

Taking Learning Outdoors: Connecting Students and the Curriculum with Nature

by

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A Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

MASTER'S OF EDUCATION

in the Department of Curriculum and Instruction

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Many children in today's society are spending less and less time outdoors. A growing number of them are becoming increasingly connected to electronic devices. This decision has resulted in a lack of time in a natural environment, which has led to their disconnection from nature. For many, this detachment has become what Louv, (2008) has termed a "nature deficit disorder." This paper will examine the literature that documents the positive impact that outdoor learning experiences have on student learning. The goal of my project was to create an approach that combined the curriculum with formal and informal learning opportunities in a natural classroom environment. I was motivated by the lack of a relationship with nature that many of my students displayed. My intent was to provide authentic nature-based experiences with cross-curricular connections that would be the foundation for enhanced student learning while reconnecting them to the natural world.

Keywords: nature, student learning, natural classroom, nature-based experiences

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Acknowledgements

First of all, to my parents who encouraged and supported me throughout this journey. You helped me see obstacles as challenges and the stress as motivation. Your confidence in me never wavered, even when I was feeling overwhelmed. Thank you.

To my amazing cohort group, thank you for sharing your ideas and experience. Your encouragement, humour and support made this academic odyssey we were on seem less daunting and actually achievable.

I would also like to thank the professors at the University of Victoria in the Department of Curriculum and Instruction. Your diverse areas of study provided stimulating conversations, and many thought-provoking and memorable experiences.

To my friends and colleagues, thank you for listening, and caring and all the laughter in the staffroom. I felt your support during every step of this marathon. You were with me all the way to the finish line.

Finally, thank you to all my students, past, present and future. You keep me in touch with my inner child. Your sense of wonder and your enthusiasm for new experiences makes each day feel like it is full of possibilities. You inspire and motivate me every day, and because of you, I honestly love what I do.

Dedication

For my parents who gave me the gift of time, and the opportunity and freedom to explore nature from an early age. Through these adventures I learned about independence, perseverance, and resilience. These encounters formed the foundation for my lifelong relationship with the natural environment. My experiences and memories in nature are filled with feelings of wonder, curiosity, the thrill of discovery and the rush of adrenaline from testing limits and taking risks, as well as peace, mindfulness, joy and a sense of belonging. Thank you seems so inadequate when I cannot even begin to imagine my life without a connection with nature that may not have existed without your encouragement.

Chapter One: Introduction

“Passion is personal. Passion is lifted from the earth itself by the muddy hands of the young; it travels along grass-stained sleeves to the heart.” Richard Louv (2008)

Virtual Playgrounds

When I began teaching in elementary school one of my most rewarding experiences was listening to the variety of activities my students had been involved with over the weekend. At the start of my career many of the conversations centred on their adventures that took place outdoors. Sometimes they happened in their own backyards. Other times the stories were based in neighbourhood or city parks, or even down at the local beach. As the years went by, more and more of the experiences shared by my students began to move indoors with them. Many of their weekend tales now focused on game consoles and other computer-based activities. Eventually, a large number of the stories about outdoor time faded away and were replaced by their personal connection to at least one, if not multiple, electronic devices. Over the years, when sharing with my class some memories of my own childhood, most of which was spent engaged in outdoor adventures of one kind or another, I receive an ever increasing number of looks of incomprehension from many of my students.

Similarly, when my students excitedly regale me with detailed, lingo-filled explanations of the electronic game worlds they are currently absorbed by, I feel like they are speaking a completely foreign language. Through our disconnected conversations, I am realizing how different our concepts of play have become: especially the definition of *what* and *where* it

happens now seems to exist in separate worlds – while I found it outside in a relationship with the natural world, for many of my students it means being inside while being plugged into the virtual world. When I ask my class why they don't play outside or spend time in nature instead of being inside in front of a screen, too many of them look at me with a mix of confusion and disbelief. I have to admit that seeing their expressions and hearing multiple responses along the lines of “why? ...there's nothing to do out there!” breaks my heart.

