Beyond the Fence:

Reclaiming Children's Right to Nature

by

Jennifer Lynn Erickson

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Dr. Chris Filler (Department of Curriculum and Instruction)

Co-Supervisor

Dr. Jodi Streelasky (Department of Curriculum and Instruction)

Co-Supervisor

Abstract

Time spent outdoors in natural environments is essential to the healthy physical, social-emotional, cognitive, and spiritual development of children. Furthermore, time spent in nature helps to develop environmental stewardship in children, a necessity given the current state of the environment. Despite these benefits, children are spending increasing amounts of time indoors. Schools are in a unique position to help address this deficiency through nature-based education. My project details a comprehensive plan to develop a nature-based learning site and educational program at Lochside Elementary School. This plan addresses the major barriers that keep teachers from using the outdoor environment for educational purposes and seeks to alleviate these through education and supports. Furthermore, it considers all the major partners within the educational system in hopes of effecting change that is realistic and sustainable.

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Acknowledgements

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Chapter One: Introduction

Introduction

Current research is conclusive; time spent in nature is critical to the well-being of our children. It plays a crucial role in all areas of development including physical health, social-emotional well-being, cognitive and intellectual growth, and the development of self-identity and beliefs (Bagot, Allen, & Toukhsati, 2015; Bilton, 2010; Fjortoft, 2004; Knight, 2009; Raith, 2015). Furthermore, positive experiences in nature help children develop an affective connection to the environment, promoting the development of pro-environmental actions (Chawla, 2007; Frantz et al. 2005; Williams & Chawla, 2016), a goal of vital importance in an age of environmental degradation and uncertainty. In addition to the scientific research, there is a growing cultural recognition of the importance of getting our children back outside. To begin with, books that emphasize the importance of outdoor play and reconnecting children with the natural world are increasingly common, most notably, the seminal and best-selling book, *Last Child in the Woods*, by Richard Louv (2008). At the same time, local nature kindergarten programs have been unable to keep up to parental demand, with lengthy waitlists currently the norm. In addition to these specialized kindergarten programs, the BC Ministry of Education recommends that *all* students are provided with environmental education and place-based experiences that will help them to develop an "intuitive relationship with and respect for the natural world" (BC Curriculum, 2016). Within the new BC Curriculum, environmental understanding and direct experience in the natural world is woven throughout many of the core competencies and between the different subject categories. Likewise, at a national level the Government of Canada advocates for a similar approach to environmental education. In 2002 the federal government published a guide, *A Framework for Environmental Learning and*

Sustainability in Canada, that presents the "vision" for environmental education as being "Canadians of all generations and from all sectors of society are given opportunities to engage in environmental learning and sustainability within and beyond the classroom walls where good questions can be asked and meaningful dialogue can take place" (2002, p.7). Finally, even the United Nations claims that "the development of respect for the natural environment" (United Nations, 2005) is a basic human right of children. Clearly, there is a growing movement on many levels that reinforce the idea that children need nature, and indeed nature needs the love and care of children.

Despite the research, discourse, and policy addressing the necessity that children spend more time *outdoors*, children are instead spending increasingly more time *indoors*. Within families, this has been attributed to a number of factors including the lure of electronics, safety concerns, and lack of accessible green space (Louv, 2008). Given this disparity between what research shows children need and what they are actually experiencing, it is imperative that teachers provide meaningful outdoor experiences to fully support the healthy development of the *whole* child; social-emotional, physical, cognitive, and spiritual. To continue to ignore the necessity of providing regular and meaningful experiences in the natural world is proving detrimental to the health of our children (Louv, 2008). Given our responsibility as educators to provide for the best interests of the child, along with the idea that developing respect for nature is a basic human right, neglecting to provide opportunities for children to learn, play, and connect with nature is, in many ways, unethical. Why then is our system of education so slow at responding to the overwhelming evidence supporting children's connection to nature while at school? Key questions guiding my project and review of the literature include: What is required to shift teaching beliefs and practices regarding use of the natural outdoor world? How can a

natural play space be developed and nature-based learning be supported so that all teachers value and understand the benefits, enticing whole school involvement?

Rationale

Every day after school my son asks to play in the bushes on "the other side of the fence" (Figure 1) that borders Lochside Elementary school. This area is an untouched forest area with large trees, shrubby undergrowth, and many secret places waiting to be discovered. It is approximately half an acre of land bordered by farmland on one side and parkland on the other. As an ardent supporter of nature-based play for children, I am ecstatic that my son and his friends will happily play in this area for as long as they are allowed, creatively and actively engaging with each other and the environment. During the school day, however, this area is off limits to students. The area was once open to students but was fenced and closed off two decades ago after a student was injured while playing. While there has been much talk about once again making this area accessible to classroom teachers, nothing has yet been done to make this a reality. At the school level, mixed messages exist regarding the use of the outdoors and perceptions of risk in the outdoor environment. The Lochside school community has shown significant interest and initiative in creating and promoting the use of the outdoors through such projects as the creation of the Outdoor Learning Center in 2015. Unfortunately, the Learning Center is often unused with most teachers still choosing to teach predominantly indoors. When teachers do take students outside, this time is often viewed as non-instructional or "action break" time for children to play on the fields or playground. Furthermore, a school culture exists that could be characterized as “risk-averse,” where caution is favoured over healthy risk and natural exploration. For example, when a large branch had fallen in a storm my students were naturally drawn to the possibilities of this impressive new "toy." They worked together to drag the limb,

experimented with how they could rock it using force and momentum, and wondered about why it fell, what tree it had come from, and how old it was. It wasn't until later that I learnt that this tree limb had been deemed "off limits" to the children and that a rule existed that students can only play with sticks no larger than their hand. Given the existing school rules and culture it brings to question, if the area "beyond the fence" *is* re-opened, will teachers even use it?

Figure 1. The fence and gate bordering the wild, nature area at Lochside School.

As both a teacher and parent at Lochside School, I am committed and passionate about increasing the accessibility and use of the natural environments surrounding the school. For the purpose of this project I define a "natural environment" as any unmanicured, undeveloped area and all of the living and nonliving things contained within and "nature-based education" as a

wide range of school activities that may occur in such a place including direct teaching, student-led inquiry, and free exploration. While an ardent supporter of nature-based education, I also understand the barriers that often keep teachers inside the classroom; the uncertainty involved when entering a natural environment and engaging in activities deemed to be risky, the perceived pressure to "cover the curriculum," lack of confidence in teaching environmental education, and the reluctance to step outside of established methods and beliefs. This is especially true when considering the exploration of an undeveloped natural area, such as "the other side of the fence." As a parent, I also understand the barriers that caregivers face when trying to schedule time each day for meaningful experiences in nature. With busy schedules, working parents, urban living, and a good portion of daylight hours spent in school (especially during the winter months), it can be incredibly difficult for parents to provide nature experiences for their children within the busy day-to-day routine. In my own life, after a day of work I often have barely enough time and energy to prepare dinner, take care of daily chores and homework, and get my three children fed and into bed. When my children do go outside, our city lot offers green space and gardens, but hardly the ideal natural environment, with the closest nature park a ten minute drive away. Truly, the easiest place for my children to access nature is sneaking in to the "other side of the fence" after school.

In light of these realities, I believe there is an obligation for the school system to provide the nature experiences necessary for both the personal well-being of our children as well as for the future health of our society and planet. As a parent, I want this for my children. I want them to experience the natural environment not as something separate from education and schooling but as an authentic source of awe, wonder, and joy that is intricately and organically connected with everything they do. I want them to develop an understanding of their natural environment

through direct experience and observation. I want them to understand that nature does not need to be fenced and restricted. I want them to see that their teachers, school, and community value and honour nature through the decisions they make in how and where they spend their classroom time. As Orr states,

> *All education is environmental education.* By what is included or excluded, emphasized or ignored, students learn that they are a part of or apart from the natural world. Through all education we inculcate the ideas of careful stewardship or carelessness (1992, p.92).

Our educational system is shaped and influenced by many forces including individual beliefs, school and cultural practices, the influence of administration and school districts, and the direction of the provincial Ministry of Education and federal government. Sustainable change in the way that our schools approach environmental education necessitates involvement of *all* of these various levels (Fullan, 2003). Given the reasons outlined above, I believe it is imperative that we, as teachers, look critically at our own practice as well as the system we work within in order to provide the educational experience that our children need and deserve. At Lochside School, reclaiming the area "beyond the fence" is a first step in reclaiming our children's right to nature.

Theoretical Background

Children learn through experience. They construct knowledge through interactions with themselves and others, fueled by their own hearts and minds; through this process "(they) become someone through what (they) know" (Jardine, 2008, p.155). My capstone is built on the foundation of various theorists who speak to the way children learn, the nature of knowledge, and the greater implications of children's learning for the future health of our planet. The

theorists that have resonated and inspired my own philosophy regarding how children learn with and in the natural environment include: social constructivist theory (Dewey, 1938; Malaguzzi, 1994; Vygotsky 1933); place-based theory (Sobel, 2005); and ecopedagogical theory (Jardine, 2002).

Social Constructivist Theory:

Social constructivist theory contends that children construct their own knowledge through direct experiences with others and the environment. Over a century ago, Dewey (1938), asserted that children learn best when guided by their own interests, a process of inquiry in which children engage in experiential learning that is personally meaningful. In this way, environmental education is about direct experiences in the natural world, learning through the senses and the emotions, not a textbook. Likewise, within the work of Loris Malaguzzi (1994) and the Reggio Emilia schools, children are seen as strong, intelligent, and active participants in forming their own knowledge. From this philosophical perspective, the educator's role becomes one of listening, reflecting, and co-constructing knowledge with children.

Place-Based Theory:

Place-based theory (Orr, 1994, 1992; Sobel, 2013, 2005) also informs my project. Place-based theory advocates for education that is rooted in direct experiences with the local environment and community. Instead of focusing on abstract concepts or global issues, children use their local community as a starting point to learn concepts across the curriculum. This direct, real-world experience helps develop positive connections to the land and community in which they live, serving to foster future environmental stewardship and civic responsibility. In turn, this authentic participation in the workings of the community helps to improve the local environment and increase community vitality (Sobel, 2013). This "pedagogy of place" is a theoretical

framework that advocates for a curriculum specialized and responsive to the unique integration of school, community, and environment (Sobel, 2013, p.11).

Ecopedagogical Theory:

Finally, the central tenets of ecopedagogical theory (Bateson, 1972; Jardine, 2002) underlie this project. This theory asserts that environmental education requires more than cognitive knowing; it necessitates a philosophical shift away from the notion of individual intelligence to an ecological intelligence that recognizes the interdependence and interconnectivity of all life. Ecopedagogical theory recognizes that it is not enough to simply teach from a book about the environment, children need understanding that grows from a direct intimacy and connection with the environment itself. It is this understanding that shapes who they become, how they view themselves in relation to the environment, and how they will live and care for the earth.

Within all these theories there is a common thread of sensitivity, integrity, connection, and care. Often teaching and learning can become a hurried exercise in meeting requirements, disconnected from the larger world outside the classroom. By embracing a reflective stance on the values that we as, teachers, communicate through what and how we teach, hopefully our educational system can begin to reinforce the idea that learning itself requires sensitivity, integrity, connection, and care. These values have the potential to influence the role of the teacher, the role of the student, and the development of a relationship with the natural outdoor world.

Significance

The Earth is facing increasing environmental problems including climate change, environmental degradation, and depleted resources (United Nations Environment Program, 2015). As Bowers (2011) attested, "our survival depends upon a radical transformation of the dominant patterns of thinking in the West" (p.13) According to the ecopedagogical theorists (Jardine, 2005; Sorin, 2005), we must move towards an ecological intelligence that honours the interconnectivity of all life while challenging many of the taken for granted ideas and ways of being that shape our current behaviour and thought. Jardine (2012) and Sorin (2005) argued for positive, first-hand experiences in nature in order to build knowledge and connection with the natural environment. Chawla (2007) showed that time spent in natural environments helps children develop a stronger emotional connection to nature which translates into pro-environmental actions. In an age of increasing degradation of the natural environment, fostering an ethos of understanding and care for the environment can be seen as a goal of global importance.

Further, current research (Bagot, Allen, & Toukhsati, 2015; Bilton, 2010; Fjortoft, 2004; Knight, 2009; Raith, 2015) has clearly revealed that there are multiple physical, cognitive, and social-emotional benefits to children learning and playing outdoors. Outdoor play has been associated with more vigorous physical activity (Fjortoft, 2004), better gross motor skills development (Raith, 2015), and healthy opportunities for risk-taking (Constable, 2012; Sandseter, 2012). On a social-emotional level, time spent in nature has been shown to restore psychological resources (Kaplan, 1995), lower stress (Kaplan, 1995), improve social behaviour and self-regulation (Bell & Dyment, 2008), foster more inclusive play (Fjortoft, 2004), and strengthen relationships (Elliott & Chacellor, 2014). In addition, there are many cognitive

benefits associated with time spent in or near natural environments. Natural, green environments help children concentrate and increase creativity (Raith, 2015), restore the ability for directed attention (Kaplan, 1995), improve memory (Dadvand et al., 2015), and raise standardized test scores (Wu et al., 2014). Parents are becoming increasingly aware of the critical role that nature plays in healthy childhood development. One survey done by The Nature Conservancy in 2014 found that parents ranked connection with the natural world second only to reading in terms of importance for their children's development (The Nature Conservancy, 2014, as cited in Sampson, 2015).

In spite of this evidence, children are spending increasingly more time indoors. Parenting practice does not align with proposed beliefs. The reasons for this are multifold including the lure of technology, lack of green space, over-scheduling, and concerns for safety (Brussoni, Olsen, Pike, & Sleet, 2012; Louv, 2005). In light of the overwhelming evidence that our children are not spending the time outdoors necessary for optimal development, there is a growing impetus and obligation for schools provide for this, both for the health of our children as well as the health of our environment (Chawla, 2007; Williams & Chawla, 2016). However, even though educators recognize the value of outdoor learning, their use of the outdoors is often limited - similar to parents, teachers' practices do not always align with their beliefs (Ernst, 2014). It is imperative that teachers are provided the education, support, resources, and time necessary to examine their beliefs and develop the confidence and competence needed to provide the kind of education that our society and our children so critically need. (Ernst, 2014; Nundy, Dillon, & Dowd, 2016).

Project Overview

In my review of the relevant research that follows, I explore in greater depth the research in the field on nature-based activities including the benefits for the holistic development of children. I look more closely at teachers' practices and beliefs towards nature-based learning as well as cultural change at the school level. I also look at best practices for supporting and encouraging meaningful nature-based education. In Chapter 3, I show how this literature provides a framework for creating both the physical outdoor natural space, as well as the supporting structures, education, and resources necessary to affect change in the use of the natural environment at Lochside School. Chapter 4 includes my reflections and implications towards my own practice, as well as limitation and recommendations for future implementation.

