First Nations, Métis, and Inuit (FNMI) learning or Indigenous connections to learning. Five of the teachers interviewed mentioned Indigenous learning during the interview. All the comments referenced the idea that outdoor spaces are advantageous for incorporating Indigenous knowledge and traditions. One teacher showed me a display in her classroom that taught about the seven sacred teachings and how they were incorporated in students’ learning both within the classroom and outside.

Mila and Sophia discussed the challenges of knowing what to teach regarding Indigenous

knowledge. Nevertheless, both expressed a strong connection between OL and FNMI teachings. In developing her outdoor classroom, Mila stated, "My endgame goal for this is to really integrate it with Indigenous knowledge and Indigenous teaching." Amelia discussed how she incorporated FNMI into Language Arts and stated,

> Last year, when I taught language arts, we did a social studies and language arts cross curricular book novel study about residential schools. And we did a debriefing and briefing sharing circle with our liaison. And we did this outside.

Leo, Amelia, and Carl discussed the involvement of a district FNMI coordinator to assist their OL experiences. This included activities at school and field trips away from school. Amelia discussed an experience with elders who brought a teepee to the school so the kids could explore it and listen to stories inside of it. Leo shared his experience with one of the outdoor field trips and said,

> They're going out to Dry Island Buffalo Jump, and they actually have some FNMI coordinators going out there. And there will be, I think, three stations… they have one station where they talk about the buffalo jump itself, but we all sit on a big buffalo skin – all around a big buffalo skin. In a circle.

Carl discussed his desire to do more with FNMI teachings when teaching outside. He plans on inviting an Indigenous elder to teach students the names of plants and animals connected to the park he takes his students to. In his quest to bring more FNMI knowledge to his teaching, he found the book *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge and the Teachings of Plants* (Kimmerer, 2015) to be transformational in connecting students to the land. He spoke at length about helping students view the land from various perspectives, including viewpoints from both FNMI peoples and European settlers.

# Chapter 6: Analysis and Discussion

*"I like to position my definition [of MMR] as a cohesive approach to ethical and rigorous research where qualitative and quantitative data are collected, analysed, and integrated to generate novel inferences that draw on these collective data contributions to address the purpose of the mixed methods study." (Poth, 2018, p. 35)*

## Mixed Methods Data Integration and Analysis

The first part of this chapter integrated and analyzed the quantitative and qualitative data collected during this study. Next, I used the combined data to evaluate my research questions. Finally, I discussed the limitations I encountered during this research.

A critical element of an MMR design is the integration of data (Creswell & Creswell, 2018). In this study, I made connections between the quantitative and qualitative data to explore the results collectively. I used a side-by-side joint display table to present the two data types. It is important to note that there was convergence between the two data sources. This research design, in which the qualitative data was intended to better explain the quantitative data, naturally converges as the data sources have similar content agendas (Creswell & Creswell, 2018). This is common when an explanatory sequential MMR approach research is used.

For this data analysis, I integrated the data points with positive single-tailed Pearson Correlations with p-values < .05 and considered significant with related qualitative data. However, I excluded teaching experience ($p = .035$) from this data integration process. While this correlation renders a numerically significant value, it maintains the lowest statistical significance, and the two independent variables making up this category provide little insight into this study. It does, however, warrant further exploration in future research.

Using a side-by-side joint display, I compared the top six statistically significant

correlations related to successful OL with related teachers' interview responses. Tables 9-14 show the integrated data along with an analysis of the integration, followed by connections to previous research and relevant literature. These specific data strands were crucial to my three research questions:

1. What are the experiences of K-9 teachers with OL in Alberta?
2. What do teachers identify as key factors for successful OL?
3. How can teachers ensure the quality of OL experiences in K-9 classrooms?

**Table 9**

*Data Integration 1: Resources and Features that Make OL Easy*

| Quantitative Results | Qualitative Results | Analysis |
|---|---|---|
| Pearson correlation p = .001*<br><br>% of survey respondents have access to:<br>90.7% - grassy fields<br>67.1% - picnic tables<br>26.4% - garden<br>22.9% - forest area<br>22.1% - outdoor classroom<br>16.4% - walking trails<br>16.4% - grow boxes<br>10.0% - pond<br>3.60% - stream<br>2.90% - greenhouse<br>2.10% - nature playground<br>2.10% - river<br>1.40% - lake<br><br>72.9% of teachers were within 1 km of a natural area/park.<br><br>61.9% of teachers rate their access to suitable OL areas as sometimes to often challenging.<br><br>67.6% of teachers rate their access to suitable teaching facilities (tables, seating, teaching facilities, etc.) as sometimes to often challenging. | All six interviewees reported they had adequate access to OL spaces. These included OL areas on school grounds and also nearby OL areas.<br><br>Mila described the park adjacent to her school's property by stating, "There is a, like a, pergola with a cement pad. And then, like a bench, and then, that's kind of like our meeting space where they all come back to."<br><br>Mila also stated, "It's grassy, there are some trees towards the back. And then there's like a walking path down the middle that connects the sidewalk. And then there's a little rock garden …"<br><br>Sophia talked about OL areas adjacent to the school grounds by stating, "… down by Main Street. So, they have a pond there, and a forested area, and then another park."<br><br>Leo discussed his OL areas by stating, "We have picnic tables… we also have the shaded area over there…"<br><br>Mila had lots of inexpensive items she used for OL. She stated, "I also had this bucket full of stuff… spoons, and old yogurt containers…" | According to the Pearson Correlation of the dependent variable and composite variables, having adequate access to resources, equipment, and OL features were key factors for successful OL. Both data sets indicate that teachers feel they could be more successful with increased access to suitable OL areas and teaching facilities. The qualitative data reports higher access to resources, equipment, and OL features than the questionnaire data. This was because the interviewees were chosen based on a high level of OL engagement and, therefore, will likely have increased access to OL resources. There was a clear correlation between highly involved teachers and their increased access to OL areas and facilities for teaching. Teachers with access to resources, equipment, and OL features were likelier to have a higher frequency of OL experiences with their students. It is also important to note that OL equipment could include inexpensive items like spoons and yogurt containers (interview with Mila). |

* 1-tailed Pearson Correlation

The resources needed for OL vary among teachers. In a study by Tuuling et al. (2019), a list of OL equipment was reported:

> Teachers pointed out the equipment typically used for exploring and measuring, such as strings and tapelines; some of them also mentioned thermometers, binoculars and compasses. The respondents often emphasized the use of various working tools, such as rakes, shovels, watering cans, cups, and buckets. They also described the art tools they used, mainly drawing boards, crayons, pencils and paper, while a few mentioned gouache paints. In association with reading and writing, they often listed pencils and paper and sometimes books and pictures. (p. 6)

The interviewees in my study shared a similar view as Tuuling (2019) in that the resources they needed to teach outside were relatively inexpensive and easy to access. Mila reported that her students looked for "rocks or whatever they find… they were into the big pine needles for a while, or spruce needles." Other interviewees discussed books, paper, pens, and the need for clipboards, which are all common school supplies.

The area around the school also was an essential resource for teachers (Dyment, 2005; Fägerstam, 2012). In fact, Dewey (1938) believed that the school's local community provided important resources for the student's learning experiences. Dewey stated,

> The school environment of desks, blackboards, a small school yard, was supposed to suffice. There was no demand that the teacher should become intimately acquainted with the conditions of the local community, physical, historical, economic, occupational, etc., in order to utilize them as educational resources. A system of education based upon the necessary connection of education with experience must, on the contrary, if faithful to its principle, take these things constantly into account (p. 40).

By providing experiences for students in their local community, we engage in Dewey's Theory of Experience (Krutka et al., 2017), in which students connect previous interactions with their community to their current educative experiences facilitated by their teacher. According to Dewey, this leads to growth and learning and affects students' future experiences.

The school grounds, and even the natural spaces close to the school, are key OL resources that are sometimes underutilized. "Yet, given the reported additional benefits to using a school ground as an outdoor classroom, it seems a profound loss to have them remain underused" (Dyment, 2005, p.42). OL experiences can engage students in the school's local environment.

**Table 10**

*Data Integration 2: Comfort with OL*

| Quantitative Results | Qualitative Results | Analysis |
|---|---|---|
| Pearson correlation p = .001*<br><br>% of survey respondents reported teaching curriculum outdoors:<br>79.3% - physical education<br>70.0% - science<br>62.8% - art<br>57.1% - language arts<br>37.8% - social studies<br>35.7% - health/life skills<br>29.3% - math<br>18.5% - EE and OE<br>9.3% - music<br>8.5% - career & technology<br>6.4% - drama<br>5.0% - locally developed course<br><br>67.1% of teachers reported they were somewhat comfortable to comfortable with teaching outside; 19.3% were uncomfortable to comfortable with teaching outside; and 13.6% were somewhat uncomfortable to uncomfortable with teaching outside.<br><br>53.2% of teachers reported they were rarely to somewhat rarely challenged with the lack of OL training; 15.1% were sometimes challenged; and 31.7% were somewhat often to often challenged. | Sophia uses outdoor spaces often and stated, "… part of our curriculum is outdoor-based. So it's a lot of comparing living things to each other. So we'll go outside and do that."<br><br>Amelia reported how teaching outside was needed. She stated, "… we did a social studies and language arts cross-curricular book novel study about residential schools and we did a debriefing and briefing sharing circle with our liaison. And we did this outside."<br><br>Zoey shared her comfort level with OL by explaining how she took her students outside to learn lifecycles, gardening, social studies, art, flight, natural medicines from plants, birding, physical education, Indigenous learning, and science.<br><br>All six interviewees talked at length about their positive OL experiences and their comfort with OL. Leo shared how comfortable he was with teaching outside, even if he didn't know everything. He shared his comfort with OL and his challenges by stating, "and so I had to educate myself on the environment… that was interesting to me. I wanted to learn more. I couldn't learn unless I got out there." | According to the Pearson Correlation of the dependent variable and composite variables, teachers feeling comfortable with teaching outside was a key factor for successful OL. Almost 70% of teachers reported some level of comfort with teaching outside (questionnaire), and interviewees reported a high level of comfort. There was a connection between the frequency of OL experiences and increased comfort level with OL. This was easily identified with the interviewee group as they discussed the many OL experiences they engaged in with their students. Also worth noting was that teachers' OL comfort level increased when they engaged their students outside, even when teachers didn't know everything (interview with Leo). This suggests a correlation between OL comfort levels and teacher confidence levels. What is clear is that there is a correlation between OL comfort level and the frequency of OL experiences. The higher frequency of OL experiences reflects a higher teacher comfort level with OL. |

* 1-tailed Pearson Correlation

In a research study by Marcum-Dietrich et al. (2011) titled "No Teacher Left Inside: Preparing a New Generation of Teachers," the authors discussed a challenge facing OL by saying, "Unfortunately, a new generation of teachers is growing up indoors lacking a basic understanding of the natural world either from personal experience or formal education" (p. 2). The authors continued by suggesting that this lack of experience contributes to teachers' discomfort with OL and reduces their desire to use outdoor spaces for teaching. With a pragmatic approach to learning, Kolb (2015) emphasized the need for concrete experiences to broaden students' knowledge. Kolb's experiential approach to learning encourages teachers to engage students beyond exclusively using indoor learning spaces for teaching to promote reflective learning among students (Kolb, 2015). These actual life experiences (Dewey, 1938) can occur in nature, thus promoting engagement with the real world. Teachers' reduced experiences with nature, as noted by Marcum-Dietrich et al. (2011), challenge Kolb and Dewey's pragmatic approach.