Grass Stains and Dirty Hands

My earliest memories are connected to being outdoors. I don't recall being concerned whether I was simply “outside” or being “in nature,” it was just the “out of doors” that was important. In school, I was the kid that was outside before the recess or lunch bell had even stopped ringing. At home, I could be found in my backyard sandbox (half sand and half dirt), sometimes on my own and other times with friends. Here, in this outside space, imagination had free reign; castles, underground cities, or maybe the moon or another planet became the fantasy location for the day. These virtual worlds were inspired by personal experiences, designed with our own minds, using creativity and found objects. They were also co-created and supported by agreed upon rules and maintained intricate plot lines over multiple days.

Another favourite pastime was playing road hockey, either in my driveway or on the road. Growing up in Victoria, B.C., the temperature rarely dropped low enough to freeze ponds to the point where they became safe enough to skate on. However, this meant that road hockey began in the fall and carried on until late spring. Sometimes this would be only a few of us playing one-on-one or two-on-two against a single goalie. Other times there would be enough players to make two full teams. Often the games would last for hours. The only interruption

might be hunger, but more likely it would be darkness or an on-coming car which meant moving the nets temporarily to let the traffic pass. Today, when I am driving and I see a red and white net in someone's yard I am reminded of those days and can actually hear the faint echo of the call of "caaaarr!" when our game was momentarily paused in order to let the vehicle carry on its way.

As an outdoor-oriented kid, I spent countless hours immersed in "outside" activities close to home, whether in my own backyard creating and imagining, or being involved in constantly replaying Game 7 of the Stanley Cup playoffs. I treasure these experiences and can easily recall them today. However, an even larger portion of my time was spent with a small group of friends at a neighbourhood park just a short bike ride away from my home. There we played baseball, tag or flew kites in the wide open space. Some days we would ride the swings, revelling in the feeling of almost being able to fly, as the ground fell away then rushed back toward us. Other days we would just lie on the soft grass, feeling the warm breeze on our faces and ruffling our hair, as we watched the clouds, exchanging ideas of what fantastical shapes we were seeing against the sky blue backdrop.

My favourite place of all to spend time was down at the small creek that ran next to the park. Its leafy banks and hidden nooks and crannies offered a cool respite from the heat of a summer's day. Hours were spent in the dappled green light exploring the mysteries and the inhabitants of "our" creek. Sometimes our little waterway became a stand in for the Nile or Amazon Rivers, and we were the first to discover it and explore its length, unsure of what we might encounter. Other times, our days were filled with making elaborate plans for a fort hidden in a secret location beside the creek. We would build it using fallen branches, rescued or "borrowed" wood and other supplies to create a hideaway with trap doors, ladders and a swing. Once complete, it became whatever our imaginations could dream up. We were free to discover,

wonder, and learn about the world and ourselves. It was a magical place where adventures waited, while the scent of sun-baked mud wafted on the breeze and the sound of the creek played its song in the background.

Nature...Always Part of My Life

Although I grew up and moved away from my childhood home and neighbourhood, my affinity with natural spaces has not waned. In fact, spending time outdoors has become an integral part of my life. The connection I felt with natural places when I was young has continued throughout my life. So much so, that both the amount and type of natural areas were important determining factors when I chose where to relocate in order to obtain a teaching position. I knew that having access to green space was a necessity for my well-being, both in and around my workplace as well as in my community.

There are a multitude of reasons that are currently contributing to the disconnection many children have with nature. One factor is the sheer number of hours that young people spend occupied with electronic devices. This cannot help but to have a detrimental effect on the amount of time they have to spend exploring the outdoors. Another reason is the diminishing natural areas that are available for kids, their parents, as well as others to explore and enjoy. In addition is the question of safety; the difficulty of balancing independence with reasonable precautions as well as what constitutes responsible parenting in today's world. However, if outdoor time is made a priority for both children and parents alike, using a combination of cell phones and location choices, quality, personal experiences in nature can be achieved by both families, as well as by other members of the public.