Chapter 2: Literature Review

The importance of re-connecting children with nature is gaining increasing attention in both academic research as well as popular culture. In this chapter, I begin by discussing the growing research supporting the clarion call to take our children outside. I then look at the current state of our environment and the cultural beliefs that shape the way we view and interact with the natural world. To challenge these dominant cultural beliefs, I look at research that advocates for reconnecting children with nature for both their own health, as well as to help create pro-environmental behaviours of a future generation. I then look at best practices in outdoor learning while examining how many of the theories and philosophies support the British Columbia Ministry of Education's new curriculum (2016). After establishing the importance of re-connecting children with the natural world, the 'why' of my capstone, I look at the considerations for implementing this at the public school level, the 'how.' I examine research on teacher's beliefs and practices, barriers to implementation, and ways to affect change at the school level.

Supporting the Holistic Growth of the Child

"Those who contemplate the beauty of the earth will find reserves of strength that will endure as long as life lasts" (Rachel Carson, 1956, p.100).

This poignant sentiment made by the biologist and conservationist, Rachel Carson, echoes what current research is proving; time spent in nature strengthens our children. Much of this research compares "natural" or "greened" play areas, defined as play areas that incorporate elements of nature such as trees and plants, with traditional playgrounds. Others look at innovative programs that take children to "wild" areas, such as undisturbed forest and meadow. Evidence is mounting that time spent in natural environments supports the social-emotional,

cognitive, physical, and spiritual development of children (Bagot, Allen, & Toukhsati, 2015; Bell & Dyment, 2008; Berger & Lahad, 2010).

Social-Emotional Development:

In terms of social-emotional development, time spent in nature has been shown to lower children's mental stress, restore depleted psychological resources (Kaplan, 1995), help them deal with crisis (Berger & Lahad, 2010), develop resiliency (Berger & Lahad, 2010), increase self-esteem, and help develop an improved overall quality of well-being (Bell & Dyment, 2008). Research has found that children's perceived restorativeness, a psychological process for the renewal of depleted capacities, is directly related to the vegetation volume of their play area (Bagot, Allen, & Toukhsati, 2015). Natural play areas are felt by children to be more restorative, or more strengthening than traditional playgrounds.

Kaplan's research has shown that this perception is indeed supported by empirical findings, particularly in the ability of natural environments to aid the recovery of directed attention (1995). In his Attention Restoration Theory, Kaplan explained how directed attention is critical to overall human effectiveness in that it is the key to information processing, decision making, problem solving, and appropriate behaviour. Furthermore, directed attention is also a particularly "fragile" psychological resource, susceptible to fatigue and depletion (Kaplan, 1995, p.178). Kaplan drew on empirical research to show how natural environments have proven to be more effective than urban environments in restoring directed attention. This is due to the particular likelihood of a natural environment meeting the four requirements of a restorative environment; "being away," opportunities for "fascination," "extent" or the feeling of a place being "rich enough and coherent enough so that it constitutes a whole other world," and "compatibility" between the setting and human desires (Kaplan, 1995, p.173). In these ways,

"experiences in natural environments can not only help mitigate stress; it can also prevent it through aiding in the recovery of this essential resource (directed attention)" (Kaplan, 1995, p.180). Clearly, there are important implications of Kaplan's Attention Restoration Theory within an educational setting for both learning as well as overall psychological well-being.

Natural play areas have also been found to increase the quality of social behaviour between children, a quality that persists even once back inside the classroom. A study done of 45 schools in Toronto, Canada (Bell & Dyment, 2008) found that "greened" school yards fostered equality, cooperation, and communication. This study also found a decrease in aggressive play and discipline problems and more inclusivity with regards to age, class, and race. This was partially attributed to the greater range of activities available in a natural play area which appeals to a wider range of children than the traditional playground and soccer field. As a result, greened school yards have been reported to be more peaceful, harmonious, and socially inclusive - a result that was consistent amongst the 45 schools, regardless of socio-economic status of the school or amount of funding for the greening project (Bell & Dyment, 2008).

Finally, research has shown that nature-based education programs help to strengthen the relationships between students, between students and teacher, and with parents and the community (Elliott & Chancellor, 2014). Due in part to the often automatic re-framing of the student-teacher relationship that happens once outside of the traditional classroom, research has found that teachers behaviour when outdoors becomes less rigid, more relaxed, and more tolerant of loud and boisterous activity. Teaching methods become more child-initiated with teachers spending more time listening, observing, and documenting learning; acting as facilitators rather than instructors (Maynard, Waters, & Clement, 2011). Teachers also found that when outdoors they were able to spend more "quality time" with children due to the often universal engagement

of the children when in a natural outdoor environment (Elliott & Chacellor, 2014). These changes in expectations and abilities when outdoors serve to strengthen the bond between teacher and student. Likewise, incorporating outdoor learning into the school system holds the possibility to strengthen the bonds between students, teachers, parents, and the greater community (Elliott & Chancellor, 2014). In this way, creating opportunities for nature-based learning can build opportunities for students to feel connected with the community they live in benefiting both the child as well as the community at large.

Physical Development:

Outdoor learning and play also increases the physical resources of our children. On a very basic level, children need fresh air, sun, and daylight. A study done on classroom air quality found that many classrooms are "very unhealthy" in this regard (Bilton, 2010, p.17). Sunlight and daylight are another necessity. Being outside, and exposed to the sun helps to regulate hormones and activate Vitamin D, the role of which in promoting health and preventing disease is gaining increasing prominence.

Furthermore, simply being outside is also associated with increased physical activity with evidence showing that time spent outdoors is a strong indicator of overall physical health. This is of particular importance in an age of increasingly sedentary children and the resultant increase in obesity and associated health problems (Woo et al., 2013). Natural settings in particular have even greater physical health benefits as the range of motion required in a natural setting is more diverse than that of a traditional playground. A study done with two groups of 5-7 year olds in Norway (Fjortoft, 2004) found that the group of children that played in the forest every day, as opposed to the group that played on the traditional playground, had significantly greater motor fitness, especially in regards to balance and coordination; "demanding movement tasks stimulate

learning more than stereotypic movements, and engage more varied movement patterns" (Fjortoft, 2004, p.39).

Finally, the opportunities for challenge and healthy risk-taking were also found to be greater in natural play areas (Fjortoft, 2004; Sandseter, 2012). This is important as research has found risk to be essential for children's healthy development in many domains. Sandseter, a Norwegian researcher, proposes that there are many reasons to encourage risk rather than limit it, as is the current societal norm in Canada. Her research shows that risk-taking behaviour promotes physical activity, independence, and social and cognitive development. (Sandseter, 2012). She draws attention to the naturally progressive risk-taking of children and their ability to assess and regulate their own behaviour. Through risky-play, children learn how to self-regulate and manage risk, important transferable skills for managing future risk and avoiding injury (Sandseter, 2012). Furthermore, Sandseter draws attention to the potentially antiphobic function of risky play, serving a role in helping children to encounter and cope with anxiety-provoking situations. She claims that risky play may be a way to reduce phobias and anxiety amongst children (Sandseter, 2011). Even the BC Injury Research and Prevention Unit, a Canadian organization that works to reduce injuries to the general population, proposes that " keeping children safe involves letting them take and manage risk" and advocates for policy that keeps children as "safe as necessary" rather than as "safe as possible" (Brussoni, Olsen, Pike, & Sleet, 2012, p.3134).

Cognitive Development:

The impacts of the natural environment on cognitive development are just recently being proven through empirical research. Two recent studies have used satellite imaging to investigate the relationship between the "greenness" of school yards with cognitive functioning and

academic performance (Dadvand et al., 2015; Wu et al., 2014). The first study, conducted in Spain, found that the level of greenness surrounding a school affected measurements of growth in affective working memory, superior working memory, and inattentiveness over a twelve month period (Dadvand, et al., 2015). Similarly, a study done in Massachusetts found that the greenness of children's surroundings was positively linked to performance on standardized tests, even after adjustments were made for socio-economic demographics, gender, and levels of urbanization (Wu et al., 2014). Indeed, the previously mentioned social-emotional and physical benefits of natural outdoor areas play a similar supportive role in cognitive development and learning. For example, Kaplan's Attention Restoration Theory (1995), previously mentioned in relation to social-emotional development, plays a concomitant role in cognitive learning and development. Cognitive development is inextricably linked with overall physical and social-emotional health.

Spiritual Development:

Finally, an area often neglected by academic research, and an area that I will explore in more depth later, is the spiritual development of the child. By spiritual, I am not speaking of organized religion but a feeling of connection, purpose, and belonging in one's own life. As many educators, philosophers, and environmentalists have argued, developing a connection with the natural world is a necessary and integral component of developing this sense of spirituality (Bateson, 1972; Jardine, 2012; Louv, 2008; Orr, 1992, 1994; Sobel, 2005, 2008). One study examined a Nature Therapy kindergarten program offered to help Israeli children develop resiliency and cope with uncertainty and stress following the Second Lebanese War. Children traumatized by acts of war were able to find peace, hope, and connection through the power of nature; "Nature's role in the process (of healing) is crucial;... it transmits a message extending

beyond time; as an entity that is larger than us, it represents the eternal and the universal" (Berger & Lahad, 2008, p.898). It is this conceptualization of nature that may hold the greatest benefit for our children and society.

Academic research often compartmentalizes childhood development in order to study and empirically test various influencing factors. In reality, however, childhood development is not so easily segregated. An educational program must take care to acknowledge specifics while keeping in mind how they work synergistically to support the holistic development of the child. What is quite clear is that the benefits of reconnecting children with nature extend across all domains of children's development and well-being. Two researchers that adopt this stance are Bell and Dyment (2008). They acknowledge the growing body of research on the benefits of green-school grounds and argue that this should be used to advocate for re-connecting children with nature on the basis of health promotion from a holistic perspective. Health promotion in schools is a growing international movement (Bell & Dyment, 2008); on a local level, my own school in the Saanich School district supports the "Healthy Schools Program," an "Unplug and Play" program, and a program called "Build our Kids Success" which emphasizes physical activity. However, health promotion at Lochside, consistent with the research findings at other schools (Bell & Dyment, 2008), does little to consider the role of the physical environment in supporting children's health. Bell and Dyment claim that "health promotion must extend beyond interventions that target individual behaviour to a more comprehensive and ecological model that addresses the settings where people live, work, and play" (2008, p.86). I would argue that the same should be said when discussing children's development; a holistic view of the child recognizes the interconnection of physical, mental, emotional, and spiritual development and the integral role that the environment plays in children's health and well-being. By using a more

comprehensive and ecological view of children's development, educators can perhaps be able to more readily identify and challenge some of their (our) taken-for-granted ideas regarding the purpose of the public education system and the role that nature plays in the holistic health and development of our children.

The Current State of our Environment and Pro-Environmental Behaviours

"We cannot solve our problems with the same thinking we used when we created them" (Albert Einstein).

An equally convincing argument for the importance of reconnecting children with nature is the role that intimate experiences with nature plays in the development of pro-environmental behaviours. Our planet is at a place of environmental crisis. In 2009, a team of the world's top scientists, including Nobel Laureate Paul Cruzen and NASA climate scientist James Hansen, recognized nine life-support systems critical for human survival as well as safe zones within which humans can safely operate. We have currently exceeded the safe limit for three of these systems (biodiversity, the nitrogen cycle, and climate change) and are set to reach the boundary of three more by mid-century (ocean acidification, freshwater cycles, and land use) (Johan et al., 2009 as cited in Goleman, 2012). Cruzen and others have proposed that we have moved from the Holocene into a new geological epoch he terms the "Anthropocene;" an era characterized by rapid climate change, ocean acidification, and disappearing biomes. Plants, animals, and people are all at risk (World Wildlife Fund Living Planet Report, 2016). While disturbing, I include this information not to demoralize the reader but to re-emphasize how critical it is that we question and change the way that we encounter and interact with the natural world. Public education is a powerful platform in which to enact such critical thought and change.

However, just as I do not wish to demoralize the reader, similar care must be taken not to demoralize children in our attempts to "educate" them on the state of the environment. Sobel (1996) posits that education that focuses too early on environmental problems or distant ecosystems with which children have no direct experience engenders feelings of "ecophobia," or fear of ecological deterioration (Sobel, 1996, p.8). Deficient in first-hand nature experiences, children may begin to associate the natural world with fear, rather than joy and wonder. Eventually, this may cause a psychological disassociation from environmental action and the natural world in general, the opposite desired effect of so-called environmental education.

Instead, children must begin by developing love, curiosity, and affinity for the natural environment. Current research and anecdotal evidence points to the importance of intimate and sustained experiences in the natural world for the development of pro-environmental actions and beliefs. In interviews with prominent conservationists and environmentalists, researchers have found two childhood factors key in determining their commitment to environmental protection: early experiences in nature and the influence of a mentor (Chawla, 2007). Many scholars emphasize the importance of regular and sustained first hand experiences in nature to develop a personal connection with the natural world (Chawla, 2007; Orr 1992, 1994; Sobel, 2005; Williams & Chawla, 2016). This connection fosters an ethos of care and protection for the natural world and helps create a culture of environmental stewardship. Researchers have found that this affective connection to the environment can be attributed in part to the restorative quality of nature; children intuitively want to protect the natural environment that strengthens them (Collado & Corraliza, 2015). Environmental knowledge also plays a role in environmental attitudes, a study done in Greece with students involved in protecting sea-turtle rookeries found that increased knowledge reinforced children's locus of control and their understanding and

concern for the sea turtle. These factors were found to influence positive environmental behaviour towards the sea turtle and perhaps, by extrapolation, to other aspects of the natural world (Dimopoulos, Paraskevopolous, & Pantis, 2008).

And yet, ecopedagogical theorists have long held that it is not just our practices but our social and cultural belief system that has to change in order to create a sustainable relationship with our environment. Bateson claims that our survival depends upon a radical transformation of the dominant patterns of thinking in the West (Bowers, 1972). Echoing Einstein's famous quote, Orr emphasizes that the crisis cannot be solved by the same kind of education that helped create the problems. "Against the test of sustainability, our ideas, theories, sciences, humanities, social sciences, pedagogy, and educational institutions have not measured up. School, colleges, and universities are part of the problem" (Orr, 1992, p.83).

Western culture and our deep cultural beliefs in individualism, economic growth, and consumerism put us at odds with a view that all life is connected and interdependent (Bowers, 2013). Furthermore, teaching practices often serve to further segregate and compartmentalize learning and living. Jardine (2002) drew attention to the way teachers' attempts to integrate subject matter with a common "theme" often serves to fragment and strip the learning of its inherent meaning and integrity, disconnecting it from its place and significance in the real world. For example, a classroom "mitten" theme may include mitten poems, mitten paintings, and mitten sorting. However, none of these activities touch on the true place, stories, and meanings of the concept of "mitten;" the home-spun mittens our grandmother knit for us, the craft-work behind an aboriginal beaded fur mitten, or the stitches that need to be counted and the patterns created. Such an attempt to "integrate" the curriculum actually serves to disconnect learning from its true meaning and place in the world, re-enforcing a view of life as fragmented and

disconnected (Jardine, 2002). As educators, even our attempts at creating "connection" can have an unintentional opposite and negative effect. In this way, it is ignorant to expect that simply taking children outside will occasion significant future changes in environmental protection. Instead, he calls for education that is holistic and authentically connected and integrated with the stories, places, and experiences of real life. In terms of environmental education, he emphasizes the importance of children having deep and meaningful connections with nature through which they develop knowledge that is "ecologically, pedagogically, and spiritually vital" (Jardine, 2002, p.155).