According to Benfield (2016), if an OL experience is carefully planned, with curricular connections included, the experience has value. Dillon et al. (2005) further states, "It is important to acknowledge that integrating outdoor learning opportunities with classroom-based curriculum can involve connections of curricular, cross-curricular and extra-curricular nature" (p.35). Along with this, my data suggests that teachers' OL comfort level can increase when they engage students in OL experiences, even if they are not highly experienced with OL (interview with Leo). If teachers with little OL experience engage their students with OL and include curricular connections, teachers' OL comfort levels will potentially increase.

**Table 11**

*Data Integration 3: Student Behaviours When Outside*

| Quantitative Results | Qualitative Results | Analysis |
|---|---|---|
| Pearson correlation p = .001*<br><br>72.7% of teachers reported they were somewhat comfortable to comfortable with student behaviour management when teaching outside; 9.3% were a mix of comfortable and uncomfortable; and 18% were somewhat uncomfortable to uncomfortable.<br><br>73% of teachers reported their students somewhat often wanted to learn outside; 13.1% sometime wanted to learn outside; and 13.9% somewhat rarely to rarely wanted to learn outside. | Five teachers talked about the need to teach behaviours, expectations, and class procedures for outside learning.<br><br>Carl stated, "Students are taught how to be outside. It doesn't happen by accident, it's taught."<br><br>Amelia worked to make outdoor spaces learning spaces where students know how to behave. She stated, "So I think that's part of what I need to figure out. How do I make both this [indoor] space a learning space and outside a learning space?"<br><br>Setting up rules and student procedures for OL in advance was important to the five teachers who discussed student behaviours.<br><br>Leo shared, "And you have to do some activities that are very geared towards [creating] that structure." He felt that if he had a defined outdoor classroom area with nature-based boundaries, students would maintain a learning attitude when outside. | According to the Pearson Correlation of the dependent and composite variables, feeling comfortable with students' behaviour management when teaching outside was a critical factor for successful OL. Between the two data sets, it was clear that increased frequency of OL experiences correlates with higher comfort levels with behaviour management. Teachers reported that, similar to indoor classroom teaching experiences, students need to be taught behaviour expectations and acceptable procedures for behaving when outdoors. Of the 139 responses to this question about comfort levels with student behaviours when outdoors, only two teachers were completely uncomfortable with behaviour management when teaching outside. Therefore, the keys to teachers' comfort with outdoor behaviour management are the frequency of OL experiences and teaching students behavioural procedures when outdoors. |

* 1-tailed Pearson Correlation

As students move from established indoor classroom procedures to an outdoor environment, behaviour management and expectations can change. Students have much more room to move and learning experiences outside often encouraged movement. Dewey (1938) encouraged healthy learning experiences and recognized that "Freedom of movement is also

important as a means of maintaining normal physical and mental health" (p. 63). Dewey further stated,

> "The limitation that was put upon outward action by the fixed arrangements of the typical traditional schoolroom, with its fixed rows of desks and its military regimen of pupils who were permitted to move only at certain fixed signals, put a great restriction upon intellectual and moral freedom. Straight jacket and chain-gang procedures had to be done away with if there was to be a chance for growth of individuals in the intellectual springs of freedom…" (p. 61)

As the current research identified student behaviour management as a key aspect of teachers' success when outdoors, we recognize the dynamic nature of OL and the need for teachers to maintain order when outside. Knowing that John Dewey (1938) and David Kolb (2015) supported active learning experiences as an integral part of the learning process, it becomes apparent that students' outside behaviour is an area to consider. In a recent Ph.D. thesis, Michael Norwood (2022) stated, "Teachers found that it was essential to prepare students for learning in the outdoors through reiterating expectations from indoor classrooms" (p. 110). This supports the interviewees' comments from this research to the effect that appropriate outside behaviour can be learned by students, similar to that in indoor learning spaces.

**Table 12**

*Data Integration 4: Perceived Benefits of OL*

| Quantitative Results | Qualitative Results | Analysis |
|---|---|---|
| Pearson correlation p = .001*<br><br>98.6% of teachers reported students received mental health benefits (slightly to very beneficial) as a result of OL.<br><br>96.4% of teachers reported students received physical health benefits (slightly to very beneficial) as a result of OL.<br><br>89.9% of teachers reported students received social benefits (slightly to very beneficial) as a result of OL.<br><br>71.7% of teachers reported students benefited in the area of understanding curriculum content (slightly to very beneficial) as a result of OL.<br><br>69.8% of teachers reported students benefited in the area of academic achievement (slightly to very beneficial) as a result of OL.<br><br>75.5% of teachers reported students benefited in the area of problem-solving skills (slightly to very beneficial) as a result of OL. | Teachers reported that OL experiences helped the students enjoy learning. Sophie stated, "I say we're going outside, there's cheering, there's excitement… They are naturally curious and enjoy exploring."<br><br>Mila stated, "… it is not only good for social-emotional learning, mental health… Attendance has improved vastly as compared to other years."<br><br>Mila stated, "It's good mentally. It's grounding. It's spiritual… they are calmer."<br><br>Carl stated, "We have an increase in mental health issues today and taking kids outside is being overlooked… where you learn to be right with yourself."<br><br>Missing from the qualitative data were direct mentions of the academic benefits to the students. Related to this, however, was Leo's discussion of unexpected learning opportunities that arise from OL experiences. | According to the Pearson Correlation of the dependent variable and composite variables, a key factor for successful OL was the belief that OL is beneficial to students. According to the survey and the interviews, mental health was believed to be the most significant benefit of learning outside, followed closely by other benefits. In the interviews, teachers were visibly happy to talk about the benefits of OL that they noticed with their students. They shared how students enjoyed OL experiences and even cheered at the mention of learning outside. They saw this as an important benefit to spending time outside.<br><br>It is important to note that the benefits students receive when learning outside have further-reaching benefits like improved class attendance. |

* 1-tailed Pearson Correlation

In this study, the teachers believed there are numerous benefits associated with OL, with the highest proportion of teachers believing students receive mental health benefits when learning outside. It is not surprising that teachers believe that being outdoors is beneficial. Many researchers before me also found that there are numerous benefits connected to OL (Arianti &

Aminatun, 2019; Blair, 2009; Dettweiler et al., 2015; Fayanto et al., 2019; Harris & Bilton, 2019; Mannion & Lynch, 2015; Prince, 2017; Rickinson et al., 2004; Tuuling et al., 2019; Widada et al., 2019).

With a strong belief that OL is associated with experiential education, we can easily make a connection between OL with Dewey's (1938) statement on what true education is:

> "What we want and need is education pure and simple, and we shall make surer and faster progress when we devote ourselves to finding out just what education is and what conditions have to be satisfied in order that education may be a reality and not a name or a slogan. It is for this reason alone that I have emphasized the need for a sound philosophy of experience" (91).

The benefits of OL are broad reaching and include personal and social development in children (Harris & Bilton, 2019), spatial intelligence (Fayanto et al., 2019), mathematic critical thinking (Widada et al., 2019), and improved cognitive abilities (Rikinson et al., 2014). Along with a long list of personal benefits, students increase their understanding of environmental sustainability (Prince, 2017). Researchers have long studied the benefits of spending time outdoors, including time spent learning outside.

**Table 13**

*Data Integration 5: Teachers' Outdoor Childhood Experiences*

| Quantitative Results | Qualitative Results | Analysis |
|---|---|---|
| Pearson Correlation p = .001*<br><br>95.0% of teachers reported experiencing structured play during childhood (5, 6, and 7 on the Likert Scale**). Structured play includes organized sports, games with set rules, etc.<br><br>91.4% of teachers reported experiencing unstructured play during childhood (5, 6, and 7 on the Likert Scale**). Unstructured play includes activities with few set rules and little supervision.<br><br>61.4% of teachers reported experiencing nature walks during childhood (5, 6, and 7 on the Likert Scale**).<br><br>60.7% of teachers reported having camping experiences during childhood (5, 6, and 7 on the Likert Scale**).<br><br>53.6% of teachers reported having gardening experiences during childhood (5, 6, and 7 on the Likert Scale**).<br><br>48.6% of teachers reported attending summer camp with outdoor activities during childhood (5, 6, and 7 on the Likert Scale**). | All six teacher participants indicated a high level of involvement in childhood outdoor experiences.<br>All six teachers reported that they had very positive outdoor childhood experiences.<br>Five participants believed there was a strong correlation between their positive childhood experiences and their current involvement in taking students outdoors to learn.<br>Mila shared that her neighbour encouraged her to spend time outside. She stated, "They introduced me to camping; they took me camping all the time. We played outside lots as kids... we were outside all the time." She was told, "don't come home until dark."<br>Leo stated, "So I did some canoeing, camping and stuff at Quetico Camp. I was in Cub Scouts… we did camping trips at Lake of the Woods."<br>Sophia stated, "I was a very active child and I loved the outdoors. I grew up on a farm."<br>Amelia stated, "So, I grew up on the farm and I played outside all the time."<br>Carl stated, "My dad took me camping and stuff like that. We loved being in the mountains." | According to the Pearson Correlation of the dependent variable and composite variables, teachers' positive outdoor experiences during childhood became a key factor for successful OL. The interviews further support this, with all the interviewees sharing their high level of outdoor experiences as children. Five interviewees also stated that there was a correlation between their childhood outdoor experiences and their current involvement in OL experiences as teachers. |

* 1-tailed Pearson Correlation
** Likert Scale: 1=rarely; 4=a mix; 7=very often

Dewey (1938) believed in the continuity of learning, in which past experiences affect current experiences. "In a certain sense every experience should do something to prepare a

person for later experiences of a deeper and more expansive quality. That is the very meaning of growth continuity, reconstruction of experience" (Dewey, 1938, p. 47). Teachers who reported a high level of outdoor experiences during childhood also reported a strong interest in or high engagement with OL for their students. This continuity of nature experience among some teachers parallels Dewey's theory of continuity in learning and results in teaching experiences among nature-engaged teachers.