Competition and Cooperation

Another continuous thread that is woven throughout my life is the influence that participating in team sports, both the neighbourhood-led type, as well as the officially organized variety, has had on me. It began when I was six years old and my dad explained the rules of hockey to me. Game time became “our time” as we cheered on our team. It may have been only sports fan superstition, but we felt our support mattered and we identified with being a part of our team’s fan base. This feeling of comradery I experienced was also evident in pick-up games of road hockey and the odd game of baseball. As I grew older I also joined the world of organized sports. After discovering that there were no girls’ ice hockey teams and that I was not allowed to play on the boys’ teams, I found soccer. It just seemed to “fit me” just like hockey did. It was the combination of the team aspect mixed with a sport that ignited my enthusiasm and passion. For me there was simply a “rightness” about being a member of a team, something that just clicked inside me when I was playing hockey or soccer. Maybe it was the balance of being an individual while being part of a larger whole. Possibly it was the combination of competition and cooperation; your teammates pushed and supported you to be your best, while you did the same for them as you worked together toward achieving a common goal. The feeling of belonging to something bigger than me that I experience in nature is echoed in being part of a team. This understanding and comprehension in my head (brain) combines with the emotional knowing in my heart. The merging of these components is evident in both my experiences in natural places and as well as being a member of a team.

Teaching as a Team Sport

From the time I was very young I knew I wanted to be a teacher. Early on, this meant helping younger students with reading. Later on it took the form of coaching. I started with six year old soccer players. Thus began my first experience with “classroom management” challenges. Watching my players score a goal or seeing our goalie make a save was such a thrill; seeing them learn and work together while experiencing joy and pride in themselves and each other made all the organized chaos worthwhile.

In college I took a course in Early Childhood Education and Care. After graduation I got a job at a daycare. I worked with children aged 18 months to 5 years. All the staff worked together as a team, helping one another with our curious and busy young charges. After a few years I resigned to attend university and earned a Bachelor of Arts (Psychology) and continued on to receive a Bachelor of Education degree.

During my first few years of teaching, I remember feeling constricted and overwhelmed by the number of learning outcomes that I felt pressured to cover. It just felt wrong that completing objectives should be more important than the quality of learning as well as the level and degree of understanding that my students were able to achieve. It also never really felt natural to be seen as the holder of all the knowledge, or the “sage on the stage” if you will. This style of teaching never “fit” me, it was too passive and made meaningful engagement with the material difficult to maintain, for both me and my students. Early on in my Master’s journey I was introduced to Ted T. Aoki. His writing was both illuminating and epiphany-producing for me. Reading his work entitled *Teaching as Indwelling Between Two Curricular Worlds* was like

he was reading my mind. My first epiphany occurred when according to Aoki, he described two different methods of viewing and teaching curriculum. On one hand was the traditional view or “curriculum-as-plan” and on the other hand was what he termed “curriculum-as-lived-experience.” According to Aoki, “curriculum-as-plan” referred to the set of curriculum statements; the goals, aims and objectives that teachers and students *should do*, along with the officially recommended and created resources and statements and methods of evaluation. He described the other curriculum world as “curriculum-as-lived experience” which he defined as living the daily classroom experience, where the students are recognized as unique individuals. Central to this situation is the *relationship* between each of the students as well as with their teacher and the ever-present difficulty merging the generalized, prescribed curriculum with the variety of individual student needs and interests. I realized that my personal teaching philosophy matched his description of “curriculum-as-lived-experience. In addition, this conflict that I was experiencing now had a name-it was called “dwelling in the zone of between,” or the tension of walking the line between my responsibility to complete mandated outcomes while simultaneously honouring the passions and individual social/emotional and academic learning needs of each of my students.

My second epiphany moment was when, in a sense, his writing both validated and gave me permission to be the kind of teacher I wanted to be. Instead of being a “talking head” at the front of the room delivering the planned curriculum, I could now be their “guide on the side” or “coach” while we worked and learned together; incorporating our individual interests within the “one size fits all” curriculum in order to make the general concepts as personally meaningful as possible. Understanding that I was “dwelling in the zone of between” enabled me to find a way to make the curriculum fit the needs of my students, rather than the other way around. Using

this perspective, together my students and their families and I, along with the school-based support teachers became an “educational team.”