In a similar vein, Rose and Cachelin (2013) posit, "critical sustainability in experiential/outdoor education must reach beyond a localized stewardship given globalization and its ramifications for social and ecological justice" (p.9). By this, they suggest that it is not enough to simply look at environmental issues, but we must also must address the systems that create and sustain the degradation of the natural environment. What does this mean for the public education system? How can this be accomplished without creating "ecophobia" (Sobel, 1996, p.8) amongst our children? To begin with, it requires a reflective stance on the part of the practitioner to understand how the liberal beliefs of our western culture are the ones that have created the environmental crisis with an acknowledgement of the role that public education plays in reinforcing these beliefs. Further, it requires teachers to contemplate how the hegemonic practices of public education may serve to de-value the understanding of the interdependency of humans and the environment (Bowers, 2013). Rose & Cachelin (2013) state that outdoor education must serve three purposes: re-envision and re-present the role of humans as part of a larger ecological system, instill a sense of place, and unite students' present and future identities. Orr reminds us that not all education is created equal. “[M]ore of the same kind of education will

only compound our problems...it is not education (per say) that will save us, but education of a certain kind" (Orr, 1991, p.8). Public education and educators must not only examine our current practices regarding the use of the natural outdoor environment but also the taken-for-granted assumptions upon which our educational system and society is based.

A Generational Disconnect

"Nature is not a place to visit, it is home" (Gary Snyder).

Despite the growing body of research supporting the importance of reconnecting children with nature, the reality is that the opposite is occurring; children are spending increasing amounts of time indoors and less time in contact with nature. Richard Louv, author of the best-selling book "Last Child in the Woods" (2008), coined this phenomenon "nature deficit disorder" (p.36). Indeed, given the multitude of developmental benefits detailed above, this truly is a disorder. The reasons for the trend are many. First of all, the lure of technology plays a significant role in keeping children indoors (Fraser, 2012). This is compounded by a lack of perceived safety in the outdoor environment; stranger danger and traffic safety among them (Carver, Timperio, & Crawford, 2006). Some of these concerns, such as traffic, are true dangers substantiated by accident reports. However, such thinking and behaviour creates a double-bind; as parents chose to drive their children instead of allowing them to walk, traffic increases and pedestrians decrease subsequently *creating* a less safe environment. Conversely, perceptions of stranger danger seem to be unfounded in abduction and assault statistics, nonetheless stranger danger is an important consideration as it influences parents behaviour (Carver et al., 2006). This fear of danger extends to children engaging in risky physical behaviour as well. Research indicates that risk is necessary for healthy development; children need experiences that are challenging and involve uncertainty in order to develop autonomy, competence, courage, and resiliency (Niehues

et al., 2013). A growing risk-aversion in our society has impeded many childhood activities and contributes to a wider "society of fear" (Little, 2015). When children do go outside they are usually closely monitored, most often participating in organized sport or adult-led activity. Furthermore, time constraints due to over scheduling and the rise of dual income families further inhibits the ability of parents to provide adequate outdoor activity (Forsberg, 2009). Urbanization and the reduction of green space are further inhibitors of nature experiences for children (Louv, 2005). Finally, regulations, policy, fears of litigation, and societal pressure, or as Louv termed it the "criminalization of play" (Louv, 2008, p.27), further serve to decrease opportunities for play in natural outdoor areas. Many of these factors influence the mainstream school system and teacher behaviour as well (Ernst, 2015). In light of this striking disparity between what our children need and what they are receiving, it is imperative that the public school system does what it can to address this "deficiency" in order to truly support the holistic health and well-being of our children and society.

Best Practices and Case Studies

"It is not half so important to know as to feel. If facts are the seeds that later produce knowledge and wisdom, then the emotions and the impressions of the senses are the fertile soil in which the seeds must grow. The years of early childhood are the time to prepare the soil" (Carson, 1956, p.56).

Re-connecting children with nature comes in many forms and philosophies. According to Orr, the core of an ecological literacy program should be to develop "knowing, caring, and practical competence" (1992, p.92). The following best practices and case studies exemplify what current research deems to be best practices in eco-literacy programs.

Inquiry-based, Experiential and Emergent Curriculum:

Children are born with an innate desire to interact and learn about the world around them. They are active and capable meaning-makers in their own lives and, when given the opportunity, can initiate and direct their own learning (Aasen, Grindheim, & Waters, 2009). Inquiry-based learning is based on the interests and passions of the students. It is through their wonderings, their fascinations, and their questioning that the curriculum emerges. Within this model, the teacher plays an important role in facilitating and extending learning through questioning, encouraging discussion, providing resources, and listening to and documenting the learning that is taking place. Understanding is developed through negotiation and shared thinking between children, and children and teachers (Waite, 2016). This learning is experiential in that occurs through direct contact with nature in contexts that are based in the real world. In this way, children come to see that their learning and knowledge is important and worthwhile (Waller, 2007). Furthermore, research advocates for giving children the opportunity to not only direct their own *learning*, but to also shape the *spaces* in which this learning happens (Waite, 2016). This recognizes the child as knowledgeable and capable and can be a powerful force in fostering engagement, creating a sense of ownership, and increasing levels of usage of outdoor spaces (Waite, 2016).

This experiential, emergent, and inquiry-based approach to learning both *supports* environmental literacy while simultaneously being *supported by* the natural environment. By this I mean that not only is this approach to teaching central to best practices for outdoor education, but being outdoors naturally engenders teaching that is more experiential, emergent, and inquiry-based. In the outdoors, the taken for granted modus operandi present within the classroom walls is removed and more egalitarian relationships are developed (Waller, 2007). Researchers found

that teachers automatically adopt pedagogical approaches that are more child-initiated and child-centered when outside (Maynard, Waters, & Clement, 2011). This positive-feedback cycle of best practices is yet another reason to take our students outdoors.

Most importantly perhaps, an approach to nature-based learning that is experiential, inquiry-based, and emergent retains and fosters the joy and wonder that draws children to nature. The natural world is inherently fascinating to children (Kaplan, 1995). Education that builds upon this fascination, providing for sensory rich experiences in the natural world will imprint not only a child's mind but their heart as well. A book can never compare to the emotions evoked through discovery and first-hand exploration of the natural world.

Learning is a social process:

The process of experiential, inquiry-based, emergent learning involves the negotiation of meaning between children, and between children and adults; in other words, it is a social process. In this model, teachers are not the conduits of knowledge but instead are co-creators, collaborating with children in the construction of shared meanings and understanding. This philosophy is exemplified by Reggio Emilia schools of Italy and the work of Loris Malaguzzi (1994) where children are seen as strong, intelligent, and active participants in forming knowledge through direct interaction with others and the world around them. Within this social constructivist framework, teachers do not endeavour to transmit knowledge but, instead, to "activate within children the desire and will and great pleasure that comes from being the authors of their own learning" (Malaguzzi, 1994, p.3) In addition, Malaguzzi (1993) highlighted the significance of the learning environment as the "third teacher" and the importance of building relationships with families and communities (Malaguzzi, 1993).

Once again, the outdoor environment facilitates this more collaborative and egalitarian social structure, allowing children and adults to be less governed by systems of power and instead enter into relationships that are based on shared exploration and discovery. As Waller posits,

> Natural (wild) outdoor environments can be developed as appropriate 'children's spaces' because within this space activities and culture are created by the children themselves. In these 'children's spaces' pedagogy and research take on different forms as children and adults co-construct knowledge together, enjoying and learning from, and with, the outdoor environment" (2007, p.404).

In the outdoor environment, researchers highlight that collaboration and cooperation should be encouraged and reinforced, creating interdependency amongst the group (Tsekos, Christoforidou, & Tsekos, 2012; Waller, 2007). Relationships are built not just amongst the class, but with families and the community as well; building connections with families and the communities is indeed an essential part of an outdoor program. This process of relationship building need not be just human-centered, but can extend to the relationship that is built between children and the environment itself. Learning about the environment is no longer based on abstract ideas presented within the classroom; instead, it arises through a true relationship and understanding of the natural world. Learning becomes not just about "knowing," but instead a process of listening, reflection, and negotiation. It expands our notions of what a "teacher" is, what "knowledge" is, and what it means to "understand."

Developing a Sense of Place:

Many researchers and theorists point to the importance of children developing a "sense of place;" a connection, understanding, and love for their immediate environment and community (Orr 1992, 1994; Sobel, 2005). Indeed, Harvard University scientist Edward O. Wilson argues that the desire for connection with other living organisms and the natural world is an innate drive of human nature; a phenomenon he coined "biophilia" (Wilson, 1984, p.85). Likewise, Chawla, an international expert on children and nature, argues that children need to develop a bond with the natural world in order to form the foundation for good health and environmental stewardship (2007). As we become increasingly disconnected from the natural world, helping children foster this sense of place becomes increasingly important.

Place-based education is a broader interpretation of environmental education that teaches to both the natural and the built environment, recognizing the interconnection of schools, community, and the environment (Sobel, 2005). Within this model, students are involved in hands-on, real-world learning situated in their local environment and community. According to Sobel, this hands on, real-world experience increases student engagement and achievement and enables children to truly know, understand, and love the environment in which they live. This type of education helps students create not just knowledge, but also a story or a history with their local environment. Learning of this kind happens not just in the head, but in the body and the heart as well. It is this mind, body, and heart connection to place that engenders students to become environmental stewards, conscious of the ethical imperative to care for and protect the land that sustains us. A connection to place also helps to strengthen connections between individuals and the community building strong, honest citizens and healthy communities (Orr, 1992). Furthermore, such an approach to education recognizes the agency of children and

involves them in authentic work and learning that empowers them to be agents of change in their own community; "we're not preparing students for tomorrow, we're preparing them to solve the problems of today" (Sobel, 2005, p.12). In Sobel's words, place based education is about

> emphasizing hands-on, real-world learning experiences, this approach to education increases academic achievement, helps students develop stronger ties to their community, enhances students' appreciation for the natural world, and creates a heightened commitment to serving as active contributing citizens. Community vitality and environmental quality are improved through the active engagement of local citizens, community organizations, and environmental resources in the life of the school (2005, p. 7).

Sobel also drew attention to the important role that the environment plays in early and middle childhood. Children, he contends, have a natural fascination and affinity for natural environments with childhood being an important and pivotal time for developing a connection to nature. In particular, children have a special affinity for the construction of and affiliation with "special places" (Sobel, 1993, p.7). He argues that special places created in the natural environment (such as forts) serve an important role in the psychological development of children and their feelings of connection to the environment;

> "Developing this sense of place depends on the previous bonding of the child to the nearby natural world in middle childhood. The sense of place is born in children's special places…. If we allow children to shape their own small worlds in childhood, then they will grow up knowing and feeling that they can participate in shaping the big world tomorrow" (1993, p.161).

In keeping with E.O. Wilson's concept of biophilia, children are biologically attracted to the natural world and are innately fascinated with such activities as nature play and fort building as they serve an evolutionary purpose (Wilson, 1984). Helping children to develop a sense of place not only serves this biological need but also serves to strengthen children's connection with the natural world and the larger community.

Family and Community Involvement:

Parents, community members, and community organizations are valuable assets and can greatly contribute to the success of a place-based environmental program. Such an approach recognizes the social and cultural context of the child, situating learning within this context instead of apart from it. It is a model that supports the child, the family, and the community while concurrently being *supported by* the child, the family, and the community.

The benefit of parental engagement in learning has been well established by researchers and educators. Benefits include increased motivation and engagement, increased achievement, raised self esteem, and raised aspirations (Goodall & Montgomery, 2014; Sobel; 2005). Furthermore, such an approach recognizes the funds of knowledge that children bring to school, using parents as a resource to gain both a better understanding of the child and to contribute specialized knowledge to the learning of all students (Hedges, Cullen, & Jordan, 2011). It is an asset based approach to education that welcomes and acknowledges parents as true partners in their child's education (Torre & Murphy, 2016). While the importance of including parents is nothing new in the educational field, researchers have recently been reconceptualising how parent involvement is viewed. Goodall & Montogomery (2014) advocated for the progression from "parental involvement" with schools to "parental engagement" with learning (2014, p.399). This progression is characterized by a shift in focus from the relationship with the school to the

relationship with their child's learning, creating greater commitment and sense of ownership of action amongst parents. Furthermore, it is "parental engagement" that creates the greatest benefits for children. This re-conceptualization of parent involvement also necessitates a re-conceptualization of "teaching" from the sole responsibility of school staff to a more inclusive model that recognizes learning requires the support of all involved (Goodall & Montgomery, 2014). Torre & Murphy (2016) also looked at parent engagement, but as it relates to the conceptualization of "school." They argued for a shift from viewing "schools as institutions" to "schools as communities" (Torre & Murphy, 2014, p.203). This conceptualization of "school as community" is anchored in essential norms including care and respect, trust, authentic membership, collective work, and shared vision. This model, they purport, increases the efficacy and capacity of teachers and parents, leading to positive academic and social-emotional benefits for children (Torre & Murphy, 2014).

Inclusion of community members and organizations plays a similar supportive role in the educational system. When "teaching" is no longer seen as the sole responsibility of the teacher, it is easy to recognize the important learning that can happen from partnerships with community volunteers and organizations. Furthermore, as explored above, situating learning in and with the community helps children to develop a sense of place, a connection and responsibility to their local community. Finally, increasing parent, family, and community involvement leads to stronger support for education and a greater sense of ownership. This maximization of ownership is important when garnering support for place-based, environmental education (Sobel, 2005).

Aboriginal Ways of Knowing:

Many of the aforementioned best practices in environmental education are central tenets of aboriginal ways of knowing. The *Science First Peoples Teachers Resource Guide* put out by

the First Nations Education Steering Committee and First Nations Schools Association (2016) summarizes many of these guiding principles of aboriginal pedagogy and traditional ecological knowledge. Although each First Nation has its own unique beliefs and practices, there are commonly held beliefs amongst Nations about how we learn and interact with our world; these include the importance of inquiry-based, learner-based, experiential learning, an equal emphasis on self and others, the value of group processes, and support of a variety of learning styles. Furthermore, there is a common aboriginal belief in the interconnectedness of all life, summarized in the First Peoples phrase, "All my relations," representing people's connection to nature and to each other (FNESC, 2016, p.10). First Nations cultures also hold strong connections to the land, "(c)onnection with place, with the land, is the foundation of Indigenous Knowledge" (FNESC, 2016, p.10). Historically, knowledge of the land was passed on generationally and was critical for survival. This knowledge goes beyond the physical land and includes a strong sense of place; the emotions, histories, memories, and spiritualities that connect a people to the land. Clearly, aboriginal ways of knowing and environmental education are mutually supportive curriculums or, more broadly, mutually supportive ways of knowing and interacting with the world. An environmental education program can be greatly strengthened by embracing the principles of aboriginal learning and including members of the aboriginal community who can share their knowledge in a culturally appropriate manner. Conversely, environmental education is a natural area in which to include aboriginal content within the day to day elementary curriculum.