In a study of pro-environmental attitudes, Fiennes et al. (2015) reported that when individuals spent time in nature during childhood, they had higher positive pro-environmental attitudes and feelings of being connected to the natural world. This more heightened sense of connection to the natural world can be identified in teachers who had positive outdoor experiences during childhood and now engage students in OL experiences. Teachers with positive outdoor experiences during childhood had increased success with OL experiences with their students.

Looking to future generations, thought must be given to how teachers can provide positive outdoor experiences to children with the hope that their positive experiences will result in their engagement with OL as future teachers. Marcum-Dietrich (2011) makes a profound point when stating,

> First and foremost, for American science education to improve in a manner that addresses all children's need for outdoor, hands-on experiences, elementary teachers' undergraduate education must include science instruction that employs authentic inquiry-based learning experiences in the outdoors using curriculum that models best teaching practice. Future elementary teachers need science content courses that model how to use the outdoors as the classroom space and as the basis for teaching science fundamentals.

> By moving introductory science away from the large, lecture-driven, cookbook lab, passive learning environment, to hands-on, collaborative, outdoor learning experience, a new generation of teachers will acquire a sense of comfort and purpose in the outdoors that may not have been cultivated as a child (p. 3).

The cultivation of positive nature experiences during childhood is a critical step in developing pro-nature attitudes and feelings of comfort in nature among adults. Thompson et al. (2008) states, "The data show a strong relationship between frequent childhood visits and being prepared to visit woodlands or green spaces alone as an adult. By contrast, not visiting as a child was associated with a very low likelihood of later adult visits" (p. 118). The research indicates a strong correlation between positive childhood nature experiences and adult engagement with nature. Children should have frequent experiences with OL to develop positive environmental attitudes (Blair, 2009; Braun & Dierkes, 2017; Haris & Bilton, 2019).

**Table 14**

*Data Integration 6: School Administration Support for OL*

| Quantitative Results | Qualitative Results | Analysis |
|---|---|---|
| Pearson Correlation p = .012*<br><br>91.4% of teachers reported that they received support from school administrators ranging from sometimes to often. 51.8% of all teachers indicated very strong support from school administration.<br><br>73.3% of teachers reported other course-work requirements challenged their ability to include OL in their students' learning experience. 10.2% of teachers reported it was rarely a problem. | Three of the interviewees reported that their administration strongly supported their OL endeavours.<br><br>Mila stated, "Is this [outdoor classroom] a possibility? Can I do this? Would you support this? And she said yes, 100%."<br><br>Zoey shared that her school administrator supported OL by stating, "Money or support is not a challenge."<br><br>The other three interviewees reported that they have administration's support.<br><br>Leo stated, "It depends on the vision of the administrator." He clarified that he does have support but stipulated that it could sometimes be conditional.<br><br>Sophia mildly reported, "Yes, I would say we have support."<br><br>Amelia shared specific supports that she received from school administration. | According to the Pearson Correlation of the dependent variable and composite variables, having school administrators support OL was a key factor for successful OL. Most teachers expressed some level of support for OL from school administrators. This was supported by the interviewees, who all felt support from their school administrators for OL. |

* 1-tailed Pearson Correlation

I found that most teachers felt some level of support for OL experiences from their school administrators. In a recent research study analyzing school principals' support of OL, Oberle et al. (2021) found that,

> 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 (p. 12).

The study describes one area of school administrative support that came in the form of reassurance of teachers' OL approach. This helped the teacher feel more confident in their OL approach and goals. To further teachers' reassurance, it is important that teachers view their school administrators as having a positive attitude toward OL (Bilton, 2020; Coe, 2016; Dyment, 2005; Ruether, 2018). Teachers also reported the importance of school administration communication with the school community about the value of OL activities. Lastly, the study noted the need for school principals to provide funds to support OL needs (Oberle et al., 2021). This includes addressing the challenge teachers face with an overcrowded curriculum and finding time to plan and teach outdoors (Dillon et al., 2006; Dyment, 2005; Inwood, 2005; Kim & Fortner, 2006).

One area of Kolb's (2015) Experiential Learning Theory Model focuses on active experimentation. School administrators' support for OL aids teachers in providing outdoor experimentation. This is especially important with hands-on science experiments (Dewey, 1938; Kolb, 2015) that allow students to develop knowledge based on connecting previous knowledge with current experiences. School administrators play a significant role in allowing and encouraging teachers to use OL as a pedagogical tool for authentic learning.

**Research Question 1: What Were the Experiences of K-9 Teachers with OL in Alberta?**

One of the goals of this research was to gain a better understanding of the experiences of K-9 teachers with OL in Alberta. The data provides a picture of teachers' engagement with OL in Alberta K-9 schools. I found:

- teachers participate in a wide variety of OL activities when they take their students outside to learn (quantitative and qualitative data, see Figure 2).
- teachers use outdoor areas to teach a wide variety of curriculum content areas. Teachers reported going outside to teach physical education (79.3%), science (70.0%), art (62.8%), language arts (57.1%), social studies (37.1%), health/life skills (35.7%), math (29.3%), EE and OE (18.5%), and a variety of other curricular content areas (<10%) (quantitative and qualitative data, see Figure 3).
- all teachers surveyed and interviewed reported having access to OL features. Some teachers had a higher number of OL features than others (quantitative data, see Figure 4). All six interviewees reported having very accessible OL areas (qualitative data).
- 72.9% of teachers reported having access to a natural area that could be used for OL within one kilometer of their school (quantitative data, see Table 5).
- 72.9% of teachers reported their school's grounds were, to some level, conducive to OL. 2.1% reported that their school grounds were dreadful for OL purposes (quantitative data, see Figure 6).
- teachers reported that most students enjoyed OL experiences (qualitative data).
- Almost 70% of teachers reported some level of comfort with teaching outside (quantitative and qualitative data).
- teachers reported that student behaviour management and class routines had to be taught when teaching students outside, similar to indoor teaching (qualitative data).
- according to the survey and the interviews, mental health was believed to be the most significant benefit of learning outside, followed closely by other benefits (quantitative and qualitative data).

- most teachers expressed some level of support for OL from school administrators. This was supported by the interviewees, who all felt support from their school administrators for OL (quantitative and qualitative data).

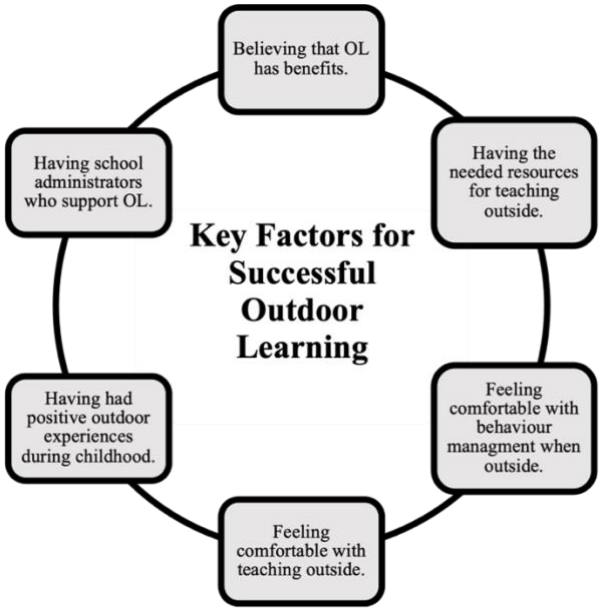
**Research Question 2: What Do Teachers Identify as Key Factors for Successful OL?**

The second goal of this research was to identify key factors that contribute to successful OL experiences among teachers involved in teaching outside. After analyzing the quantitative data, specifically the strong correlation between the composite variables and the DV (see Table 2) using a single-tailed calculation (see Table 4), I discovered six key factors for successful OL:

1. Teachers who have the needed resources for teaching outside.
2. Teachers who feel comfortable with teaching outside.
3. Teachers who feel comfortable with students' behaviour management when teaching outside.
4. Teachers who believe OL has benefits.
5. Teachers who have had positive outdoor experiences during childhood.
6. Teachers who have school administrators who support OL.

**Figure 30**

*Key Factors for Successful OL*



**Research Question 3: How Can Teachers Ensure the Quality of OL Experiences in K-9 Classrooms?**

The final goal of this research aimed to look at ways to ensure the quality and success of OL experiences in K-9 classrooms. I developed a draft framework (see Appendix G) for teacher training to help teachers understand the key factors for successful OL and develop ways to increase their success. This draft framework, which aims to increase the success of K-9 teachers' OL experiences, was accepted and approved by a group of school divisions and is currently being refined.

This draft framework includes a training book, ten online training modules, online teacher resources focused on OL with K-9 students, and a two day in-person training program. The content of the training book designed to support the learning modules is described below.

**Part One – Background Information**

1. Introduction
2. What is outdoor learning?
3. Key definitions
4. Hands-on learning – the pragmatic teacher
5. The joy of discovery

**Part Two – Key Factors for Successful Outdoor Learning**

6. Do you believe outdoor learning is beneficial?
7. Outdoor learning resources, equipment, and outdoor features
8. Are you comfortable with students' behaviours when teaching outside?
9. Being comfortable with teaching outside
10. Positive outdoor experiences during childhood
11. Do you have school administrators who support outdoor learning?

**Part three – Action Plan**

12. Outdoor learning area site assessment
13. Teacher success factors: a self-evaluation

14. Developing your outdoor learning action plan
15. Getting started

**Glossary**

**Appendices**

A. Teacher success factors: self-evaluation
B. Outdoor learning plan template
C. Resources: five simple outdoor learning activities

There are three phases to this training program. First, teachers will complete the ten online learning modules with the support of the training book. Second, a collection of online resources will be made available for teachers to browse and select OL activities that best suit their curriculum goals. Teachers are prompted to develop a plan that includes lesson plans with curriculum links. Finally, teachers are encouraged to participate in a two day in-person training program to further develop practical skills.

The ten online learning modules were designed around the six key factors for successful learning. Here are the titles and brief descriptions of each learning module:

1. So, let's get started: what school facilities do you have?
   This module guides teachers to look at their school's facility and outdoor teaching resources. We begin with this important assessment so the teacher realizes the potential of what they can accomplish.

2. Being successful…
   Here, we look at what we can do to be successful when teaching outside. Participants will be directed to other resources not at their school that will aid in success. These include identifying local experts that can help.

3. The kids won't stand still!
   This module equips the teacher to understand behaviour management when working outdoors with students. Focus is placed on developing engaging and fun activities for the students and training them in outdoor classroom procedures, similar to what they do when teaching indoors.

4. Technology and nature: an oxymoron?
   Here, we discuss the technology available for teaching outside. Topics include available apps, science tools for outdoor use, geo-caching, nature photography, etc.

5. Safety: come down from that tree!
   Safety is an essential topic for teachers who teach outside. This module identifies areas of concern with important information provided by the Risk Management Insurance Company. We'll also discuss knowing the limitations of both students and teachers and introduce the "*challenge by choice*" approach used by outdoor professionals.