My Project Objectives

My goal is to expand the opportunities my students have to interact with the natural world. I plan to use an outdoor classroom setting as a means to improve student learning and understanding by using hands-on, engaging, cross-curricular activities to bridge the gap between the information in textbooks and real life experiences. I also intend to provide my students with experiences to help them develop and strengthen a sense of place; to form a physical and emotional relationship with nature while broadening their awareness and understanding, both of themselves and the natural space. Another purpose of these learning intentions is to empower and inspire my students to utilize their knowledge and personal relationship with nature in order to become informed, active and lifelong stewards of the environment so that natural places are protected and preserved for future generations to discover and explore.

The importance of making this effort cannot be understated or underestimated. The impact of nurturing a personal relationship with the natural world with young people increases the likelihood that it will become a lifelong, enriching and memorable experience. When I am outdoors in nature I feel a sense of being connected physically and emotionally to it, like it is a place that I belong. It is a relationship that began when I was so young that I don't remember when it actually started; spending time in nature was just always part of my life and part of who I am. My wish is to be able to share this passion with my students, in the hopes that they might experience a similar sense of curiosity and wonder. Also, to help them discover and connect to their own special place and become an advocate for the preservation of natural spaces.

Chapter 2: Literature Review

*If you use the environment as an integrating theme across the curriculum, test scores go way up. It's reading about the environment and then exploring it that makes a difference. It's not merely the act of going outdoors, but if you tie it back to the curriculum in an applied way, then things start to happen...
Brian Day (2007)*

Introduction

There is no single factor that is solely responsible for either the lack or the loss of a connection that too many of today's children seem to have with nature. Besides the issues of availability and access to green spaces and the questions surrounding safety, it is the matter of time, specifically both the amount of it, as well as how it is used, that stands out. While many students' lives are highly scheduled with lessons and other organized activities, electronics in its many forms, is another element that consumes much of their attention. The relationship with the natural world that was once an integral part of the lives of many young people is now being usurped by the mesmerizing draw of the virtual world that consists of a variety of electronic devices including computers/tablets, game consoles, and cell phones. In addition, although to a somewhat lesser extent, is the captivating power of various social media sites. This continually increasing "connectedness" to a variety of forms of technology is one of key contributors to the alarming rate of "disconnectedness" that many young people have regarding their experiences in nature. So much so, that a term describing this phenomenon has been developed by author Richard Louv. He has coined the phrase "nature-deficit disorder" (2008, p. 36) in his book "Last Child in the Woods" when referring to the loss of, or the human costs of "alienation from nature."

Many of the types of skills that are being brought to the forefront by the British Columbia Ministry of Education are being labelled as 21st Century skills. Among them are self-reliance, critical thinking, inquiry, creativity, problem solving, innovation, teamwork and collaboration. These are many of the types of skills that used to be learned while being involved in a variety of outdoor/nature-based activities. It was during afterschool hours and on weekends when many children spent time engaged in play-based experiences outdoors, when questions were wondered about and solutions were suggested and attempted. Ideas were created and limits were tested; lessons were learned by trial and error (sometimes the hard way), all the while children were being completely absorbed by, and fully participating in the hands-on learning experiences about how the natural world worked, as well as their impact on it and their place in it. An increasing number of students today appear to be lacking that experiential background to help them think critically as well as hindering their ability to connect their “book learning” to authentic “real world” situations and conditions.