Case Study 1: Forest Kindergartens and Nature Preschool:

There is a world-wide movement in early education to reconnect children with nature. This movement began in Europe in the 1950s, spreading to North America in the 1970s and

shows no signs of slowing down. The movement is now present in many countries across the world and goes by many different names including Nature or Forest Kindergarten (Canada), Waldkindergarten (Germany), and Bush School (Australia) (Sobel, 2016). According to Forest Schools Canada, a non-profit organization created in 2012 to help support the Forest School movement, there are two main characteristics that set Forest Kindergartens apart from other environmental education programs: 1. consistent access to a natural space and 2. child-directed, emergent, and inquiry-based learning. Through these practices, "children are provided with opportunities to build an on-going relationship with the land, to a dedicated educator, to one another, and to themselves through this educational lens" (http://www.forestschoolcanada.ca/).

Case Study 2: Norwegian Public School System:

In Norway, kindergarten is a term for an early years setting encompassing children from birth to 6 years of age. Norway has a standardized ECE program that includes nature and environment as one of ten required subjects (Sandseter, Little, & Wyver, 2012). Being outdoors is routine for school children who play outside for 3-5 hours a day regardless of weather. Schools adhere to the Scandinavian tradition; "there's no such things as bad weather, only bad clothing" (Knight, 2009, p.4). Norway has a deep cultural connection to the environment and outdoor play is seen as a vital part of child culture and something educators must work to retain. Furthermore, early childhood education is closely tied to the UN Convention on the Rights of the Child and the belief that children have the right to participate, to be responsible, and to be active (Sandseter, Little, & Wyver, 2012); children are seen as active meaning makers in their own lives. Researchers have drawn attention to the democratic nature of the Norwegian educational system - children make choices and are seen as active, capable meaning-makers - and the development of democratic values in society (Aasen, Torunn, & Waters, 2009).

Norwegian educational policy is influenced by socio-cultural theory which puts social interaction at the center of learning and development. Interestingly, it is also influenced by Hendry and Kloep's lifespan model of development (Hendry & Kloep, 2002, as cited in Sandseter et al., 2012). This theory holds that development happens through encountering and mastering challenges rather than pre-determined development based on age. This may partly explain research that indicates Norwegian educators are more tolerant of risk; in one example kindergarten children are allowed to whittle with knives in the autumn when they turn three (Sandseter et al., 2012). It is hard to imagine many grade 5 teachers at my own school feeling comfortable with children using knives! This cultural difference is important to note given our own "risk-averse" culture and the developmental consequences this may have on our children (Little, 2015; Niehues et al., 2016).

Connection with the New British Columbia Curriculum

"When we try to pick out anything by itself, we find it hitched to everything else in the Universe" (John Muir).

These ideas of experiential, inquiry-based learning in the natural environment are not new to educational discourse, Dewey (1981) stated over 100 years ago,

> We cannot overlook the importance for educational purposes of the close and intimate acquaintance got with nature at first hand, with real things and materials, with the actual processes of their manipulation, and the knowledge of their special necessities and uses" (1981, p.457).

The best practices of outdoor education explored above are also key elements of the revised BC curriculum, specifically that learning is experiential, inquiry-based and emergent (BC Ministry

of Education, 2016). The process of learning and the competencies required to be life-long learners are a major focus of the new curriculum, as illustrated in the "Know-Do-Understand" model of the new curriculum (Figure 2). As explored above, the outdoor environment supports such educational reforms as the taken-for-granted ways of teaching and learning that often dominate the indoor environment are often challenged in the outdoor environment (Waller, 2007). When outside, teaching methods naturally become less didactic and more child-initiated and child-centered (Maynard, Waters, & Clement, 2011). In this way, a simple change in educational locale may be an important tool to affect change in teacher's behaviours and promote implementation of the new inquiry-based curriculum.

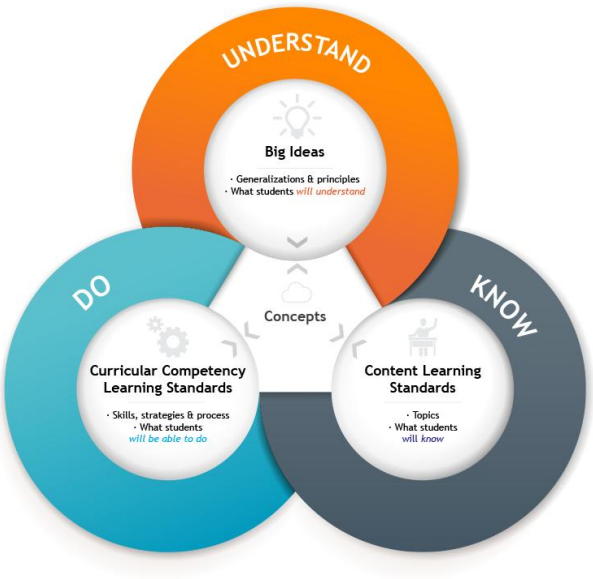


Figure 2. Know-Do-Understand model from the British Columbia Curriculum. https://curriculum.gov.bc.ca/rethinking-curriculum

Furthermore, the BC Science Curriculum is centered on a place-based approach to learning. Curricular competencies are focused on "experiencing and interpreting the local environment," "demonstrating curiosity and wonder about the world," and "expressing and

reflecting on personal experiences of place" (BC Curriculum, 2016). In the Goals and Rationale of the Science Curriculum it states,

> Students will develop place-based knowledge about the area in which they live, learning about and building on Aboriginal knowledge and other traditional knowledge of the area. This provides a basis for an intuitive relationship with and respect for the natural world; connections to their ecosystem and community; and a sense of relatedness that encourages lifelong harmony with nature (BC Curriculum, 2016).

This focus on developing respect and personal responsibility for the health and well-being of our environment is also addressed in the Social Responsibility Core Competency where it states: “Students develop awareness and take responsibility for their social, physical, and natural environments by working independently and collaboratively for the benefit of others, communities, and the environment” (BC Curriculum, 2016). Clearly, the best practices of outdoor education readily align with the BC Curriculum. Indeed, many of the goals and rationales cannot be fulfilled unless we do take students outside of the classroom in order that develop "place-based knowledge" and an "intuitive relationship with and respect for the natural world" (BC Curriculum, 2016). Furthermore, teaching and learning outdoors may be an important strategy to support pedagogy that is more in-line with the new BC Curriculum - education that is experiential, emergent and inquiry-based.

Change at the Teacher and School Level

Teachers:

"If a child is to keep alive his inborn sense of wonder... he needs the companionship of at least one adult who can share it" (Rachel Carson, 1956).

Any educational program or reform is only effective if it affects actual change on the behaviour of teachers. In terms of nature-based learning, teachers need to feel competent and confident in planning, managing, and implementing an outdoor program. Researchers have identified various factors that influence teacher use of the outdoors including level of confidence and competence, perceptions of difficulty, and safety concerns.

According to research, teachers often do not feel confident teaching in an outdoor environment. This may be due in part to a lack of education on methods and principles of outdoor learning. For example, a study in Singapore (Tan & Atencio, 2016) followed a group of teachers implementing a place-based education program. They found that implementation suffered because teachers did not fully understand the methods or reasons for implementing a place-based approach (Tan & Atencio, 2016). A lack of confidence may also originate from lack of experience, both personal and professional, in an outdoor environment. A study done in Hampshire on the implementation of an outdoor curriculum (Nundy, Dillon, & Dowd, 2016) found that teachers need time and support in order to feel confident and capable in their role as outdoor educator. They emphasize that it is the teacher's degree of self-efficacy, or a person's belief about their ability to affect change, that affects their performance. In order to develop self-efficacy they claim that teachers need opportunities to see others manage tasks successfully and

peer persuasion that they, themselves, are also capable of the given task. They stress the importance of not only providing adequate levels of training, but also developing a community of learners and a collaborative group identity amongst teachers of outdoor learning (Nundy, Dillon, & Dowd, 2016). Both studies emphasize the importance of education and collaboration between teachers.

Another barrier to teacher's use of the natural environment is their perceived level of difficulty in taking children outside. A study done with pre-school educators in Minnesota (Ernst, 2015) looked at various factors that may influence teacher practice. They determined that it was not teacher beliefs that influenced practice but instead their perceptions of difficulty in using the outdoor area. These difficulties included ease of access, available time, weather, safety supervision, parent support, appropriate clothing, and including children with disabilities. This research suggests that professional development should be focused on reducing such perceptions of difficulty. They also advocate for time for teachers to examine and question the discrepancy between their beliefs and practices as beliefs were shown to be more developmentally appropriate than their practice (Ernst, 2015).

Concerns about risk and safety also affect teacher's use of the outdoors, as well as their practices once outside. Just as parents limit children's behaviours due to fear of perceived-risk, so too do teachers (Niehues et al., 2016). It is important however, to differentiate between a "hazard" and "risk." A "hazard" is a source of injury that is not apparent to the child, such as a rotted tree that could fall, whereas a "risk" is a situation in which a child can identify and evaluate the challenge and choose a course of action (Brussoni et al., 2014). Risk-assessment and safety protocols can help to manage any hazards present when using an outdoor environment, helping to relieve some safety concerns. Often, however, such concerns center more on children

taking risks. Given the research supporting the importance of risk taking for childhood development, it is imperative that teachers examine and challenge their beliefs in order to fully support the healthy development of the children they work with. One study had particular success in risk-reframing by involving parents and educators in activities and discussions that allowed them to explore their automatic responses to risk. They came to understand how their automatic responses can actually stand in the way of the health and happiness they desire for their children. By the end of the sessions, the adults were able to re-frame risk as a complex concept that could be framed positively (Niehues et al., 2016). This study again reinforces the importance of education and collaborative inquiry in changing beliefs and practice. It is interesting to note that in Norway, a country that supports healthy risk-taking amongst children, no formal rules exist about risk. Certain "unwritten" rules do exist amongst practitioners but risk assessment is happening continually with respect to the situation and knowledge of the child (Sandseter, Little, & Wyver, 2012). This reinforces the principle that ideas about risk cannot simply be created as "rules" but must be negotiated amongst teachers, and amongst teachers and students, while being aware that certain perceptions of acceptable risk may need to be challenged.

School:

"Teaching children about the natural world should be treated as one of the most important events in their lives" (Thomas Berry).

Education, collaboration, and self-reflexive practice form the backbone of support that can affect change in teacher practice; however, it is also imperative that there is support at the school level in order for outdoor learning programs to be successful. One study that examined environmental education (EE) practices in various schools in Ontario stated that "EE is a

demanding endeavor in conflict with the dominant purposes, structures, and practices of schooling.... Indeed, this explains why EE has not flourished in schools regardless of its importance to society despite policy initiatives" (Fazio & Karrow, 2013, p.640). These researchers identify three conditions necessary for school reform; school leadership, opportunities for professional development, and appropriate resources. They also highlight the importance of building professional learning teams as well as partnerships with the school's social and ecological community (Fazio & Karrow, 2013).

Michael Fullan (2003), an international authority on educational reform, argues that educational reform is a complex system that requires moral purpose and what he terms "tri-level reform" (p.18). That is to say, if change is going to be effective and sustainable it requires the support of the school and community, the local district, and the state. He argues that we need more interaction and collaboration within schools, between schools, between districts, and between districts and the state. In this way, a cycle of development and learning will be enacted that will reverberate throughout the system, a cycle that will support teachers in new behaviours. In other words, "you cannot get transformation by going it alone" (Fullan, 2003, p.40). In this model, each level of the tri-level system has two responsibilities; to try to increase interaction within each level (i.e. amongst teachers) and to try to increase communication between the different levels (i.e. between the school and the district).

Research has established the importance of an emergent, inquiry-based and place based-approach to nature-based education. Furthermore, there is a clear connection with the way in which this approach helps to develop the core competencies as indicated in the BC curriculum. My focus will now shift to how these principles serve to guide and shape a proposal for establishing a natural outdoor space ("the other side of the fence") at Lochside School. In the

next chapter I will also look at the supporting structures, education, and resources needed to encourage teachers to regularly use the space and support and sustain a school culture that values outdoor education.

Chapter Three: Project

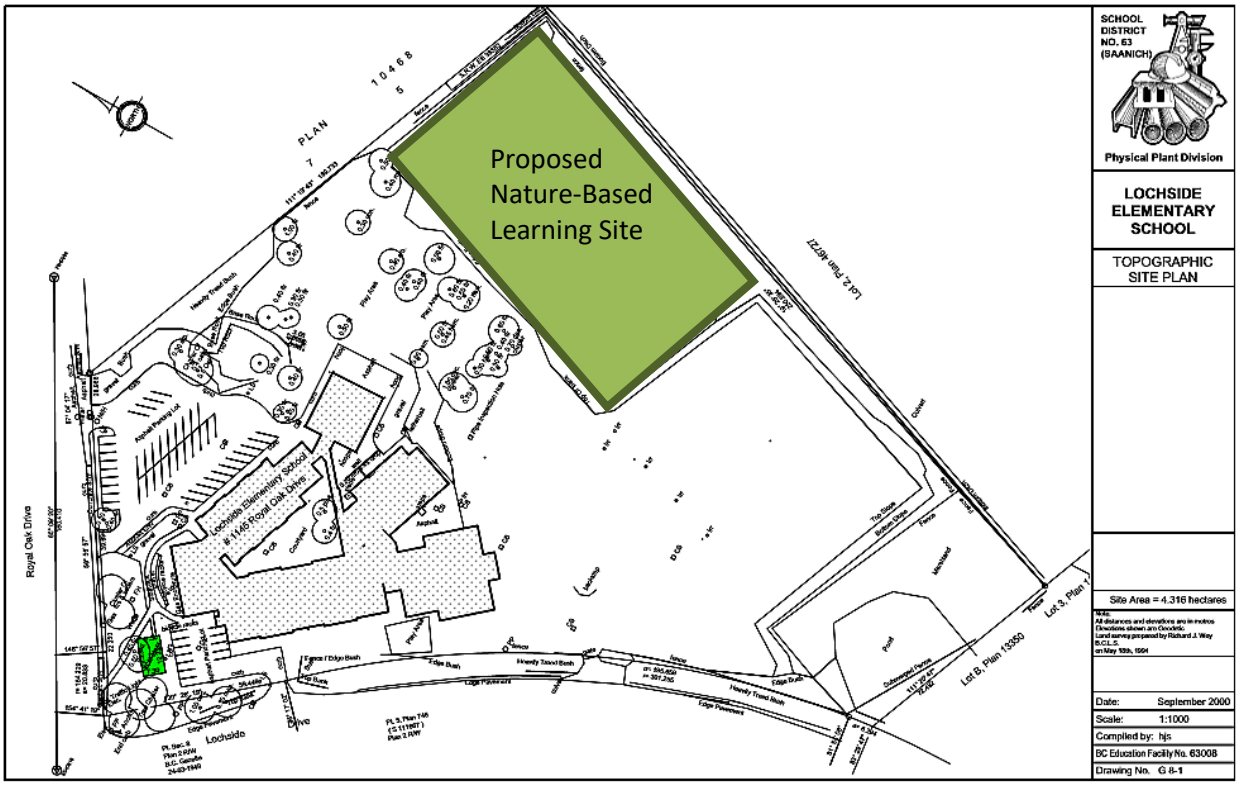


Figure 3. Lochside Topographical map indicating proposed nature-based learning space.