6. What about classroom nature centres?
   This module introduces the idea of bringing the outdoors inside. It challenges teachers to consider (a) developing an indoor nature centre, (b) working in nature centres, and (c) engaging kids actively in nature centre learning. Topics include safety, animal care, scavenger hunts, aquarium learning, etc.

7. Developing a plan…
   This module encourages teachers to develop plans for teaching outdoors. Meaningful Indigenous connections will be presented to engage kids in FNMI land-based learning experiences. Teachers will be guided to create grade-appropriate plans that are curriculum based. The plans can be tailored to their particular school based on its facilities and available resources. Links to helpful online resources and activities will be available for the teacher to consider.

8. Let's go outside!
   Do you remember visiting a park or museum that had a tour guide? A good tour guide has a system to make you feel welcome and safe when you arrive. This module helps teachers develop lesson plans to ensure a good flow from start to finish (just like a tour guide).

9. Loving nature: involving the entire school…
   Here we prepare teachers to engage the entire school with nature. This includes students, teachers, families, and community members. The goal is to create a culture focused on outdoor learning. We address topics such as (a) developing outdoor classrooms, (b) developing "nature nugget" presentations for the entire school, and (c) promoting healthy lifestyles that incorporate nature.

10. The final steps…
    This chapter is meant to encourage schools and teachers to develop outdoor learning experiences with students. It wraps up the training with final thoughts.

The two-day training program is intended to provide OL experiences for teachers. These experiences are based on what they learned in the ten online learning modules and online resources. Teachers will be taught by experienced outdoor educators and naturalists who can

guide them and build their skills. Training experiences will occur at an OL site with a robust OL program.

## Research Limitations

Long before the data was collected, I thought a lot about developing a reliable research project. Reflective action was practiced throughout the process. This pushed me to question each step of the research process to assess research reliability and rigour. However, like all research, despite efforts to ensure research reliability there were still limitations in this study.

### *COVID-19 Pandemic*

The COVID-19 global pandemic played a role in limiting research participation for this research. This became evident when I requested school divisions to participate in this research. Some school division superintendents denied my request to include their teachers in this research project because they felt their teachers were already overworked due to increased workloads related to the pandemic. Similarly, some school principals reported that they did not invite their teachers to participate because of teacher fatigue related to increased workloads from the pandemic.

### *Participants*

Another limiting factor in this research relates to the volunteer participants. Of the 140 teachers that participated, 102 were female (74.45%), 34 were male (24.81%), and one was non-binary (0.72%) (three data points missing). These significant gender differences undoubtedly created a limitation within this study. Additionally, the participants represented a range of 1-40 years of teaching experience. Ideally, I would have preferred to have equal representation from all ages; however, the mean years of teaching experience of the participants' was 15.23. This skews the ages slightly below average and reduces representation from the older age range.

Participation in this research was also limited to schools north of Calgary and south of Edmonton. As this research included one other large city (Red Deer), I decided to exclude Edmonton and Calgary to maintain a manageably sized research project. For similar reasons, many other school districts in Alberta were not included. Therefore, the results of this research are specific to the researched area.

Although there are research limitations, the validity and reliability of the results are supported by rigorous research with many validity checks done throughout the research process. I also aimed to have 100 participants in the questionnaire but exceeded this and achieved 140 participants. Higher than expected participation increased the study's reliability and rigour. This increased participation was also evident in the second pilot study for the questionnaire in which I received 40 voluntary participants. The results from the pilot study were consistent and reliable.

# Chapter 7: Conclusion

*"Learning is defined as the process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping and transforming experience. Grasping experience refers to the process of taking in information and transforming experience is how individuals interpret and act on that information." (Kolb, 2015, p. 51)*

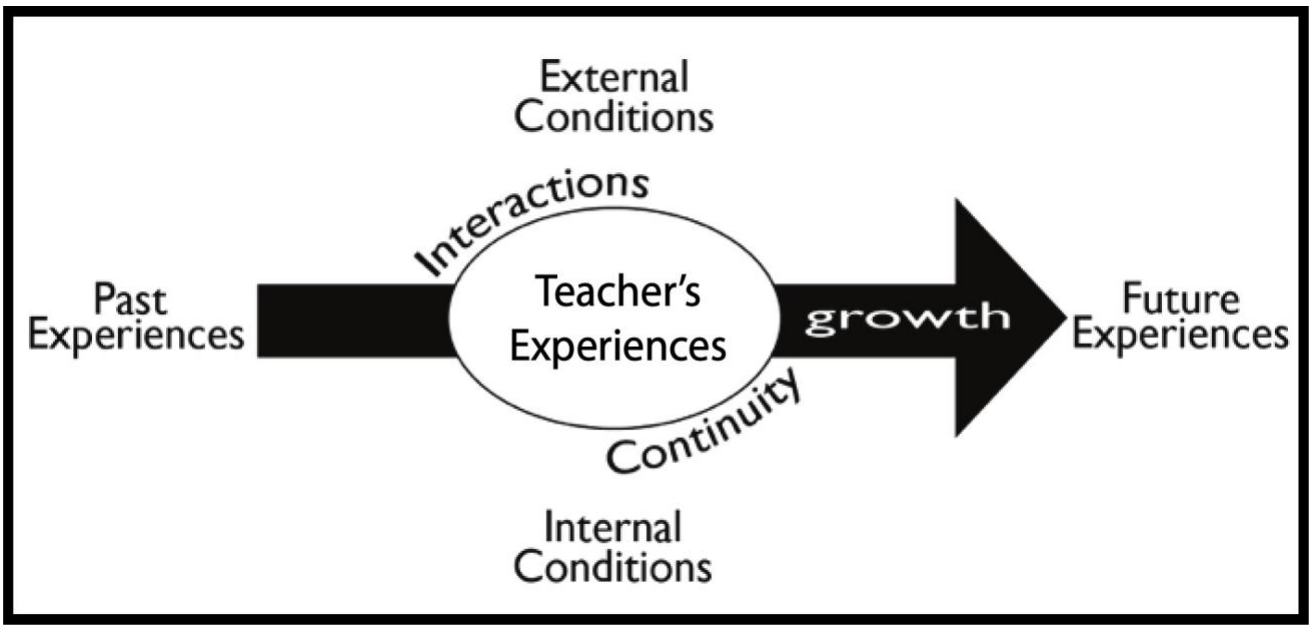
## Past Experiences, Growth, and Future Experiences

Dewey's Theory of Experience (Krutka et al., 2017) considers past experiences as an integral part of growth. He states, "In a certain sense, every experience should do something to prepare a person for later experiences of a deeper and more expansive quality. That is the very meaning of growth continuity, reconstruction of experience" (Dewey, 1938, p. 47). In this study, teachers were provided space to share experiences from their past to provide insight into their current experiences (continuity). I collected data to understand teachers' external conditions (OL curriculum connections, childhood experiences) and internal conditions (OL teaching fears, interests, perceived abilities, and confidence) to understand what shapes teachers' success in OL.

Teachers' experiences were central to understanding OL in Alberta. The research questions focused on these experiences and the meaning these experiences brought to teachers. Dewey states, "I have said that educational plans and projects, seeing education in terms of life-experience, are thereby committed to framing and adopting an intelligent theory or, if you please, philosophy of experience" (Dewey, 1938, p. 51). Teachers often expressed their OL experiences as a part of the linear growth they experienced. Carl shared, "Growing up, my dad took us camping lots. We spent a lot of times outside. That's what I want for my kids [at school]. I want them to love nature and stuff." Figure 30 describes the growth teachers experience in OL.

**Figure 31**

*Dewey's Theory of Experience for Teachers (Krutka et al., 2017)*




Zoey described linear growth by reflecting on her outdoor experiences from when she was young, to now, as a teacher highly involved in OL. She attributed her outdoor play during childhood to her involvement in using outdoors for teaching. These past outdoor play experiences and current OL experiences will affect her future experiences. She stated,

> We were a camping family… we went on hikes... there is a correlation between teaching outside and growing up outside a lot. And even playing outside, like, how many kids are all on their phones now and all that. We stayed out until the streetlamps came on. My parents did not watch where I was.

Linear growth was also a factor for Sophia. She stated, "My mom was a teacher here… I have vivid memories of playing outside here and walking down to the pond and engaging in the lifecycles at the pond. So, I think that I almost want to re-create those memories for my [classroom] kids." Sophia's childhood experiences were related to outdoor experiences that took place at school. It is worth noting that she grew up in the country and had many outdoor play

experiences as a child. Internal conditions are also related to Dewey's Theory of Experience; Sophia grew up with confidence and interest in outdoor experiences which led to future OL experiences in her classroom. As for Dewey's theory of external conditions, Sophia, Carl, and Zoey grew up in a family culture of being highly involved in outdoor play. These internal and external conditions affected their future experiences with OL.

Now, as I reflect on my research experiences and understand what they mean to me, I once again take a lesson from Dewey, who stated, "To reflect is to look back over what has been done so as to extract the net meanings which are the capital stock or intelligent dealing with further experiences. It is the heart of intellectual organization and of the disciplined mind" (Dewey, 1938, p. 87). My future experiences are further developed by understanding the past experiences and growth of the teachers from this study. Furthermore, Kolb's Experiential Learning Theory (Kolb, 2015) promotes abstract thinking beyond the experience as a result of the experience, leading to further experimentation. During my interview with Carl, he stated, "After the lesson was taught [outside], students started asking other questions… about topics connected to the lesson… it showed they wanted to learn more." This is an example of Kolb's model where the active learning experience is the subject of reflection, and learning moves toward related concepts.

By understanding the key factors for successful OL, the findings of this research have the potential to shape teachers' future experiences. More specifically, these key factors could potentially become a part of teachers' future growth experiences. A critical aspect of effective teachers' professional development, promoting these OL growth experiences, was identified in a study by WestEd (2000) which stated, "The very nature of staff development shifted from isolated learning and the occasional workshop to focused, ongoing organizational learning built

on collaborative reflection and joint action" (p. 11). This extensive study of eight award-winning schools, with a wide variety of locations, sizes, and student demographics, demonstrated that success with OL can be accelerated with a whole school approach. This supports the key factors for successful OL as it connects school administrators with teachers involved in OL initiatives. A collaborative approach to learning among teachers with similar interests is also supported by a study done by Armour & Yelling (2007), identifying that teachers "placed a high value on learning with and from professional colleagues in their self-selected professional learning networks or communities" (p.189). Increasing teachers' success with OL is, therefore, improved through collaboration among teachers who are involved in teaching outdoors.

**Experiential Learning**

Like Dewey, David Kolb viewed knowledge development through a pragmatic lens. Kolb believed that learning should be centred on experiences to broaden knowledge and understanding. Kolb developed the Experiential Learning Theory Model (Kolb, 2015) (see Figure 2, p. 18) that focused on first having meaningful experiences (concrete experiences), reflecting on and reviewing these experiences (reflective observation), drawing conclusions from the experiences (abstract conceptualization), then finally experimenting with new knowledge (active experimentation) (Kolb, 2015).