Opening up the "area beyond the fence" (Figure 3) at Lochside School has long been a dream of mine. Ever since I first began my teaching career at Lochside School, I have been drawn to the idea of using this area with my own class. This space was once loved by the students of Lochside School as a natural play space but was long ago fenced and restricted after a child was injured. As a strong supporter of nature-based learning experiences for all children, I have always seen this area of the school as an untapped resource and an exciting opportunity to enable children to experience the wide-ranging benefits of spending time in nature. Furthermore, it is an ideal location to foster place-based learning, helping Lochside students develop knowledge, connection and love for their local natural environment and community, a precursor

for environmentally responsible citizenship. However, this area has remained neglected and unused for decades. I, myself, am also guilty of not doing more to bring my ideas into practice, my dreams into reality. This project has been the impetus to look comprehensively at how both the physical space as well as the necessary support structure and training can be put into place to enable and encourage nature-based learning at the Lochside School. With two of my own children now at the school, my hopes that Lochside children will re-claim their right to their own little piece of "wild" is no longer just philosophical but personal as well.

The research is quite clear that time spent in nature is essential for the healthy development of our children; physical, social-emotional, cognitive, and spiritual (Bagot, Allen, & Toukhsati, 2015; Bell & Dyment, 2008; Berger & Lahad, 2010). Despite this evidence, statistics show that, for a variety of reasons, children are spending progressively more time indoors (Louv, 2008). Taking children outside, into nature, is a simple yet powerful strategy to support the health of our children in a comprehensive and holistic manner. In order for this to happen at a school wide level, however, teachers must understand the benefits associated with nature-based learning and feel comfortable in delivering such a program. They also must have an appropriate support structure and resources available (Nundy, Dillon, & Doyd, 2016). Furthermore, in order for school-based change to be effective, the school, the district, and the state must all support the change process (Fullan, 2003). With this in mind, my project is not just about developing the physical space for outdoor learning, but it is also an attempt lay out a comprehensive plan for developing a nature-based education program at Lochside School in a way that will be supportive and sustainable.

Major Partners:

Michael Fullan (2003), an international authority on educational reform with significant experience in Canada, claims that sustainable educational reform must include the school and community, the local district, and the state. He also contends that within this "tri-level system" (Fullan, 2003, p.18) each member has two responsibilities, to attempt to increase communication within each level (i.e. between teachers) as well as between levels (i.e. between teachers and the district). As such, within my project I attempt to address all three levels. However, given that I am a teacher working at the school level, my proposal necessitates a focus on the school and community. Within the school and community level, I attempt to be as comprehensive as possible in identifying the various partners, their needs, and their possible role in the creation of an outdoor learning space and program. The following table (Figure 4) addresses the three levels functioning within educational reform and outlines how my project will attempt to address each level within this proposal. Following this table, I will explain each sub-section more fully.

Level	Partners	Plan of Action
School and Community	Students	- inform students of project - invite participation through informal and formal idea gathering - form a committee of interested students
	Teacher	- pre-survey to identify current understanding - Power Point Presentation to present idea to staff - post-survey to help shape future education/direction - form committee of interested staff - organize appropriate training - assess resource needs - look at future funding and partnerships
	Parents and Families	- pre-survey to identify current understanding - Power Point Presentation to present idea to Parent Advisory Council - post-survey to help shape future education/direction

		- communication home to present idea to all parents and invite participation - form committee of interested parents - participation in Healthy Schools Committee as teacher representative and School Health Champion
	Administration	- include administration in planning and development - assess outdoor learning site regarding necessary modifications to insure accessibility and safety - create guidelines regarding safety and liability - look at costs / funding options
	Community Organizations	- build partnerships with various community organizations: • Habitat Acquisition Trust and "Green Spots" Program • CRD and invasive plants program • District of Saanich Parks Department • Horticultural Center of the Pacific
District	Saanich School District (SD63)	- visit and collaborate with other schools in the district with nature-based learning programs - collaborate with school board and other schools through the Healthy Schools Champion program
	Victoria and Sooke School Districts (SD61/ SD62)	- visit and collaborate with schools in neighbouring districts with nature-based learning and Nature Kindergarten programs
State	BC Ministry of Education	- examine the ways the BC Curriculum supports nature-based learning

Figure 4. Comprehensive plan for nature-based learning space that addresses major partners within the three levels of the "tri-level system" (Fullan, 2003, p.18).

Students:

The ultimate goal of this project is to help reconnect children with nature. While the nature of this project up until this point has been almost entirely adult driven, my hope is to include the voice and vision of children in the creation, maintenance, and use of the nature space. Research has shown that when children are given the opportunity to help shape the actual physical space in which they learn, engagement, sense of ownership, and usage of the space are

all increased (Waite, 2016). In addition, involving children directly in environmental efforts helps increase children's understanding of the problem while reinforcing feelings of concern and agency in the face of environmental problems (Collado & Corraliza, 2015). Furthermore, if one of the goals of nature-based learning is to help children develop a sense of place and foster environmental stewardship, then direct involvement with the environment is necessary (Chawla, 2007; Orr, 1992; Sobel, 2005). What better place to begin then involving students in the beginning stages of planning and implementation of a nature-based learning space?

The first stage of involving the students at Lochside School will be informing them of the plan to open up the gate and use the area beyond the fence for nature-based learning. Ideally, this will be done on a class-by-class basis and include a visit to the site. If this is not feasible, it could also be presented to all students through a school assembly. Next, I will gather input from the students regarding their vision and dreams for the nature space. This could be done on an individual, class, or school level. It might involve a visioning sheet that each child completes, or it could be as simple as a brainstorming chart hung in the hallways to gather ideas from those interested. While I expect enthusiasm, it is interesting to note that when I first proposed this idea to my own son he was quite hesitant about opening up access to the nature area as he didn't want other students to find his "secret spots." In light of this, I recognize that sensitivity must be used to truly listen to and honour the ideas and requests of the children. Finally, a "Nature Space" committee of interested students will be formed to help with ongoing visioning, planning, and upkeep. In addition, I hope that individual teachers will be motivated to directly involve their own class during instructional time in planning and caring for the nature area.

Teachers:

In creating this proposal and planning for the creation a nature area, a constant question running through my mind has been, "Will teachers use the space?" I know there are some teachers who are as excited as I am about the possibility of a nature-based learning area on school property. At the same time, there are other teachers who I know will be hesitant or even resistant to the idea of nature-based learning. While I know that I cannot ensure use by all teachers, I hope that my proposal will help to educate and support teachers in such a way that encourages understanding and use by most, if not all, teachers within the school. According to research, there are a number of factors that influence teachers use of natural outdoor spaces including level of confidence and competence, perceptions of difficulty, and safety concerns. These inhibitors can be lessened through proper education and experience, time for collaboration, and adequate supports and resources (Ernst, 2015).

In working with teachers, I will first present the idea of a nature-based learning space to staff during a staff meeting, aided by a Power Point presentation. This will provide some basic information about my idea for a nature-based learning site, some of the research-based rationale for my initiative, strategies and connections to the BC Curriculum, and examples of other schools engaged in similar projects. The goal of this presentation is to begin discussion amongst staff, assess current understanding and beliefs regarding nature-based education, and begin the process of collaboration in envisioning and creating a nature-based learning site for Lochside School. The following overview outlines the process I will follow to educate and collaborate with fellow teachers of Lochside School.

Staff Presentation:

Pre-Presentation:

Before the presentation I will circulate a survey to help understand teachers' current understanding and support for nature-based education. This survey will include questions about teacher interest in, understanding of, concerns about, and perceived difficulties in using a nature-based site for student learning. As Ernst has shown (2015) these factors all affect teacher's use of the outdoors. I will use the information gathered to help shape and focus the presentation I conduct for the staff. For example, I expect to find general support for the idea of outdoor learning but concerns regarding safety and supervision. I will therefore spend a greater amount of time addressing these concerns.

Presentation:

The following is a proposed itinerary for a presentation at the monthly staff meeting. It may change depending on the feedback of the pre-survey; however, it includes the major areas that I think are important to address with the teacher and administrative group.

00:00-00:05 - Introduction

In the introduction I will include a general overview of the idea of a nature-based learning space including images of the current area (Figure 6 and 7). While most teachers have a basic knowledge of the school property, many are unfamiliar with the particular area that my project focuses on. Images will help them visualize the location and condition of the current space in order to more fully understand the scope of the project. Finally, in order to make the presentation interactive and engage the audience on both a cognitive and emotional level, I will ask them to discuss in small groups their own experiences with nature play growing up or a

special spot in nature that they had as a child. Time for discussion is necessary when encouraging teachers to look critically at their beliefs and practices (Ernst, 2015).

Figure 5. Title page for staff Power Point Presentation.

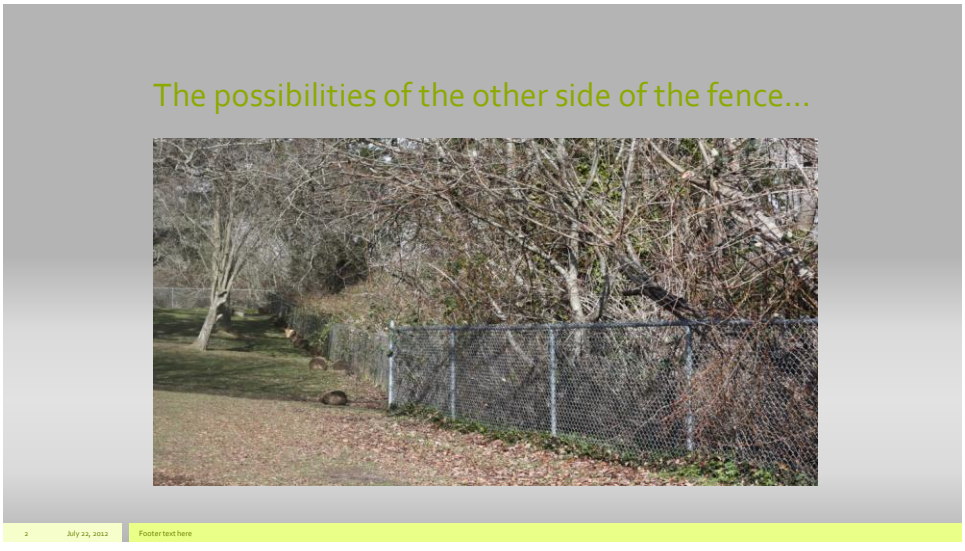


Figure 6. Power Point slide of the Lochside School fence.

Figure 7. Power Point slide of aerial photo of Lochside School and proposed nature-based learning site.

00:05-00:15 - Benefits of a Nature-Based Learning Site

In this section I will introduce the physical, social-emotional, cognitive, and spiritual benefits of children spending time in nature (Figures 8 and 9). While research shows that many educators recognize the value of children spending time in natural environments (Ernst, 2014), practical experience tells me that many educators are unaware of much of the current research, particularly as it applies to social-emotional, cognitive, and spiritual development. In order to begin to convince those educators reluctant to change their established ways of teaching, it is important to first of all share some of the empirical research supporting the nature-based learning movement; such statistics can sometimes begin to sway those who do not see the value of taking children outside. Furthermore, in light of the current challenges many teachers feel due to student behaviour and class composition, an emphasis on the social-emotional benefits (Figure 8) of nature-based play and learning will be especially important. This area will also be addressed later as it applies to teaching strategies in an outdoor environment. Likewise, the cognitive benefits of

nature for children will also be an important area to highlight; especially for those teachers who feel that time spent outdoors would be taking away from more important academic work indoors. Finally, I think it is imperative that the benefits of healthy risk be addressed as concerns about safety are a significant deterrent to use of natural outdoor areas (Niehues et al., 2016). At Lochside School, teachers hold widely different views on this topic and a brief introduction to risk, risk-management, and the developmental benefits of healthy risk is a necessity, especially as it applies to the creation of a nature-based learning site.

Figure 8. Power Point slide outlining the social-emotional benefits of nature-based learning.

Figure 9. Power Point slide outlining the spiritual benefits of nature-based learning.

00:25-00:30 - The Reality

Just as I think it is important to share some of the statistics about the benefits of nature-based learning, I also think it is important to share the reality of our current society and world. This includes both the state of our current environment as well as social trends that see children spending increasing amounts of time indoors. In this section, I will also highlight Chawla's (1999) research on developing environmental stewardship in children (Figure 10). Hopefully this section of the Power Point Presentation will help teachers begin to see the larger importance of environmental.

Figure 10. Power Point slide of environmental stewardship.

00:15-00:35 - Strategies and Connection to the New Curriculum

In spite of good intention, many teachers actions when it comes to outdoor learning are determined by their level of competence and confidence, perceptions of difficulty, and safety concerns (Ernst, 2015). This section of the presentation will help teachers begin to envision how they could see themselves incorporating outdoor learning into their own school day. As a starting point, I will share the theoretical underpinnings and central practices of place-based, nature-based education and show how this approach is fully supported by the new BC Curriculum (Figure 11 and 12). I will also draw attention to how outdoor learning can readily integrate aboriginal history, knowledge, and ways of knowing in a very authentic manner, a new requirement of the new BC Curriculum (2016). As part of this section, I will also include slides showing examples of outdoor learning and play happening in local pre-schools, kindergartens, and elementary schools since seeing someone more capable engaging in outdoor education has

been shown to help build teacher confidence (Nundy, Dillon, & Dowd, 2016). Time permitting, I may also share some international examples to illustrate alternate ways of structuring school and a typical school day. These examples will help teachers begin to envision the possibilities and hopefully reduce some of their perceptions of difficulty. In terms of teaching strategies, I will highlight some very simple activities that can be done in the nature-site, such as journal writing or seasonal observations. At this initial point of engagement, I do not want to overwhelm but instead begin to increase confidence and decrease perceptions of difficulty. It is also important to address the safety concerns that many teachers have when taking children outdoors (Ernst, 2015). I will begin to address this issue by using examples of how local nature-based programs ensure safety through guidelines, safety assessments, proper planning and supplies, and supervision. In addressing safety concerns, I will also re-iterate the important developmental benefits of opportunities for risk taking behaviour. Furthermore, I will introduce the possible benefits of including parents and outside organizations in an outdoor-learning program. During this section, I will facilitate teacher discussion about how they envision themselves using a nature-based learning site as well as any concerns they may have. Research shows that teachers need time to collaborate when engaging in new ideas and initiatives (Nundy, Dillon, & Dowd, 2016). I will have each group share out one or two important points and collect their recorded ideas for my own future reference and planning.

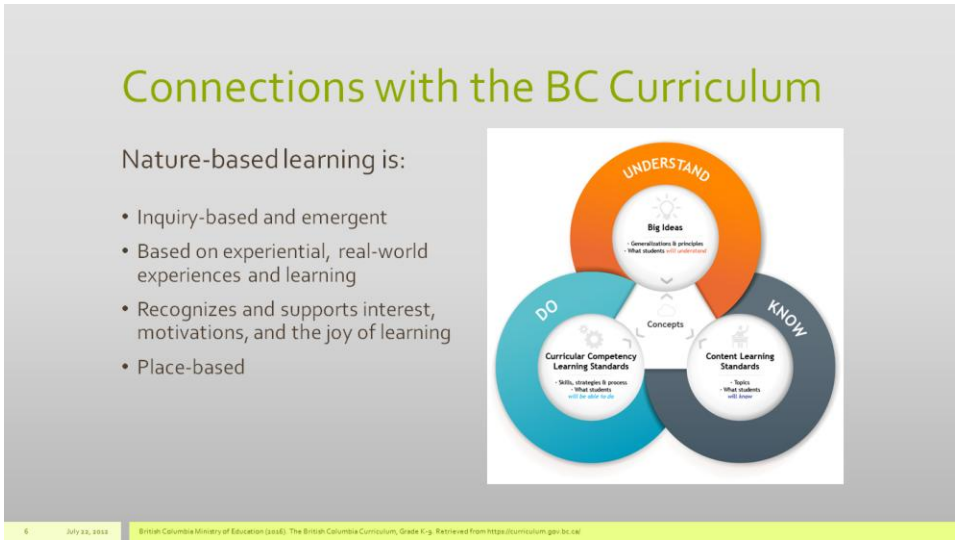


Figure 11. Power Point slide outlining the connections between nature-based learning and the BC Curriculum.

Figure 12. Power Point slide of one of the goals of the BC science curriculum particularly relevant to this project.

00:35 - 00:45 - The Plan

I will finish the presentation by re-visiting the proposed plan for the nature space in greater detail. I will look again at our own space as well as nature-based learning spaces at other schools. Once again, I will include time for staff to collaborate in envisioning ides for our own

nature site. Hopefully this will help to generate positive energy and enthusiasm for the project. I will also include specifics about other partners involved (i.e. students, parents) as well as possibilities for community partnerships (i.e. Habitat Acquisition Trust, Saanich Parks). I will explain a proposed time-line outlining the steps that need to be taken and possibilities for involvement. Finally, I will ask teachers to participate in a post-presentation survey and invite interested teachers to help form a committee to shape the future direction of the project.

Figure 13. Power Point slide for the future of the nature-based learning site.

Post-Presentation:

Following the presentation, I will circulate another survey to determine future direction for the project and areas of focus for a second presentation. In this survey I will include questions about level of interest in the project, lingering concerns, and areas of interest for further education and training. As mentioned above, the first session would be just an introduction to the project and the research behind nature-based education, serving as a catalyst for further

discussion and education. Change cannot be expected overnight; sustainable teacher development requires not only adequate training but also time to examine beliefs and practices, collaborate with others, and form a community of learners (Nundy, Dillon, & Dowd, 2016). I will use the information gathered from the post-presentation survey to plan a secondary session tailored to fit the needs and desires of the staff. This will hopefully include more specific teaching strategies combined with a site visit to increase teacher's confidence in using the space. If possible, it may include observing students using the site, perhaps with a more experienced outdoor educator serving as model and mentor for teachers new to this type of teaching and learning. Having the opportunity to actually see the space in use can help build teacher's confidence in using the space themselves (Nundy, Dillon, & Dowd, 2016).

Following the first presentation, I will form a "Nature Space" committee with interested teachers to shape the future of the outdoor space and nature-based learning program at Lochside School. While I am passionate about getting this project into the implementation phase, I recognize that I will need the support, ideas, and energy of my fellow educators. As Fullan has argued, communication and collaboration amongst teachers is a strengthening factor in educational reform (2003). This committee also serves a strengthening factor as it helps to establish a collaborative group identity and purpose amongst teachers (Nundy, Dillon, & Dowd, 2016). The committee will help to plan for the physical site, assess future educational and training needs, and assess and build outdoor education resources. This committee may also engage in specialized nature-based training so that they can later serve as mentors for the rest of the school.

The committee will initially focus on decreasing teachers' perceived difficulties in using the nature site, a significant barrier associated with teacher use of the outdoors (Ernst, 2015).

Using the information gathered from teachers in the post-presentation survey, the committee will assess immediate needs and actions. For example, if teachers' primary concern is children having appropriate clothing, we may begin to build a "clothing library" with extra boots, mud pants, and waterproof jackets that classes are able to borrow. If the concern is lack of confidence or knowledge about outdoor education and the outdoors in general, we may begin by building a resource library of teaching resources and appropriate field guides for children. While I hope to work on building many of these resources eventually anyways, the survey will help us to understand the areas of more urgent need for teachers. This committee will periodically meet and collaborate with the student and parent committee as a whole.

Future Direction:

As researchers have pointed out, in order for teachers to change their teaching behaviours they need time to examine and challenge their practices, especially in terms of how these practices align with their beliefs (Ernst, 2015). This is an on-going process that will ideally be a continuous and collaborative process. An integral part of the project will be creating opportunities for further education and training in nature-based learning. This will be determined by continually assessing the interests and needs of the staff. Ideally, this will be at the whole school level, perhaps as one of our in-service professional development days. Forest Schools Canada provides training courses such as an "Introduction to Forest School and Nature School" and "Risky Play Workshop" (http://childnature.ca/forest-school-canada/).The University of Victoria may also serve as a resource in providing knowledgeable instruction in nature-based education through the UVic Speakers Bureau (http://www.uvic.ca/communications/speakersbureau/). In addition, local organizations, such as Victoria Nature School (http://www.victorianatureschool.com) also provide professional

development for educators including classroom management outdoors and risk assessment. Finally, the Habitat Conservation Trust Foundation (http://hctfeducation.ca/school-programs/) provides a three year training program to support schools in environmental learning programs.

Furthermore, in collaboration with the Nature Space Committee, we will continue to create a robust and comprehensive resource library. These resources might include children's books and field guides suited for outdoor education; teaching manuals; theoretical books on the importance of nature-based education; outdoor equipment such as magnifying glasses, collection buckets, and shovels; safety equipment; and appropriate outdoor clothing. These resources will be continually assessed and built upon in collaboration with the larger staff body to insure we are meeting the resource needs of all teachers.

Administration:

School leadership and support are crucial for the development of a successful nature-based learning program. Indeed, the three conditions that researchers have found necessary for school reform - school leadership, professional development, and appropriate resources - are all directly affected by school administration (Fazio & Karrow, 2013). At Lochside School, there is already significant administrative support for nature-based learning programs. Again, the creation of the Outdoor Learning Center is emblematic of the importance that administration places on outdoor learning. Nevertheless, any new initiative can suffer push-backs, especially if there are any concerns for health and safety. I will include administration in discussion and planning of the natural learning space and work to ensure continued support and leadership on nature-based learning initiatives. Administration will also have to play a role in risk assessment of the site, development of safety guidelines, the creation of a school wide liability waiver, and development of funding for the nature site and program.

Parents:

Involving parents in a nature-based learning program can be mutually supportive and beneficial to all involved. Student benefits of parental engagement in learning include increased motivation and engagement, increased achievement, raised self esteem, and greater aspirations (Goodall & Montgomery, 2014). Recognizing that parental engagement is an important and integral aspect of student learning creates a more supportive, holistic and inclusive vision of learning and education. Inclusion of parents also helps student to see learning and school as situated in the larger community, as part of the adult world instead of apart from, in keeping with the ideas of Malaguzzi (1994). Parents can also serve an important role as teachers of specialized skills and knowledge. While this may be threatening to some educators as it necessitates a re-framing of the term "teacher," it holds the possibility to include parents in the education of children in a very powerful and authentic manner. Furthermore, research has shown that when parents are included in the nature-based education of their children it can affect their behaviour at home as a family. For example, parents involved with their children in a nature preschool reported greater subsequent use of green spaces as a family (Elliott & Chancellor, 2014). In this way, when parents are included in a nature-based program, reconnecting children with nature at school can possibly extend to parents, siblings, and the wider community serving to strengthen the personal and environmental benefits of such a program. Finally, parents can serve a very practical purpose in helping with funding, development, up-keep, supervision, and education of a place-based program.

Lochside School is lucky to have a very strong and supportive parent advisory council (LEPAC). Lochside School is situated in an upper middle-class neighbourhood, with many working professional parents. It also serves a population of lower income families as well as

drawing a significant population of English Language Learners and children with special needs from neighbouring districts. Support for outdoor learning and environmental education is high within the parent population. In 2015 LEPAC played an instrumental role in building an outdoor classroom on the school grounds. The following overview outlines the process I will follow to inform, include, and collaborate with the parents and families of Lochside School.

LEPAC Presentation:

Pre-Presentation:

Similar to the pre-survey for teacher, I will send out a pre-survey to assess the parent body's current level of knowledge and support of nature-based education. Recognizing the different audience, this survey will not include questions about teaching methods or strategies, but would instead focus on level of understanding of the benefits of nature-based education as well as any areas of concern the parents might have. Similar to the survey for teachers, I will use this information to help tailor the power point presentation to their specific needs. For example, I may find that most parents are supportive of nature-based education but are nervous about possible risks. I will thus include a greater focus on healthy risk as well as safety protocols and routine safety assessments that will be done by staff. In my communications with families, I will try to reach as many parents/guardians as possible by including information about the proposed-nature space on the school website, school newsletters, and classroom newsletters and blogs. In recognition that only a small percentage of parents actually attend the PAC meetings, I will also ensure that the information is widely available to all parents and will include a link to the Power Point presentation as well as an overview of the proposed project (Figure 17) through school email.

Presentation:

The following is a proposed itinerary for a presentation at the monthly LEPAC meeting. It may change depending on the feedback of the pre-survey, however it includes the major areas important to address with the parent group.

00:00-00:05 - Introduction

Similar to the presentation for teachers, in the introduction I will include a general overview of the idea of a nature-based learning space including images of the current area. Many parents are unfamiliar with the school grounds and the images will help them visualize the location and condition of the current space in order to more fully understand the scope of the project. I will briefly introduce the idea of a nature-based learning site and explain how it will add to the function and usability of the existing LEPAC funded outdoor classroom. Finally, in order to make the presentation interactive and engage the audience on both a cognitive and emotional level, I will ask them to discuss in small groups their own experiences with nature play growing up or a special spot in nature that they had as a child.

Figure 14. Power Point Slide of the current outdoor classroom and how a nature-based learning site could support its current use.

00:05-00:15 - Benefits of a Nature-Based Learning Site

In this section, I will fully explain the physical, social-emotional, cognitive, and spiritual benefits of children spending time in nature. Research shows that parents already place great value on their children developing a connection with and understanding of nature, second in priority only to reading in a survey commissioned by The Nature Conservancy (Sampson, 2015).This parental prioritizing of nature experiences is also evidenced by the continual high demand in Victoria for nature kindergarten and nature preschool programs. However, often parents are more familiar with the physical benefits of nature play and not so much the social-emotional, cognitive, and spiritual benefits. For this reason, I will spend a greater amount of time on the latter three areas of development, placing less emphasis on physical development. I will also highlight the academic benefits of nature-based learning to help parents see that important and powerful knowledge and skills can come from engagement in a hands-own, real-world context.

00:15 - 00:20 - The Reality

Similar to the teacher's presentation, I think that it is important to mention the reality that despite the research, children are spending increasingly greater amounts of time indoors. This will be based in the social and contextual environment of the general parent group, drawing attention to barriers such as busy lives, safety concerns, the lure of technology, and dual-working parents. It will be intended as an acknowledgement that despite good intentions, the realities of our society and culture do not always allow for the nature-based experiences our children need. I will use my own experiences as a parent to help illustrate these barriers and personalize the conundrum. I will use this "reality" to place greater emphasis on the importance of providing nature-based education within the school day.

00:20 - 00:25 - Place-Based, Nature-Based Education

Within this section of the presentation, I will focus on the guiding principles behind place-based and nature-based education. It will be a general overview of the guiding philosophy and central practices behind this approach to education. While I expect many parents to be familiar with the benefits of nature for their children's development, I don't expect them to be aware of the pedagogy behind place-based learning. I will not, however, focus on specific teaching strategies or concerns for a teaching point of view. Finally, this section of the presentation will draw attention to the important benefits that such an approach has for their children's learning and overall development and well-being.

Figure 15. Power Point slide definition of place-based, nature-based education.

00:25 - 00:35- Benefits of Parental and Community Involvement

In attempting to garner parent support, it is important that parents understand the important benefits that engagement in their child's learning can have on their children's achievement and well-being (Goodall & Montgomery, 2014). I will explain some of the research on the benefits of parental engagement and the value in thinking of the school as a community (Torre & Murphy, 2014). As a teacher and a representative of the school, I want the parents to understand that we value them as more than just fund-raisers or purveyors of menial jobs, but as true partners and valuable assets in the education of their children. I also want to mention that "engagement" can come in different modes and forms, in recognition that not all families have the same resources or flexibility to volunteer within the school. The message I want to convey is that this project, and Lochside School, is inclusive and supportive, and recognizes the diverse funds of knowledge that all families bring to their children's learning.

Figure 16. Power Point slide of the important benefits of parent engagement in children's learning.

00:35 - 00:40 - Connections to the New British Columbia Curriculum

While this section will not be as comprehensive as in the presentation for teachers, I do think it is important to draw attention to ways in which a nature-based program can support the new BC Curriculum. Amongst the well-educated Lochside parent population, there may be some questions or concerns regarding this area. I will draw attention to the congruencies and perhaps provide examples of what other public and private schools are doing regarding nature-based learning.

00:40 - 00:50 - The Plan

Finally, I will provide an overview of the general plan for development of the site. I will emphasize that place-based, nature-based learning necessitates the authentic involvement of parents and community, inviting parent participation through a Nature Space Committee. I will

provide time for questions, and mention that a survey will be circulated to assess areas of interest, concern, future development, and education.

Post-Presentation:

Following the presentation, I will again circulate a survey to assess for areas of interest, concern, future development, and education. I will use this information to help plan for future communication, partnerships, and parent education. If parents still articulate a concern for safety, for example, I will focus future communications and presentations on healthy risk taking and procedures for risk assessment and management. Furthermore, I may use this information to plan for future parent education sessions within the school.

I will use the Nature Space Committee as my primary contact with the parent group in planning and developing the nature site and program. However, I will also insure that I continue to inform and include the greater parent body. Frequent updates on the progress of the project will be presented at LEPAC meetings as well as through whole-school email communications. Furthermore, I will insure multiple and varied opportunities for parental involvement such as weekend invasive species removal, opportunities to share specialized knowledge and skills, and special celebrations to mark project milestones. Finally, I will begin to build a parent resource library with books focused on nature-based activities for families. The overarching goal is developing a community of parent engagement.

Community:

One of the central tenets of place-based education (Sobel, 2004) is that children develop connection with both their local environment and community. It is this connection that helps children begin to develop their role as citizens and as part of a larger ecological system (Rose & Cachelin, 2013). Connecting with the larger community is also in keeping with Social Constructivism and the work of Loris Malaguzzi (1994), knowledge is not transmitted but is instead built through interactions with others and the environment. The possibility for developing relationships with local community organizations is an exciting component of developing a nature-based learning site and program.