This research shows all four domains of Kolb's Experiential Learning Theory. The data I gathered represents all domains and provides an in-depth understanding of OL. Even beyond the separate effect of the quantitative and qualitative data, the integrated data analysis (see Tables 9-14) represents all four of Kolb's domains. Furthermore, as I continue to develop the training program with learning modules and in-person training experiences, I will continue to use Kolb's theory.

1. Concrete Experiences: Teachers reported taking their students outside to learn lifecycles, gardening, social studies, art, flight, natural medicines from plants, birding, physical education, Indigenous learning, letters, numbers, lifecycles at the pond, comparisons of living things, math, literacy, community and environmental awareness, creative expression, reading, and social studies.
2. Reflective Observation: Amelia provided an example of guiding her students in a reflective observation experience by stating, "We did a social studies and language arts cross-curricular book novel study about residential school, and we did a debriefing and briefing sharing circle with our liaison. And we did this outside." Mila also guided her students to reflect on their OL experiences. Mila stated, "We would go and build something [outside], and then we would come back inside and write about it." Mila also used Venn diagrams to organize the information her students collected to help them reflect on how the items related to each other. Amelia used a sharing circle to reflect on their learning.
3. Abstract Conceptualization: After reflecting on their experiences, students adjusted their thinking to reflect new ideas. Sophia shared her classroom's OL experiences and stated, "So it's a lot of comparing living things to each other. So, we'll go outside and do that." By comparing living things, her students adjusted their thinking to reflect these new comparisons. Leo reflected on his own OL experiences as a teacher and took steps to improve by "educating myself on the environment… that was interesting to me. I wanted to learn more." The OL experiences encouraged Leo to want to learn more and, therefore, adjust and add to his understanding of the outdoor experiences.
4. Active Experimentation: During an OL experience, Mila shared how she always brought

a bucket full of items when she taught outside, just in case she needed them. During an outdoor experience with her students, a student asked for a spoon from the bucket. Mila shared how a thin layer of ice had formed overnight on the animal tracks they were observing. Mila stated the student "was feeling it with his hands… [and was] tapping it [with the spoon]. And it was making a sound, and he said, 'I can make music.' And he takes it [the spoon] and runs it along other surfaces." Mila's student used his previous music experiences from music class to experiment with other outdoor objects that made different sounds.

Furthermore, in regards to teachers and their experiences with their K-9 students, this research supports the concept that students are placed at the centre of learning (Dewey, 1938; Kolb, 2015). In an interview with Sophia, she shared her interest in engaging students in their own learning by stating, "So having the freedom, or the flexibility of being outside… allowing them that freedom and that autonomy to make their own choices and explore the world around them, then that is more meaningful to them because they are guiding it." Kolb and Dewey emphasized the importance of teachers prioritizing a student-centred educational experience (Dewey, 1938; Kolb, 2015).

**Future Research Agenda**

Upon completing this dissertation project, I discovered several areas of research that need further consideration. First and foremost, a deeper look into correlations between OL in Alberta and academic achievement during OL experiences is needed. In this study, among the list of benefits from OL experiences, teachers reported relatively high levels of benefits in all areas except students' understanding of curricular content and academic achievement. The latter categories achieved only a mean of 5.12 and 5.07 out of seven, respectively. Even though

teachers reported numerous benefits from OL, their OL experiences achieved lower benefit rating in these two areas. Other studies on OL have presented evidence that OL experiences increased student academic achievement and understanding (Arianti & Aminatun, 2019; Bilton, 2010; Dillon et al., 2006; Khan et al., 2020). A further, more in-depth measurement of academic achievement with OL experiences in Alberta will aid in our understanding of OL and the ways to increase students' academic success when learning outside.

A second area needing further research is the correlation between students that have experienced trauma and their attendance levels at schools in Alberta that engage in OL experiences. The suggestion of further research in this area is based on one teacher's comment that she had a significant increase in attendance resulting from her engagement with OL experiences, especially among students that had experienced first-hand trauma. She decided to begin an outdoor classroom to see if it would help. She stated,

> This [OL] is something I can do. It's good mentally. It's grounding. It's spiritual. And I have noticed it helps the kids. They are calmer. They look forward to it… It's a place where they can move. They have space… I have less behaviour issues outside with them than I would indoors… Attendance has improved vastly this year as compared to other years.

A significantly positive correlation between increased school attendance at schools in Alberta and OL experiences would further promote the use of outdoor spaces among teachers. Alberta's teachers would have one more tool to assist students who have experienced trauma.

Next, an better understanding of successful OL among lower and upper elementary students, high school students, and University students is needed. Further to this point, an understanding of OL among Indigenous students will aid in developing a more complete picture

of OL in Alberta. With an increased understanding of OL practices, school administrators will have the data needed to make decision to further the promotion of OL in classrooms.

Finally, a comparative study of OL among each Canadian province and territory would benefit our understanding of OL across Canada. The comparison could assist in analyzing the different approaches Canadian provinces use to prepare and encourage teachers to teach outside. We could also better compare the provincial structures and supports in place to assist teachers engaged in OL. This research would allow us to look at provinces with higher occurrences of OL engagement and analyze what provincial policies are in place that promote engagement of OL activities, which organizations actively promote the use of outdoor spaces for learning, and what active outdoor learning initiatives are currently engaging teachers. This Canada-wide study would provide administrators with the data needed to make informed decisions that could further OL practices among teachers.

With this research, I aim to encourage teachers to use outdoor spaces as an extension of their indoor classrooms. This will be done using the draft framework (see Appendix G) developed to increase success with curriculum-based OL in K-9 schools. This draft framework has already been approved in a school system and is currently being further developed. Successful OL, and this training program targeted at pre-service and in-service teachers, will be presented at an international conference in Arizona in 2023, with teacher training targeted to begin in 2025.

Finally, further research in the field of OL using an MMR approach is needed. OL researchers have underutilized the MMR approach; if its use is increased, it would provide various types of data points to further our understanding. In a study to determine the value of MMR, McKim (2017) found that MMR is increasing in use and can provide a more balanced

research perspective. As is apparent from my research project, there is great value in viewing research questions through integrated quantitative and qualitative data.

**Final Words**

My four-year research journey has deepened my appreciation for sound research processes that strengthen our understanding of learning outside. Through coursework, reading, writing, data collection, data interpretation, and interactions with others, I have thoroughly enjoyed the entire process and even the complexity of how knowledge is generated. This research has increased our understanding of OL and how teachers could be successfully teaching outdoors. Additionally, this research has engaged my curiosity to conduct further research in curriculum-based OL.

Looking back to my first year of teaching when I took my students outside to learn, I wish I had known how to teach my students successfully. Long ago, the six key factors for successful OL would have benefitted me as I would have been more effective with my students. With teacher engagement, this research has the potential to improve the frequency at which OL takes place in schools.

As I look forward, I am encouraged to know that teachers can increase their success with OL by (a) believing that OL has benefits, (b) having the needed resources for teaching outside, (c) becoming more comfortable with behaviour management when teaching outside, (d) having positive OL experiences and therefore feeling more comfortable with teaching outside, (e) by having had positive outdoor experiences during childhood, and (f), having school administrators who support OL. With this list, we can now develop plans to improve teachers' success and confidence with OL and increase the frequency and success of OL experiences in K-9 classrooms. Increasing success in OL will increase teachers' frequency of OL experiences and

subsequently provide students with the many benefits related to OL.

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# Appendices

## Appendix A: Research Ethics Approval

### Notification of Approval

| | |
|---|---|
| Date: | February 28, 2022 |
| Study ID: | Pro00114580 |
| Principal Investigator: | Kevin Kiers |
| Study Supervisor: | Douglas Gleddie |
| Study Title: | School-based outdoor learning in Alberta: Examining K-9 teachers' success through mixed methods research |
| Approval Expiry Date: | February 27, 2023 |

Thank you for submitting the above study to the Research Ethics Board 1. Your application has been reviewed and approved on behalf of the committee. The following documentation forms part of this approval:

**Approved Documents:**

***Recruitment Materials***

| |
|---|
| Recruitment letter to school divisions.pdf |

***Consent Forms***

| |
|---|
| Information Letter and Informed Consent Form for Interview University of Alberta.pdf |
| Information Letter and Informed Consent Form for Pilot Study.pdf |
| Information Letter and Informed Consent Form for Questionnaire.pdf |

***Questionnaires, Cover Letters, Surveys, Tests, Interview Scripts, etc.***

| |
|---|
| Questionnaire.pdf |
| Proposed Interview Questions.pdf |

Any proposed changes to the study must be submitted to the REB for approval prior to implementation. A renewal report must be submitted next year prior to the expiry of this approval if your study still requires ethics approval. If you do not renew on or before the renewal expiry date, you will have to re-submit an ethics application.

Approval by the REB does not constitute authorization to initiate the conduct of this research. The Principal Investigator is responsible for ensuring required approvals from other involved organizations (e.g., Alberta Health Services, Covenant Health, community organizations, school boards) are obtained, before the research begins.

Sincerely,

Theresa Garvin, PhD, MUA, BA
Chair, Research Ethics Board 1

*Note: This correspondence includes an electronic signature (validation and approval via an online system).*

## Appendix B: Information and Informed Consent Form - Pilot Study

Title of Study: School-based Outdoor Learning in Alberta: Examining K-9 Teachers' Success Through Mixed Methods Research

**Principal Investigator (PI)**
Kevin Kiers
Ph.D. Candidate
Faculty of Education
University of Alberta
kkiers@ualberta.ca

**Supervisor**
Dr. Douglas Gleddie
Associate Dean – Graduate Studies
Faculty of education
University of Alberta
dgleddie@ualberta.ca
(780) 248-1951

Dear Participant,

You are invited to participate in this research study about school-based outdoor learning in Alberta because of your teaching experience with grades K-9 in Alberta. Your email address has been approved for use by your school division office.

**Purpose of this Research**: From this research, I wish to (a) identify the current state of outdoor learning experiences with K-9 teachers in Alberta and (b) examine factors that contribute to successful outdoor learning experiences among teachers. This study will serve as a pilot study for my research at the University of Alberta and for an additional research study for Burman University.

**Participation**: If you wish to participate in this study, please complete the attached survey. The survey should take you approximately 10 minutes to complete. You do not have to answer any questions that you do not want to answer. Once you have completed the survey, click the "submit" button. I would appreciate receiving it within two weeks of your receiving it. Reminders will be sent to everyone after 5 days and 10 days after receiving the questionnaire.

**Benefits**: This study will provide teachers with an understanding of how many teachers in Alberta use the outdoors to teach curriculum content, and what content areas and grades are taught more commonly outdoors. This research will contribute to a broader community of practice, including informing future professional development of outdoor teaching strategies among teachers.