I propose that relationships can be initiated and built with local organizations to create mutually supportive partnerships. I am already in communication with the Habitat Acquisition Trust regarding their government funded program, "Green Spots," in which they help mentor and fund schools as they rehabilitate outdoor areas. Another possible partner is the Capital Regional Invasive Species Partnership (http://crispinvasives.ca/) and their invasive species removal program. Additionally, the Horticultural Center of the Pacific and Saanich Parks may be a valuable future partner. The property and park (Outerbridge) that borders the north edge of the property is owned by Saanich Municipality and operated by the Victoria Horticultural Center of the Pacific. A vision for the future is opening up this area as well for student learning, as well for students to help care for in partnership with the Horticultural Center. The Junior Park Stewards program, currently being piloted in the Victoria School District, is a particularly promising future partnership. Such a program will help students learn about their local environment, fostering stewardship and civic duty. At the same time, students will be giving back to their community in a very authentic and valuable way. Finally, students from Royal Oak Middle School and

Claremont High School may prove valuable partners and mentors for the students of Lochside Elementary. These mutually beneficial partnerships not only increases student achievement and engagement, but also support the development of healthy communities and environments. Furthermore, increasing the number of individuals and organizations invested in a particular program or project increases its vitality and sustainability (Sobel, 2005).

Saanich School District (SD63):

Communication between schools and between schools and the board office are also important when enacting change (Fullan, 2003). Development of an outdoor learning area must be done with the support and partnership of the school district and physical site staff such as maintenance workers. In order to succinctly and thoroughly inform district personnel of the proposed outdoor learning site, I have developed a summary of my proposal including the intent and purpose of the project, an overview of the general plan, a map of the area, and a timeline including dates, major partners involved, and proposed plan of action (Figure 17). This summary of the proposal can be used to inform those at the district level of our school plans. It can also be used, as mentioned previously, to communicate with others such as parents and community organizations.

Lochside School Place-Based Learning Site:

Developing Opportunities for Students to Learn and Play in Nature

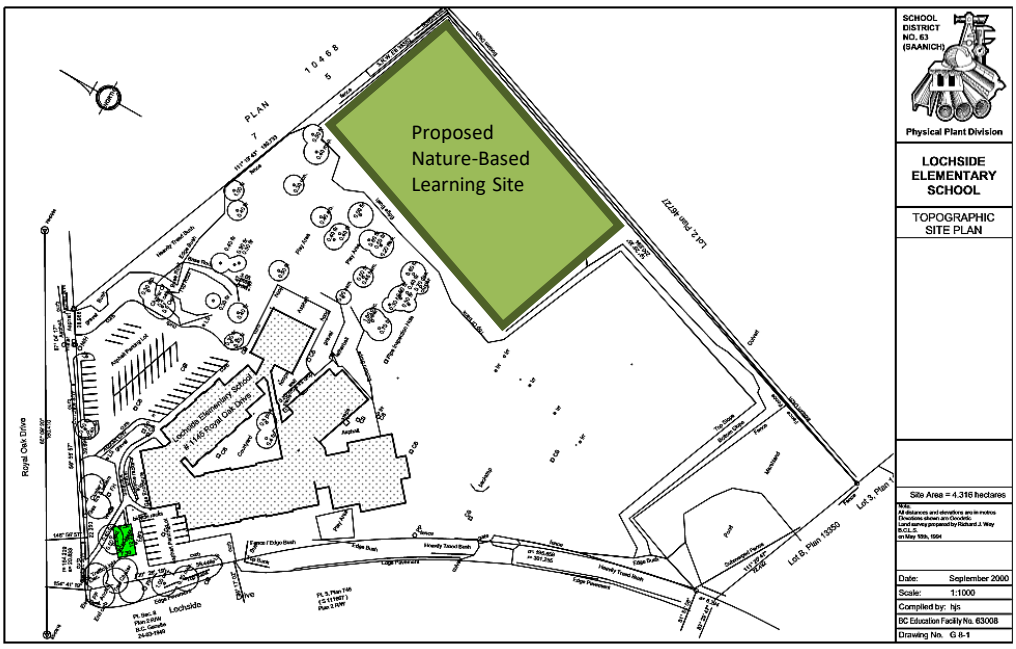
"Students will develop place-based knowledge about the area in which they live, learning about and building on Aboriginal knowledge and other traditional knowledge of the area. This provides a basis for an intuitive relationship with and respect for the natural world; connections to their ecosystem and community; and a sense of relatedness that encourages lifelong harmony with nature" (BC Curriculum, 2016).

Intent and Purpose:

- Provide opportunities for all students to benefit from the physical, social-emotional, and cognitive benefits attributed to time spent in natural environments by developing a nature-based and place-based learning site on Lochside School Property
- Provide opportunities for students to engage in inquiry-based, emergent, and place-based learning in the natural environment as supported by the BC Curriculum
- Develop resources and training to support staff and the school community in nature-based learning and play
- Develop staff, parent, and student committees committed to the ongoing maintenance of the site and promotion of nature-base, place-based learning
- Develop connections with community organizations to support school-based environmental education

Process and Timeline:

The proposed site is a semi-forested 'wild' area of land along the eastern border of school property. It is currently unused, fenced, and restricted to students. This parcel of land has the potential to be a powerful tool in providing students with nature-based, inquiry-based, and place-based learning opportunities directly on school property. Since the area is currently unused, it requires maintenance and risk-assessment to insure safety for students and those involved in developing the site. The area is partially, but not fully fenced and would require a site-manager to determine boundaries of school property. Furthermore, hazards such as fallen or rotten trees may need to be removed prior to the development of the site. The following is a proposed timeline for site development.



Proposed Timeline:

Date	Goal	Partners Involved	Actions
March 14, 2017	Determine site boundaries and conduct a safety-assessment	District 63: Erika Moser (Principal of Lochside School) Chuck Morris (Director of Facilities) Mark Peatty (Manager of Grounds) Advisors: Chris Filler - UVic and Forest Schools Canada	determine and mark the boundaries of school property assess for natural hazards including fallen/rotten trees, bodies of water, etc. determine future actions required to establish site safety such as tree removal/fencing/etc.
April 2017	Staff, LEPAC, and student presentation	Lochside School Staff (Jenni/Erika) Lochside School Parent Advisory Council (Jenni/Erika) Lochside School Students (Jenni)	present proposal of nature-based site and learning initiative to both staff and LEPAC during staff meeting and LEPAC meeting present idea to Lochside students and invite participation form Nature Space (NS) Committees of interested staff, parents, and students to jointly determine future direction
Fall: October 2017	Establish trails and learning sites	**LE:** (staff, parent, and student) **Nature Space Committees** Partnership: Habitat Acquisition Trust (Jenni) Advisors: Chris Filler - UVic and Forest Schools Canada	establish trails, remove invasive plants insure safety by trimming branches, removing hazardous trees, etc. determine areas for learning and play possible collaboration with outside organizations to determine optimal environment for nature-based play and learning
Future Direction 2017 2018 2019	Site Maintenance /Development	**LE:** (staff, parent, and student) **Nature Space Committees** District 63 Facility Manager/Grounds (Erika/Chuck/Mark) Partnership: Habitat Acquisition Trust (Jenni) Partnership: Saanich Parks	maintain trails and continually reassess for safety possible introduction of native plants in partnership with Habitat Acquisition Trust possible future expansion into Outerbridge Park on the northern school boundary in partnership with Saanich Parks and Horticultural Center of the Pacific (and new CRD Junior Park Stewards program)
	Education and Supports	LE staff, LE parents, and Lochside Area Community organizations and volunteers	establish resource library for teachers and parents create opportunities for professional development

			opportunities for teachers including strategies for nature-based learning create opportunities for parent information such as benefits of outdoor play and learning and healthy risk taking

"Those who contemplate the beauty of the earth will find reserves of strength that will endure as long as life lasts" (Rachel Carson, 1956, p.100).

Figure 17. Summary of the purpose, intent, process, and proposed timeline for establishing a nature-based learning site at Lochside School.

Furthermore, within the Saanich School District, much can be learned from other schools that have already initiated nature-based learning programs. Both Prospect Lake School and Kelset School have developed natural outdoor areas used for student play and learning. For the purpose of this project, a site visit to both schools and consultation with some of the primary educators and administrators involved in the project will help guide the development of our own space and program. In addition, a future endeavour will be to develop a group of like-minded educators at the district level to meet regularly and collaborate on nature-based learning within the Saanich School District. This is important as research shows that collaboration amongst teachers and a common group identity is important in promoting and implementing environmental education in a sustainable manner (Fullan, 2003; Nundy, Dillon, & Dowd, 2016). Finally, my role as "Healthy School Champion" for Lochside School allows me the opportunity to collaborate with other teachers and administrators throughout the district regarding healthy school initiatives. I have chosen to use this role to continue my inquiry into the importance of

nature-based learning for the holistic development of healthy children and healthy schools. I hope to use this platform to share and work together with other schools, as well as with the school district and the assistant superintendant who heads the Healthy Schools Initiative.

Victoria and Sooke School Districts (SD61/ SD62):

There is much to be learned from the success of other nature-based programs in the neighbouring districts of Victoria and Sooke. In particular, the Nature Kindergarten Program in Sooke has a relatively long history of nature-based education within the public school system. I plan to visit this program to gain some first-hand experience with what a nature-based program might look like within the public school system. Hopefully a partnership of some sort can be developed with these established programs and experienced outdoor educators to help mentor our school and program.

BC Ministry of Education:

The third player in Michael Fullan's tri-level reform is the state (2003). While this level is a difficult one for me to address as it is out of my immediate control, within the scope of this project I will continue to explore how a nature-based curriculum supports the BC Curriculum. As explained earlier, the new BC Curriculum clearly aligns with best practices in nature-based learning programs. Nature-based learning supports both the inquiry-based, emergent curriculum endorsed by the government as well as the science goals and core competencies in social responsibility. I hope that increased resources and funding will be a future component of implementing the BC Curriculum, particularly as it applies to nature-based learning. Indeed, concerns with class size, composition, and classroom support all currently serve to inhibit teachers comfort in taking their classes into less structured environments such as nature-based learning sites.

This proposal will serve as a guide and reference in the future as I enter the action phase of my project. In the next chapter I will reflect on my capstone, looking at the applications and limitations of my project to the future direction of my practice and school.

Chapter 4

Reflections and Implications:

Re-claiming the area '"beyond the fence" has long been a dream of mine. I would look through the chain-link fence and imagine the incredible potential this area held for teaching and learning in nature, in the real world, in our own backyard. I would talk with other teachers and the principal about these possibilities, about how trails could be made and blackberries could be pulled out so that teachers could use this area to engage their students in experiential, inquiry-based learning in the natural world. But nothing came of these conversations, the barriers just seemed too big and the time commitment too great for anyone to move forward into action. This capstone project has been the impetus to look at these possibilities in a systematic way, turning dreams into a plan for reality. It has helped me to realize that indeed passion and personal drive are important, but sustainable reform requires a more comprehensive and collaborative approach.

The importance of nature has always been a guiding force in my own life, as well as a central value in the way I parent and the way I teach. Based in pivotal experiences in my childhood, this value has been reinforced through my learning as an adult; books I have read, documentaries I have watched, conversations I have had with other like-minded people, professional development as a teacher, and my journey through graduate school. All of this has reinforced my own understanding and commitment to the importance of providing nature experiences for our students in the public school system. In particular, our graduate level Curriculum Theory course (EDCI 531) introduced me to the ideas of the ecopedagogists, helping me to look more critically at our educational system and the hegemonic values it unconsciously reinforces. It helped me to recognize that it is *how* we teach, not just *what* we teach that shapes the minds and hearts of our students. Throughout our course-work I found myself coming back

to the idea of nature-based learning; how is play facilitated in a natural environment, what is the importance of documenting learning in a natural environment, how can literacy be fostered in the natural environment? In deciding on a capstone project, I always knew where my passion lay. My learning along the way helped to reinforce and shape this passion, as well as raising important questions and areas for future consideration.

My capstone project itself has further helped to both solidify as well as challenge some of my preconceived ideas regarding nature-based education. I particularly enjoyed reviewing the literature on the benefits of nature-based play and learning. Having a solid foundation in the research behind outdoor pedagogy has helped me to feel more confident in my practices as a teacher. While I have always placed importance on allowing time for my students to learn and play outside, I sometimes feel self-conscious of the opinions others may have of this practice. Having a deeper understanding of the theory behind my practice has reinforced the decisions I make as an educator as well as given me the confidence to share and promote these ideas with my colleagues. This extends to the perception of risk and risky play at Lochside School. In my approach to risk taking behaviour, I am more lenient that other teachers in allowing my students to engage in potentially risky-play. However, I often felt insecure in how this would be perceived by other teachers and administrators. Now that I have a solid foundation in the research showing the developmental benefits of risk, I am much more confident and forthright about the decisions that I make as an educator. Summatively, the journey through my graduate studies and capstone project has reinforced my passion and increased my confidence in sharing the importance of nature-based learning with my colleagues and administrators.

While my literature review on the benefits of nature-based play reinforced many of my existing ideas, there were also areas of the literature review that helped me to see my project

from a new perspective. First of all, my initial thinking and planning about a nature-based learning program revolved almost entirely around the physical space; how should trails be made, what sort of learning areas should be developed, what committees should be developed to develop and care for the space, and so on. It wasn't until delving more deeply into successful environmental learning programs and ways to affect educational change that I began to fully understand the social dimension of the project. Simply creating access to the physical outdoor space could not be expected to affect change in teacher pedagogy or the school culture - if I wanted to create a nature-based learning site that would actually be *used*, I had to consider the education and resources that would support teachers in their understanding and practice of environmental education. Teachers need time to engage with the ideas and strategies and collaborate with others. This realization had important implications for my project. I began to look at the process of developing a nature-based learning program in a more holistic manner. It wasn't just developing the site, but also developing the social and cultural factors that would support it. This will certainly affect the direction that I take at my school as an advocate for nature-based learning.

In a similar way, the research behind sustainable school change and the work of Michael Fullan (2003) inspired me to look at the implementation of a nature-based program in an even broader and more comprehensive manner. Initially, I assumed that if I was passionate, driven, and persistent enough, I could individually affect change at our school. Now, I see that as a rather naive and limiting approach. Affecting change at the school level is a complex and multi-layered process, which is strengthened by support and involvement at all levels. This realization greatly changed the scope with which I approached my project. It helped me to understand the importance of communicating with and garnering the support of all levels of the educational

system; colleagues, administration, parents, and school board staff. As I move forward, I will endeavour to find opportunities to communicate and collaborate with others in the educational system.

Finally, the literature on parental involvement has likewise been enlightening both in terms of the research proven benefits as well as the different models of conceptualizing parental involvement in the schools. After reading, "Communities of Parental Engagement: New foundations for school leaders' work" (Torre & Murphy, 2016), I very much recognized my own school and practice as being more in-line with the "school as institution" model (2016, p.204). As a parent myself, I understand how it is to feel apart from the education of your children. Even given the advantage of being a teacher in my children's school, I still feel a sense that each classroom is its own realm, separate from the world of parents and family. Given the benefits of a more authentic model of parental engagement, I am driven to incorporate greater opportunities for this type of parent involvement in my own classroom. Furthermore, I see the creation of an outdoor learning space as an ideal opportunity to include parents in a more meaningful manner in the education of their children. Perhaps the nature-based learning site could even serve as a model of a more community-minded model of parental involvement, inspiring other teachers to reconsider how parents might serve a more powerful and authentic role in their own classrooms.

In consolidating my key learnings from my capstone project, it is significant that so many of them are united by themes of connection and collaboration: the importance of children connecting with the environment and the community, the necessity of teachers collaborating with each other, the importance of communication between the various levels of the educational system, and the benefits of collaborating with parents. In this way, education becomes collaborative, integrative, and holistic on all levels.

Limitations and Recommendations:

Working through my capstone project has also helped me realize some of the inherent limitations within my proposal for a nature-based learning site. To begin with, while I recognize the importance of collaboration with other teachers and other levels within the educational system, the reality is that my project at this point is primarily based on my individual interest and passion. While I do expect there to be a broad base of interest amongst staff, the reality is that there could also be resistance. This is one of the risks of bringing a proposal forward from an individual instead of a committee. In light of this limitation, one of my initial goals will be to establish a group of interested staff, The Nature Space Committee, to form a broader base of influence. This will also help build community within the school. I will ensure that I communicate regularly with staff in hopes of transforming this personal plan into an initiative shared amongst staff. I recommend this as a strategy for others in a similar position.

Another limitation of my proposal is that because it is teacher-initiated, there may be limitations from the other levels over which I have little influence. For example, I currently have limited contact with school board personnel. If the school board is not in support of such a project, I may have little control over the future of my proposal. The provincial Ministry of Education is even further removed from my realm of control. The decisions made at this level, however, can profoundly affect the ability of teachers to deliver an effective nature-based program. Class sizes may be too large, for example, for teachers to feel confident in taking their students outside. Provincial funding may be too lean for the necessary supports to be put in place. In recognition of these limitations, it is necessary to begin to share and promote the ideas and rational behind nature-based learning initiatives with people in other levels of the educational system and the greater community. Hopefully, this will continue to raise awareness

and support for such programs. While this takes courage, my increased level of understanding and confidence that has come through graduate school and the completion of my capstone have emboldened me to become an advocate for nature-based education.

References

Aasen, W., Grindheim, L. T., & Waters, J. (2009). The outdoor environment as a site for children's participation, meaning-making and democratic learning: Examples from norwegian kindergartens. *Education 3-13, 37*(1), 5-13. doi:10.1080/03004270802291749

Bagot, K. L., Allen, F. C. L., & Toukhsati, S. (2015). Perceived restorativeness of children's school playground environments: Nature, playground features and play period experiences. *Journal of Environmental Psychology, 41*, 1-9. doi:10.1016/j.jenvp.2014.11.005

Bateson, G. (1972). *Steps to an ecology of mind: Collected essays in anthropology, psychiatry, evolution, and epistemology*. San Francisco: Chandler Pub.

Bell, A. C., & Dyment, J. E. (2008). Grounds for health: The intersection of green school grounds and health-promoting schools. *Environmental Education Research, 14*(1), 77-90. doi:10.1080/13504620701843426

Berger, R., & Lahad, M. (2010). A safe place: Ways in which nature, play and creativity can help children cope with stress and crisis - establishing the kindergarten as a safe haven where children can develop resiliency. *Early Child Development and Care, 180*(7), 889-900. doi:10.1080/03004430802525013

Bilton, H. (2010). *Outdoor learning in the early years: Management and innovation* (3rd ed.). New York: Routledge.

Bowers, C.A., Ishizawa, J., Jucker, R., & Rengifo, G. (2011). *Perspectives on the Ideas of Gregory Bateson.* Eugene, Oregon: Ecojustice Press.

British Columbia Ministry of Education (2016). The British Columbia Curriculum, Grade K-9. Retrieved from https://curriculum.gov.bc.ca/

Brussoni, M., Brunelle, S., Pike, I., Sandseter, E. B. H., Herrington, S., Turner, H., . . . Ball, D. J. (2015). Can child injury prevention include healthy risk promotion? *Injury Prevention : Journal of the International Society for Child and Adolescent Injury Prevention, 21*(5), 344-347. doi:10.1136/injuryprev-2014-041241

Brussoni, M., Olsen, L. L., Pike, I., & Sleet, D. A. (2012). Risky play and children's safety: Balancing priorities for optimal child development. *International Journal of Environmental Research and Public Health, 9*(9), 3134.Canada. (2002). *A framework for environmental learning and sustainability in canada.* Ottawa, Ont: Government of Canada = Gouvernement du Canada.

Carson, Rachel. (1956). *The Sense of Wonder.* New York, NY: HarperCollins Publishers.

Chawla, L. (2007). Childhood experiences associated with care for the natural world: A theoretical framework for empirical results. *Children Youth and Environments, 17*(4), 144-170.

Chawla, L., Keena, K., Pevec, I., & Stanley, E. (2014). Green schoolyards as havens from stress and resources for resilience in childhood and adolescence. *Health & Place, 28*, 1-13. doi:10.1016/j.healthplace.2014.03.001

Collado, S., & Corraliza, J. A. (2015). Children's restorative experiences and self-reported environmental behaviors. *Environment and Behavior, 47*(1), 38-56. doi:10.1177/0013916513492417

Constable, K., & Green, S. (2012). *The outdoor classroom ages 3-7: Using ideas from forest schools to enrich learning*. Milton Park, Abingdon, Oxon;New York: Routledge.

Dadvand, P., Nieuwenhuijsen, M. J., Esnaola, M., Forns, J., Basagaña, X., Alvarez-Pedrerol, M., Rivas, I., Lopez-Vicente, M., Pascual, M., Su, J., Jerrett, M., Querol, X., Sunyer, J. (2015). Green spaces and cognitive development in primary schoolchildren. *Proceedings of the National Academy of Sciences, 112*(26), 7937-7942. doi:10.1073/pnas.1503402112

Dewey, J. (1981). "The School and Social Progress," in J. McDermott, ed., *The Philosophy of John Dewey* (Chicago: University of Chicago Press, 1981).

Dewey, J. (1938). *Experience and Education*. New York, NY: Collier Books.

Dimopoulos, D., Paraskevopoulos, S., & Pantis, J. D. (2008). The cognitive and attitudinal effects of a conservation educational module on elementary school students. *The Journal of Environmental Education, 39*(3), 47-61. doi:10.3200/JOEE.39.3.47-61

Elliott, S., & Chancellor, B. (2014). From forest preschool to bush kinder : An inspirational approach to preschool provision in australia. *Australasian Journal of Early Childhood, 39*(4), 45-53.

Edwards, C. P., Gandini, L., & Forman, G. E., (1998). *The hundred languages of children: The reggio emilia approach--advanced reflections* (2nd ed.). Greenwich, Conn: Ablex Pub. Corp.

Ernst, J. (2014). Early childhood educators' use of natural outdoor settings as learning environments: An exploratory study of beliefs, practices, and barriers. *Environmental Education Research, 20*(6), 735-752. doi:10.1080/13504622.2013.833596

Fullan, M. (2003). *Change forces with a vengeance*. New York; London: RoutledgeFalmer.

Fazio, X., & Karrow, D. D. (2013). Negotiating the constraints of schools: Environmental education practices within a school district. *Environmental Education Research, 19*(5), 639.

First Nations Education Steering Committee and First Nations Schools Association. (2016). *Science First Peoples Teacher Resource Guide*. Retrieved from http://www.fnesc.ca/wp/wp-content/uploads/2015/08/PUBLICATION-61496-Science-First-Peoples-2016-Full-F-WEB.pdf

Frantz, C., F.S. Mayer, C. Norton, and M. Rock. (2005). There is no 'I' in nature: The influence of self-awareness on connectedness to nature. *Journal of Environmental Psychology* 25, no.4: 427-436.

Fjørtoft. (2004). Landscape as Playscape: The Effects of Natural Environments on Children's Play and Motor Development. *Children, Youth and Environments*, *14*(2), 21–44. Retrieved from http://www.jstor.org.ezproxy.library.uvic.ca/stable/10.7721/chilyoutenvi.14.2.0021

Goodall, J., & Montgomery, C. (2014). Parental involvement to parental engagement: A continuum. *Educational Review, 66*(4), 399-410. doi:10.1080/00131911.2013.781576

Government of Canada. (2002). *A Framework for Environmental Learning and Sustainability in Canada* (Catalogue number: En40-664/2002).

Given, H., Kuh, L., LeeKeenan, D., Mardell, B., Redditt, S., & Twombly, S. (2010). Changing school culture: Using documentation to support collaborative inquiry. *Theory into Practice, 49*(1), 36-46. doi:10.1080/00405840903435733

Hedges, H., Cullen, J., & Jordan, B. (2011). Early years curriculum: Funds of knowledge as a conceptual framework for children's interests. *Journal of Curriculum Studies, 43*(2), 185. doi:10.1080/00220272.2010.511275

Jardine, D. W., (2012). *Pedagogy left in peace: Cultivating free spaces in teaching and learning*. London;New York, NY;: Continuum.

Jardine, D. W., Clifford, P., & Friesen, S. (2008). *Back to the basics of teaching and learning: Thinking the world together* (2nd ed.). New York: Routledge.

Kaplan, S. (1995). The restorative benefits of nature: Toward an integrative framework. *Journal of Environmental Psychology,* 15(3), 169-182.

Knight, S. (2009). *Forest schools and outdoor learning in the early years*. London; Los Angeles: SAGE.

Little, H. (2015). Mothers' beliefs about risk and risk-taking in children's outdoor play. *Journal of Adventure Education & Outdoor Learning, 15*(1), 24. doi:10.1080/14729679.2013.842178

Louv, R. (2008). *Last child in the woods: Saving our children from nature-deficit disorder* (Updated and expanded.). Chapel Hill, NC: Algonquin Books of Chapel Hill.

Maynard, T., Waters, J., & Clement, J. (2011). Moving outdoors: Further explorations of 'child-initiated' learning in the outdoor environment. *Education 3-13, 41*(3), 1-18. doi:10.1080/03004279.2011.578750

Niehues, A. N., Bundy, A., Broom, A., Tranter, P., Ragen, J., & Engelen, L. (2013). Everyday uncertainties: Reframing perceptions of risk in outdoor free play. *Journal of Adventure Education and Outdoor Learning : JAEOL, 13*(3), 223.

Nundy, S., Dillon, J., & Dowd, P. (2009). Improving and encouraging teacher confidence in out-of-classroom learning: The impact of the hampshire trailblazer project on 3-13 curriculum practitioners. *Education 3-13, 37*(1), 61-73. doi:10.1080/03004270802291889

Orr, D. W., (1994). *Earth in mind: On education, environment, and the human prospect*. Washington, DC: Island Press.

Orr, D. W., (1992). *Ecological literacy: Education and the transition to a postmodern world*. Albany: State University of New York Press.

Raith, A. (2015). Informal nature experience on the school playground. *International Journal for Transformative Research, 2*(1), 18-25. doi:10.1515/ijtr-2015-0004

Rose, J., & Cachelin, A. (2014). Critical sustainability in outdoor education: Connection to place as a means to social justice and ecological integrity. *The Taproot, 23*(1)

Sandseter, E. B. H. (2012). Restrictive safety or unsafe freedom? norwegian ECEC practitioners' perceptions and practices concerning children's risky play. *Child Care in Practice, 18*(1), 83-101. doi:10.1080/13575279.2011.621889

Sandseter, E. B. H., Little, H., & Wyver, S. (2012). Do theory and pedagogy have an impact on provisions for outdoor learning? A comparison of approaches in Australia and Norway. *Journal of Adventure Education & Outdoor Learning, 12*(3), 167. doi:10.1080/14729679.2012.699800

Sandseter, E. B. H., & Kennair, L. E. O. (2011). Children's risky play from an evolutionary perspective: The anti-phobic effects of thrilling experiences. *Evolutionary Psychology : An International Journal of Evolutionary Approaches to Psychology and Behavior, 9*(2), 257.

Sampson, S.D. (2015). *How to Raise a Wild Child: The art and science of falling in love with nature*. Boston, New York: Houghton Mifflin Harcourt.

Sobel, D., (2008). *Childhood and nature: Design principles for educators*. Portland, Me: Stenhouse Publishers.

Sobel, D., & Orion Society. (2005). *Place-based education: Connecting classrooms 7 communities*. Great Barrington, MA: Orion Society.

Sobel, D., (1996). *Beyond Ecophobia: Reclaiming the Heart in Nature Education*. Great Barrington, MA: Orion Society.

Sobel, D., (1993). *Children's special places: Exploring the role of forts, dens, and bush houses in middle childhood*. Tucson, Ariz: Zephyr Press.

Sorin, Reesa. (2005). Changing Images of Childhood - Reconceptualising Early Childhood Practice. *International Journal of Transitions in Childhood,* Vol.1, 12-21.

Tan, Y. S. M., & Atencio, M. (2016). Unpacking a place-based approach – "What lies beyond?" insights drawn from teachers' perceptions of outdoor education. *Teaching and Teacher Education, 56*, 25-34. doi:10.1016/j.tate.2016.02.001

Torre, D., & Murphy, J. (2016). Communities of parental engagement: New foundations for school leaders' work. *International Journal of Leadership in Education, 19*(2), 203-223. doi:10.1080/13603124.2014.958200

Tsekos, C. A., Christoforidou, E. I., & Tsekos, E. A. (2012). Planning an environmental education project for kindergarten under the theme of "the forest". *Review of European Studies, 4*(2), 111.

UNCRC (2005). Convention on the rights of the child. Retrieved Mar. 23rd, 2017, from http://www.ohchr.org/EN/ProfessionalInterest/Pages/CRC.aspx

Waller, T. (2007). 'the trampoline tree and the swamp monster with 18 heads': Outdoor play in the foundation stage and foundation phase. *Education 3-13, 35*(4), 393-407. doi:10.1080/03004270701602657

Waite, S. (2011). Teaching and learning outside the classroom: Personal values, alternative pedagogies and standards. *Education 3-13, 39*(1), 65-82. doi:10.1080/03004270903206141

Williams, C. C., & Chawla, L. (2016). Environmental identity formation in nonformal environmental education programs. *Environmental Education Research, 22*(7), 978. doi:10.1080/13504622.2015.1055553

Wilson, E. O. (1984). *biophilia*. Cambridge, Mass: Harvard University Press.

Wight, R. A., Kloos, H., Maltbie, C. V., & Carr, V. W. (2016). Can playscapes promote early childhood inquiry towards environmentally responsible behaviors? an exploratory study. *Environmental Education Research, 22*(4), 518. doi:10.1080/13504622.2015.1015495

Woo, M., Schaefer, L., Ball, G. D. C., Majumdar, S. R., Plotnikoff, R. C., Wozny, P., . . . McGavock, J. (2013). Outdoor time associated with physical activity levels in children and adolescents: Healthy hearts prospective cohort study. *Canadian Journal of Diabetes, 37 Suppl 2,* S261.

World Wildlife Fund Living Planet Report. (2016). Retrieved from http://awsassets.wwf.ca/downloads/wwf_living_planet_report_2016___risk_and_resilience_in_a_new_era.pdf

Wu, C., McNeely, E., Cedeño-Laurent, J. G., Pan, W., Adamkiewicz, G., Dominici, F., . . . Spengler, J. D. (2014). Linking student performance in massachusetts elementary schools with the "greenness" of school surroundings using remote sensing. *PloS One, 9*(10), e108548. doi:10.1371/journal.pone.0108548