**Risks**: No risks have been identified in this study.

**Confidentiality and Anonymity**: The information that you will share will remain strictly confidential and will be used solely for the purposes of this research. The only people who will have access to the research data are the research team. Your answers to open-ended questions may be used verbatim in presentations and publications, but you will not be identified. To minimize the risk of security breaches and help ensure your confidentiality, we recommend that you use standard safety measures such as signing out of your account, closing your browser, and locking your screen or device when you have completed the study. Anonymity is guaranteed since you are not being asked to provide your name or any personal information, unless you volunteer to participate in a personal interview with the researcher.

**Data Storage**: Electronic copies of the survey will be encrypted and stored on a password-protected computer of the researcher. The data collected during this study will be destroyed after the final copy of the research is printed. Hard copies will be shredded, and electronic data will be permanently deleted.

**Voluntary Participation**: You are under no obligation to participate, and if you choose to participate, you may refuse to answer questions that you do not want to answer. Should you decide to withdraw midway through the electronic survey, simply close the link and no responses will be included. Given the anonymous nature of the survey, once you have submitted your responses, it will no longer be possible to withdraw your responses from the study.

**Information about the Study Results**: The results of this study will be sent to your school district offices and made available to teachers. A further explanation of the results can be requested by email to kkiers@uaberta.ca.

**Contact Information**: If you have any questions or require more information about the study itself, you may contact the researcher or his supervisor at the numbers mentioned herein. The plan for this study has been reviewed by a Research Ethics Board at the University of Alberta (ID Pro00114580) and by Burman University Research Ethics committee. If you have any questions regarding your rights as a research participant or how the research is being conducted, you may contact the University of Alberta Research Ethics Office at (780) 492-2615 or Burman University Research Ethics Committee at (403) 782-3381 ext-4090. Please print this form and keep it for your records.

Completion and submission of the survey means your consent to participate.

## Appendix C: Information and Consent Form - Questionnaire

Title of Study: School-based Outdoor Learning in Alberta: Examining K-9 Teachers' Success Through Mixed Methods Research

**Principal Investigator (PI)**
Kevin Kiers
Ph.D. Candidate
Faculty of Education
University of Alberta
kkiers@ualberta.ca

**Supervisor**
Dr. Douglas Gleddie
Associate Dean – Graduate Studies
Faculty of education
University of Alberta
dgleddie@ualberta.ca
(780) 248-1951

Dear Participant,

You are invited to participate in this research study about school-based outdoor learning in Alberta because of your teaching experience with grades K-9 in Alberta. Your email address has been approved for use by your school division office.

**Purpose of this Research**: From this research, I wish to (a) identify the current state of outdoor learning experiences with K-9 teachers in Alberta and (b) examine factors that contribute to successful outdoor learning experiences among teachers.

**Participation**: If you wish to participate in this study, please complete the attached survey. The survey should take you approximately 10 minutes to complete. You do not have to answer any questions that you do not want to answer. Once you have completed the survey, click the "submit" button. I would appreciate receiving it within two weeks of your receiving it. Reminders will be sent to everyone after 5 days and 10 days after receiving the questionnaire.

**Benefits**: This study will provide teachers with an understanding of how many teachers in Alberta use the outdoors to teach curriculum content, and what content areas and grades are taught more commonly outdoors. This research will contribute to a broader community of practice, including informing future professional development of outdoor teaching strategies among teachers.

**Risks**: No risks have been identified in this study.

**Confidentiality and Anonymity**: The information that you will share will remain strictly confidential and will be used solely for the purposes of this research. The only people who will

have access to the research data are the research team. Your answers to open-ended questions may be used verbatim in presentations and publications, but neither you (nor your organization) will be identified. To minimize the risk of security breaches and help ensure your confidentiality, we recommend that you use standard safety measures such as signing out of your account, closing your browser, and locking your screen or device when you have completed the study. Anonymity is guaranteed since you are not being asked to provide your name or any personal information, unless you volunteer to participate in a personal interview with the researcher.

**Data Storage**: Electronic copies of the survey will be encrypted and stored on a password-protected computer of the researcher. The data collected during this study will be destroyed after the final copy of the research is printed. Hard copies will be shredded, and electronic data will be permanently deleted.

**Voluntary Participation**: You are under no obligation to participate, and if you choose to participate, you may refuse to answer questions that you do not want to answer. Should you decide to withdraw midway through the electronic survey, simply close the link and no responses will be included. Given the anonymous nature of the survey, once you have submitted your responses, it will no longer be possible to withdraw your responses from the study.

**Information about the Study Results**: The results of this study will be sent to the participating school district offices and made available to teachers. A further explanation of the results can be requested by email to kkiers@uaberta.ca.

Contact Information: If you have any questions or require more information about the study itself, you may contact the researcher or his supervisor at the numbers mentioned herein. The plan for this study has been reviewed by a Research Ethics Board at the University of Alberta. If you have any questions regarding your rights as a research participant or how the research is being conducted, you may contact the Research Ethics Office at (780) 492-2615. Please print this form and keep it for your records.

Completion and submission of the survey means your consent to participate.

## Appendix D: Information and Consent Form - Interview

Title of Study: School-based Outdoor Learning in Alberta: Examining K-9 Teachers' Success Through Mixed Methods Research

**Principal Investigator (PI)**
Kevin Kiers
Ph.D. Candidate
Faculty of Education
University of Alberta
kkiers@ualberta.ca

**Supervisor**
Dr. Douglas Gleddie
Associate Dean – Graduate Studies
Faculty of education
University of Alberta
dgleddie@ualberta.ca
(780) 248-1951

Dear Participant,

You are invited to participate in this research study about school-based outdoor learning in Alberta because of your teaching experience with grades K-9 in Alberta. Your contact information was provided by you when you completed the prior related survey.

**Purpose of this Research**: From this research, I wish to (a) identify the current state of outdoor learning experiences with K-9 teachers in Alberta and (b) examine factors that contribute to successful outdoor learning experiences among teachers.

**Participation**: Before you decide to participate, one of the researchers will go over this form with you. You are encouraged to ask questions if you feel anything needs to be made clearer. You will be given a copy of this form for your records. The interview will take 30-45 minutes, depending on the depth of conversation.

**Benefits**: This study will provide teachers with an understanding of how many teachers in Alberta use the outdoors to teach curriculum content, and what content areas and grades are taught more commonly outdoors. This research will contribute to a broader community of practice, including informing future professional development of outdoor teaching strategies among teachers.

**Risks**: The transmission of Covid-19 poses a risk to in-person interviews. A video conference is an option if health regulations require it or if participants request it. To address Covid-19 transmission during in-person interviews, the researcher will maintain a distance of at least 2 meters at all times, interviews will be limited to only the researcher and participant, appropriate face coverings will be used at all times, interviewer and participants will use hand sanitizer as

they enter the room and before leaving the room, a consent form will be emailed to participant ahead of time, and verbal consent obtained at the time of the interview. Surfaces will be sanitized prior to the interview.

**Confidentiality and Anonymity**: The information that you will share will remain strictly confidential and will be used solely for the purposes of this research. The only people who will have access to the research data are the research team. Your answers to open-ended questions may be used verbatim in presentations and publications, but neither you (nor your organization) will be identified. Anonymity is guaranteed and will be maintained throughout the research process.

**Data Storage**: Electronic copies of the recorded interview will be stored on a password-protected computer owned by the researcher. The data collected during this study will be destroyed after the final copy of the research is printed. Hard copies will be shredded, and electronic data will be permanently deleted.

**Voluntary Participation**: You are under no obligation to participate, and if you choose to participate, you may refuse to answer questions that you do not want to answer. Should you decide to withdraw midway through the interview, simply let the researcher know. Additionally, you may request that the researcher remove your data from the study within two weeks after your interview.

**Information about the Study Results**: The results of this study will be sent to the participating school district offices and made available to teachers. A further explanation of the results can be requested by email to kkiers@uaberta.ca.

**Contact Information**: If you have any questions or require more information about the study itself, you may contact the researcher or his supervisor at the numbers mentioned herein. The plan for this study has been reviewed by a Research Ethics Board at the University of Alberta. If you have any questions regarding your rights as a research participant or how the research is being conducted, you may contact the Research Ethics Office at (780) 492-2615.

**Consent statement**:
I have read this form, and the research study has been explained to me. I have been given the opportunity to ask questions, and my questions have been answered. If I have additional questions, I have been told whom to contact. I agree to participate in the research study described above and will receive a copy of this consent form. I will receive a copy of this consent form after I sign it.

_____ _____
Participant's Name (printed) and Signature Date

_____ _____
Name (printed) and Signature of Person Obtaining Consent Date

## Appendix E: Questionnaire Questions

The following questions were used in the quantitative questionnaire portion of this study. Similar questions were sent to pilot study group one and pilot study group two. After both pilot studies were complete, slight edits were made based on their feedback.

**Questions**

1. What age range do you fit in?
   - ____ 20-29 years old
   - ____ 30-39 years old
   - ____ 40-49 years old
   - ____ 50-59 years old
   - ____ 60-69 years old
   - ____ 70 years old or older

2. What is your gender?
   - ____ male
   - ____ female
   - ____ Other: _____

3. How many years have you been a teacher? _____
   (Age range provided in questionnaire: <1 years old - 55 years old)

4. Please list any teaching specializations that you have: _____

5. What best describes your school's physical location?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| extremely rural setting | | | outskirts of town | | | extremely Urban setting |

6. Have you taken your class to an outdoor area to: (choose all that apply)
   - ____ read or write
   - ____ plant or garden
   - ____ teach camping or survival skills
   - ____ observe weather/sky
   - ____ study forest ecology/life
   - ____ complete a nature art project
   - ____ physical education
   - ____ nature walk
   - ____ observe/collect wildlife, soil, habitats, rocks
   - ____ supervised play/recess
   - ____ study pond ecology/wetlands
   - ____ study fossils
   - ____ learn about cultures
   - ____other (please list):_____

7. Select the curriculum areas that you have taken students outdoors to learn: (choose all that apply)
   - ____ English Language Arts
   - ____ Social Studies
   - ____ Math
   - ____ Science
   - ____ Physical Education
   - ____ Health and Life Skills
   - ____ Art
   - ____ Career and Technology Foundations (CTF)
   - ____ Drama
   - ____ Environmental and Outdoor Education
   - ____ Ethics
   - ____ First Nations Languages

____ French as a Second Language (FSL)
____ International Languages
____ English as a Second Language
____ Locally Developed Courses
____ Music
____ Other: _____

8. On a scale of 1-7, how do you rate your comfort level with teaching outside?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| very uncomfortable | | | a mix | | | very comfortable |

9. On a scale of 1-7, how do you rate your comfort level with behavior management while teaching outside?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| very uncomfortable | | | a mix | | | very comfortable |

10. On a scale of 1-7, to what extent do you consider your school's property to be conducive to teaching outdoors?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| dreadful | | | a mix | | | very ideal |

11. What outdoor features does your school have for teaching outdoors? (Choose all that apply)

____ playground structures
____ pavement
____ stream
____ pond
____ garden
____ greenhouse
____ outdoor classroom
____ fenced in area
____ grassy field
____ forest area
____ river
____ lake
____ grow boxes
____ walking trails
____ nature-based play structures
____ picnic tables
____ other (please list):_____

12. What proximity is your school to the closest natural area or park that **could** be used for teaching outdoors?

____ less than .5 km
____ between .5 km - 1 km
____ between 1 km - 1.5 km
____ between 1.5 km - 2 km
____ more than 2 km

13. What best describes the approximate frequency of your outdoor teaching for the FALL SEASON?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| never | 1 time/season | 2-4 times/season | 1 time/month | 1-4 times/month. | 1-4 times/week | daily or more |

14. What best describes the frequency of your outdoor teaching for the WINTER SEASON?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| never | 1 time/season | 2-4 times/season | 1 time/month | 1-4 times/month | 1-4 times/week | daily or more |

15. What best describes the frequency of your outdoor teaching for the SPRING SEASON?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| never | 1 time/season | 2-4 times/season | 1 time/month | 1-4 times/month | 1-4 times/week | daily or more |

16. Rate each of the following on a scale of 1-7 (with 4 rating as sometimes):

(a) A lack of time is a challenge I have with teaching outdoors.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| rarely | | | sometimes | | | always |

(b) Safety concerns are challenges I have with teaching outdoors.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| rarely | | | sometimes | | | always |

(c) A lack of money is a challenge I have with teaching outdoors.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| rarely | | | sometimes | | | always |

(d) Limited background or training in outdoor teaching is a challenge I have with teaching outdoors.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| rarely | | | sometimes | | | always |

(e) Lack of support from school administration is a challenge I have with teaching outdoors.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| rarely | | | sometimes | | | always |

(f) I have difficulty knowing what to teach when taking students outside to learn.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| rarely | | | sometimes | | | always |

(g) Access to a suitable outdoor learning area is a challenge I have with teaching outdoors.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| rarely | | | sometimes | | | always |

(h) I have challenges teaching outside because of other coursework time requirements.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| rarely | | | sometimes | | | always |

(i) The feeling that my students don’t want to learn outside is a challenge I have with teaching outdoors.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| rarely | | | sometimes | | | always |

(j) A lack of tables, seating, or other needed teaching facilities is a challenge I have with teaching outdoors.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| rarely | | | sometimes | | | always |

17. For each of the following, what level of benefit do you feel your students experience during outdoor class time?

(a) Physical health:

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| detrimental | | | a mix | | | very beneficial |

(b) Mental health:

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| detrimental | | | a mix | | | very beneficial |

(c) Social interactions:

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| detrimental | | | a mix | | | very beneficial |

(d) Spiritual benefits:

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| detrimental | | | a mix | | | very beneficial |

(e) Understanding of curricular content:

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| detrimental | | | a mix | | | very beneficial |

(f) Problem-solving skills:

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| detrimental | | | a mix | | | very beneficial |

(g) Academic achievement:

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| detrimental | | | a mix | | | very beneficial |

18. Thinking back to your own childhood experiences (during school and outside of school time), rate your level of participation in the following (with 4 rated as a mix):

(a) Nature walks:

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| rarely | | | sometimes | | | very often |

(b) Camping:

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| rarely | | | sometimes | | | very often |

(c) Summer camp with outdoor activities:

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| rarely | | | sometimes | | | very often |

(d) Unstructured outdoor play:

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| rarely | | | sometimes | | | very often |

(e) Outdoor sports:

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| rarely | | | sometimes | | | very often |

(f) Gardening:

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| rarely | | | sometimes | | | very often |

19. Please share what a successful outdoor teaching &learning experience looks/sounds/feels like to you:

_____
_____

20. What makes you feel successful when teaching outdoors?

_____
_____

21. Are there reasons you do not take your students outside to learn?

_____
_____

22. Would you be willing to further participate in a personal interview to provide more in-depth information on your experience with teaching and learning outdoors? (Researcher will come to your school to conduct the interview, or it can be done via Zoom). If so, please provide your name (first, last) and email address. A total of 6 interviews will be conducted from the list of volunteer teachers.

Name (first, last): _____

Email address: _____

## Appendix F: Semi-structured Interview Questions

**Questions:**

1. Can you describe the outdoor areas at your school that you can use for teaching?

2. If money were not an issue, what change would you like to see that would help you teach better outside?

3. What classes have you taken your kids outside to learn?

    i. L.A.
    ii. Math
    iii. Science
    iv. Socials
    v. Other

4. What do you teach in the winter season, as compared to in the fall/spring?

5. What are some of the challenges you have when taking your kids outside?

    CHALLENGES MIGHT INCLUDE:
    a. Students don't want to go outside to learn
    b. Other course requirements
    c. Suitable learning spaces
    d. Not knowing what to teach outside
    e. Finances
    f. Lack of teacher-training to teach outside
    g. Administration

6. What supports for outdoor teaching do you receive from your school?
    OR, What supports would you like to have?

7. What does SUCCESS look/sound like when you teach outdoors?

    a. What do your school administrators see as success?
    b. What would the parents see as success?
    c. If students would share, what would they say success is?

8. What subject areas/content areas have you found the easiest to achieve success?

9. Why do you teach outside?

10. What childhood outdoor experiences are most memorable to you?
    Do you feel that these experiences contribute to your interest in teaching

outdoors?

11. Can you talk about and describe the benefits of teaching outside?
    Might include:

    a. Academic achievement
    b. Physical
    c. Mental
    d. Spiritual
    e. Understanding of curricular content
    f. Problem solving abilities

**Appendix G: Draft Framework to Increase Successful Outdoor Learning**

# Successful Outdoor Learning For K-9 Teachers'

# K-9 Teachers Outdoor Learning

## TRAINING PROGRAM

## - Draft Framework -

## Aim

This draft framework aims to train and equip K-9 teachers to be successful outdoor teachers in a school setting. It is designed as a training and planning tool to engage teachers (and schools) in experiencing success while teaching outside. Resources will be provided to assist teachers in developing a teaching plan for their unique school setting. Training can be done online and/or in person. This draft framework aims to increase the success of K-9 teachers' outdoor learning experiences by understanding the six *Key Factors for Successful Outdoor Learning* and developing an action plan to address them.

## Introduction

Most schools are located in or near natural settings and can facilitate outdoor learning experiences. Most teachers acknowledge the vast benefits of spending time in nature. In a recent study of outdoor learning in Alberta schools,[12] teachers reported that mental health, physical health, and interpersonal social development are the top three benefits of learning outdoors. Most teachers also recognize the importance of learning through experience. John Dewey,[13] an educational philosopher, tells us:

> *What we want and need is education pure and simple, and we shall make surer and faster progress when we devote ourselves to finding out just what education is and what conditions have to be satisfied in order that education may be a reality and not a name or a slogan. It is for this reason alone that I have emphasized the need for a sound philosophy of experience. (Dewey, 1938, p. 91)*

> *A primary responsibility of educators is that they not only be aware of the general principle of the shaping of actual experience by environing conditions, but that they also recognize in the concrete what surroundings are conducive to having experiences that lead to growth. (Dewey, 1938, p. 40)*

[12] Kiers, K. D. (2023). School-based outdoor learning in Alberta: Examining K-9 teachers' success through mixed methods research (Unpublished doctoral dissertation). University of Alberta.

[13] Dewey, John. (1938). Experience and Education. New York: The Macmillan Co.

Practical, hands-on experiences are essential to outdoor learning experiences. The school learning environment is an important space to include outdoor spaces to learn! Schools have a unique opportunity to connect kids through outdoor experiences. We can help kids experience the wonder of nature through the natural things we can see, touch, smell, hear, and taste.

## Objectives

The objectives of this framework are to:

- Promote successful outdoor learning experiences in K-9 classrooms.
- Identify pathways for teachers to address the six *Key Factors for Successful Outdoor Learning.*
- Identify pathways for schools to increase the ease of outdoor learning for teachers.

## Definitions

The following are important definitions within the field of outdoor learning.

1. Outside Classroom: A space where teachers and students experience familiar and unfamiliar phenomena that would not usually occur indoors (Dillon et al., 2005).[14]

2. School-based Outdoor Learning: Outdoor learning is learning in an outside setting or an outdoor classroom (Arianti & Aminatun, 2019; Dillon et al., 2005)[15] while covering the required curriculum. A school-based outdoor learning location is a space where teachers and students have experiences that would not usually occur indoors (Dillon et al., 2005), such as school grounds, natural environments in close proximity to the school, and outside classrooms (Fägerstam, 2012).[16]

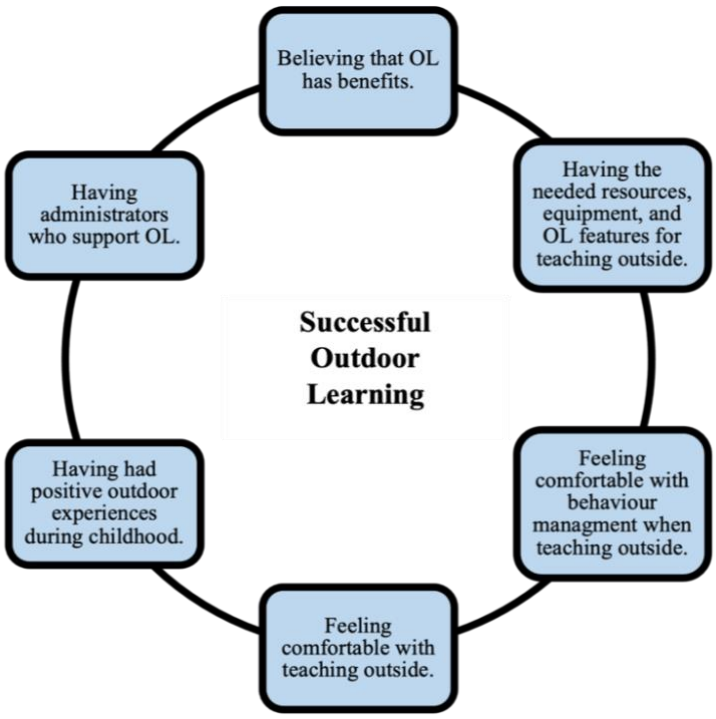
[14] Dillon, J., Morris, M., O'Donnell, L., Reid, A., Rickinson, M., & Scott, W. (2005). *Engaging and learning with the outdoors – The final report of the outdoor classroom in a rural context action research project*. 97. https://www.lotc.org.uk/wp-content/uploads/2011/04/Engaging-and-Learning-with-the-outdoors.pdf

[15] Arianti, Y., & Aminatun, T. (2019). An analysis of outdoor learning towards students' outcomes in learning biology. *Journal of Physics: Conference Series*, *1241*, 012061. https://doi.org/10.1088/1742-6596/1241/1/012061

[16] Fägerstam, E. (2012). *Space and place: Perspectives on outdoor teaching and learning*. 114. https://www.diva-portal.org/smash/get/diva2:551531/FULLTEXT01.pdf

# Six Key Factors for Successful Outdoor Learning

This figure shows the six *Key Factors for Successful Outdoor Learning* from my research with K-9 teachers[1]. These result from correlations between teachers' frequency of outdoor learning experiences and data collected from numerous factors. These six are considered highly significant (p=<.001) and directly relate to teaching outdoors.




The focus of this training program is K-9 teachers who engage students outside. This teacher training program will incorporate lessons learned during my research to increase the success of teachers using outdoor spaces to teach.

1. **Believing that OL has benefits**:
   It is essential that teachers understand the many benefits of taking kids outside to learn. The training program being developed will address these benefits.

2. **Having the needed resources, equipment, and OL features for teaching outside**:
   School administrators play a crucial role in the success of the teachers who participate in outdoor learning experiences. Assessing what is needed and supporting the needs of teachers will increase their success (and therefore the school's success as well).

3. **Feeling comfortable with behaviour management when teaching outside**: Increased frequency of outdoor learning experiences correlates with higher comfort levels with the behaviour management of kids. Additionally, the data shows that kids must be taught behaviour expectations and acceptable behaviour procedures when outside. The proposed training will address this topic.

4. **Feeling comfortable with teaching outside**: There is a connection between the frequency of outdoor learning experiences and increased comfort level with outdoor learning (higher frequency = higher comfort level with outdoor learning).

5. **Having had positive outdoor experiences during childhood**: Having had positive outdoor experiences during childhood increases success with outdoor teaching.

6. **Having administrators who support OL**: Administrators who support outdoor learning increases teachers' outdoor learning success. This support comes in many forms and will be discussed in this training.

## Resource Book

A carefully developed plan is essential to the teacher's success. This proposed training intends to develop the effectiveness of teachers' outdoor learning experiences when engaging kids in nature experiences. The following outline lists the content of a training book designed to support the training program.

**Part One – Background Information**

1. Introduction
2. What is outdoor learning?
3. Key definitions
4. Hands-on learning – The pragmatic teacher
5. The joy of discovery

**Part Two – Key Factors for Successful Outdoor Learning**

6. Do you believe outdoor learning is beneficial?
7. Outdoor learning resources, equipment, and outdoor features
8. Are you comfortable with students' behaviours when teaching outside?
9. Being comfortable with teaching outside
10. Positive outdoor experiences during childhood
11. Do you have school administrators who support outdoor learning?

**Part three – Action Plan**

12. Outdoor learning area site assessment
13. Teacher success factors: a self-evaluation
14. Developing your outdoor learning action plan
15. Getting started

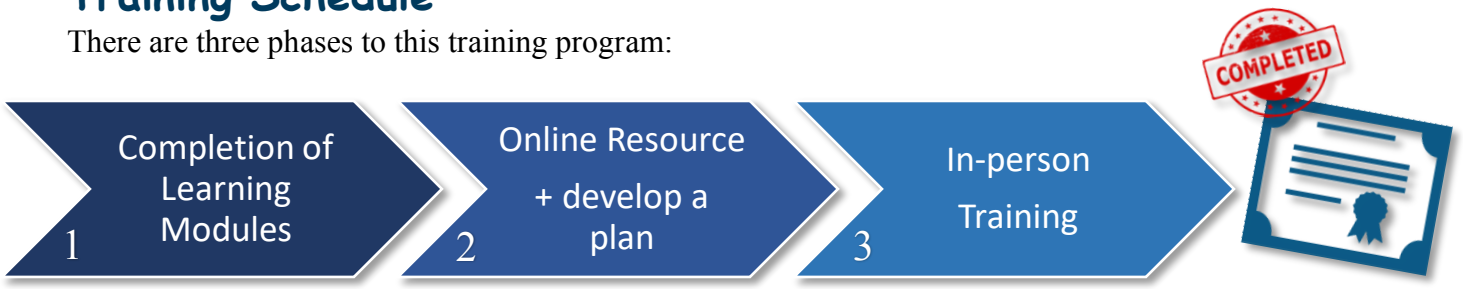
**Glossary**

**Appendices**

A. Teacher success factors: self-evaluation
B. Outdoor learning plan template
C. Resources: Five simple outdoor learning activities

## Training Schedule

There are three phases to this training program:




The three phases of this training program are developed with teachers' varying needs and resources in mind. Some teachers will only want to participate in the learning modules (Phase-1) and corresponding online resources (Phase-2) to be prepared to teach outside. Other teachers will want to participate in phase three, further developing practical skills and gaining ideas. Ideally, participation in all three training phases will best prepare teachers to engage successfully in outdoor learning experiences with their students.

Here is a breakdown of the three phases of training, with further detail:

Completion of Learning Modules

1. **Learning Modules:**
   In this phase, teachers are guided through ten online training modules. Each module includes:
   a. a short story to introduce the topic,
   b. important information that will prepare the teacher for their outdoor learning experiences,
   c. links to online resources (videos, resources, etc.),
   d. fun facts related to the module,
   e. a short quiz that allows the participant to continue to the next module.

## Ten Learning Modules:

1. **So, let's get started: What school facilities do you have?**
   This module guides teachers to look at their school's facilities and outdoor teaching resources. We begin with this important assessment so the teacher realizes the potential of what they can accomplish.

2. **Being successful…**
   Here, we look at what we can do to be successful when teaching outside. Participants will be directed to other resources not at their school that will aid in success. This includes identifying local experts that can help.

3. **The kids won't stand still!**
   This module equips the teacher to understand behaviour management when working outdoors with students. Focus is placed on developing engaging and fun activities for the students and training them in outdoor classroom procedures, similar to when they are being taught indoors.

4. **Technology and nature: an oxymoron?**
   Here we discuss the technology available for teaching outside. Topics include available apps, science tools for outdoor use, geo-caching, nature photography, etc.

5. **Safety: Come down from that tree!**
   Safety is an essential topic for teachers who teach outside. This module identifies areas of concern with important information provided by the Risk Management Insurance Company. We'll also discuss knowing the limitations of both students and teachers and introduce the "challenge by choice" approach used by outdoor professionals.

6. **What about classroom nature centres?**
   This module introduces the idea of bringing the outdoors inside. It challenges teachers to consider (a) developing an indoor nature centre, (b) working in nature centres, and (c) engaging kids actively in nature centre learning. Topics include safety, animal care, scavenger hunts, aquarium learning, etc.

7. **Developing a plan…**
   This module encourages teachers to develop plans for teaching outdoors. Meaningful Indigenous connections will be presented to engage kids in FNMI land-based learning experiences. Teachers will be guided to create grade-appropriate plans that are curriculum based. The plans will be tailored to their particular school based on its facilities and available resources. Links to helpful online resources and activities will be available for the teacher to consider.

8. **Let's go outside!**
   Do you remember visiting a park or museum that had a tour guide? A good tour guide has a system to make you feel welcome and safe when you arrive. This module helps teachers develop lesson plans to ensure a good flow from start to finish (just like a tour guide).

9. **Loving nature: Involving the entire school…**
   Here we prepare teachers to engage the entire school with nature. This includes students, teachers, families, and community members. The aim is to create a focus on outdoor learning topics such as: (a) developing outdoor classrooms, (b) developing "nature nugget" presentations for the entire school, and (c) promoting healthy lifestyles with nature.

10. **The final steps…**
    This module is meant to encourage schools and teachers to develop outdoor learning experiences with students. It wraps up the training with final thoughts.

Online Resource + develop a plan

## 2. Online Resources + Develop a Plan:

This second training phase is directly connected to the Phase 1 learning modules. It is important to note the teacher's engagement in developing a lesson plan. This plan is directly influenced by the vast list of ideas in the online resource. Teachers can browse the list of ideas organized by school resources using links provided in the training modules. For example, if the school has access to a pond, the online resources will provide activities related to ponds.

By developing an online resource for teachers, content can continually be added as we find new ideas. This resource will become more and more valuable as it grows over the years.

In-person Training

## 3. In-Person Training:

This two-day training program is intended to provide experiences for teachers and school administrators. These experiences are based on what they learned in Phase 1 and Phase 2. They will be taught by experienced outdoor educators and naturalists who can help the teacher build their skills. Training should occur at an outdoor learning site with a robust outdoor education and nature program.

Here is a sample schedule for the 2-day training:

| | |
|---|---|
| Day 1 | |
| 8:00-9:00 am | Breakfast |
| 9:15-10:00 am | Welcome, opening remarks |
| 10:00-Noon | Site assessment activity & activity demo (Block 1) |
| 12:00-1:00 pm | Lunch |
| 1:15-2:00 pm | Risk assessment and management |
| 2:15-5:00 pm (Block 2) | Activity demo with welcoming environments |
| 5:00-6:30 pm | Supper: outdoor campfire cooking demos |
| 7:00-8:00 pm | Outdoor nature presentation demos |
| 10:30-11:00 pm | Night nature hike demo |
| | |
| Day 2 | |
| 8:00-9:00 am | Breakfast |
| 9:15-10:00 am | Welcome, opening remarks |
| 10:00-Noon | Classroom nature centre & activity demo (Block 3) |
| 12:00-1:00 pm | Lunch |
| 1:15-2:15 pm | Nature technology demos |
| 3:00-5:00 pm | Developing a plan – collaborate with other teachers |
| 5:00-6:30 pm | Supper: outdoor campfire cooking demos |
| 7:00-8:00 pm | Outdoor nature presentation demos |
| 8:30-10:00 pm | Special activity |

The learning site will be chosen based on having an established outdoor learning program. The hope is that the visiting teachers are inspired by excellence in outdoor learning experiences.

## Completion of Training


Upon completion of either Phases 1 & 2 or Phases 1-3, teachers will receive a **certificate of completion**.

Additionally, after completing Phases 1 & 2 or Phases 1-3 training, teachers will receive an online **program evaluation** using Google Forms. Data collected will be anonymous and assist in improving all areas of this training.

## Timeline for Developing the Training Program:

Here is a tentative schedule for developing this training program:

| | |
|---|---|
| April 2023 – April 2024 | Collaborate with outdoor naturalists and teachers<br>Develop a plan |
| April 2024 – April 2025 | Finalize plan.<br>Develop the ten training modules<br>Collect resources from outdoor naturalists and teachers for Phase 2 online resources<br>Decide on Phase 2 online platform<br>Edit the resource book |
| April 2025 – 2026 | Finalize Phase 1 training modules<br>Build Phase 2 online platform<br>Develop Phase 3 in-person training program<br>Finalize the resource book |
| Summer 2026 | Begin training |