Providing outdoor classroom settings in schools supports the reconnection of children with nature in three main areas. First, by moving the classroom outdoors, it enables students to experience (academic) learning in an interactive way and in authentic locations. Second, it provides students with the opportunity to gain an attachment to, or to cultivate their sense of place. Third, learning in outdoor classrooms can introduce the students to the idea of environmental stewardship, how they can become involved, and why their participation matters. Learning situations outdoors can be the hands-on link between the natural world and the academic-based information in a textbook. By engaging all their senses, students have the opportunity to gain a deeper level of understanding and knowledge. According to Smagorinsky (2007) “the process is (at least) two-way: people’s thinking shapes their physical world and

symbolic worlds, and their engagement with these worlds in turn shapes how they (and others) think” (p. 61). As stated by Gordon (2008) “teaching should promote experiences that require students to become active, scholarly participators in the learning process” (p. 324). In addition, Windschitl (1999, as cited in Gordon) goes on to note that “such experiences include problem-based learning, inquiry activities, dialogues and teachers that include making sense of the subject matter, exposure to multiple sources of information and opportunities for students to demonstrate their understanding in diverse ways” (p. 324).

Section one of this chapter reviews the literature related to the use of the outdoor classroom setting and its impact on student academic achievement. The outdoor classroom is an active environment that can provide valuable learning opportunities for students that will engage them, make their learning more meaningful and increase their level of achievement, as well as their degree of understanding, awareness and appreciation. This section will begin with a description of the outdoor classroom as a teaching and learning environment and name some of the many types of settings that can be utilized for this style of learning. The research surrounding the influence that the outdoor classroom has on academic achievement in the area of literacy skills (reading and writing), and highlighting why it is important and how it is achieved will be reviewed. Other studies that focus on the effect that outdoor classrooms have on student scores/attitudes in math and science will also be examined. Finally, other research studies regarding how incorporating this teaching approach affects the environmental education of students, specifically in the acquisition of ecological literacy (vocabulary) and environmental science knowledge will be explored.

The second section of this chapter discusses how the outdoor classroom settings provide students with the experience of connecting with nature on an emotional level through the development of a sense of place. As stated by Louv (2008):

Children need nature for the healthy development of their senses, and, therefore for learning and creativity. This need is revealed in two ways: by an examination of what happens to the senses of young people when they lose connection with nature, and by witnessing the sensory magic that occurs when young people...are exposed to even the smallest direct experience of a natural setting (p. 55).

One method that can be used to incorporate nature experiences within the school setting is by moving the learning outside of the classroom walls.

The third section of this chapter examines the research on the topic of children and environmental stewardship. First, a definition is given, followed by studies on effective teaching methods, as well as why the issue of environmental stewardship matters are reviewed and discussed.

Section One

Using an Outdoor Classroom Approach

Where taking learning outside can go. According to the Manitoba Teacher's Society Outdoor Classroom website Environmental Education (2010-2011):

The outdoor classroom can consist of a well-defined area of the schoolyard with seats or benches, a garden or a field, or they can take place in natural areas such as forests and fields. School yards can be greened up with flower beds, butterfly gardens planted with

local wildflowers, vegetable gardens, and shady rest areas for reading and relaxing. In addition, outdoor classrooms offer students a hands-on experience in a living, interactive and stimulating environment. By mixing the curriculum with outdoor learning time, teachers can offer rich learning opportunities that indoor classrooms just can't provide.

Not all schools may or will have the space or budget to create an outdoor learning environment like the one described above. Also, many schools are located in the city where access to natural green space may be challenging. One method to address this issue is to have students involved in starting plants from seeds in pots and caring for them as they grow and then planting them around the school. Another possibility might be taking weekly trips to a community park. Both of these activities are economical (in cost and available space) and provide alternative ways to connect students to nature. The goal of outdoor classrooms is to “provide a real-world context for children’s learning”... to forge a “link between outdoor experiences in nature and ...mandated curriculum” (Eick, 2011, p. 801). Giving students the opportunity to acquire a physical connection to natural elements paired with the information in textbooks helps them to reach a deeper level of understanding while making the learning experience more engaging and personally meaningful.

In an outdoor classroom setting, students can engage in experiences in nature that provide hands-on learning opportunities that support in-class subject information. According to Cass, (as cited in Chernos, 2007) “outdoor education gives a much more lasting impression than a diagram in a textbook. The students dig into the soil, catch insects and explore tracks in the snow. It’s active and memorable” (p. 17). Furthermore, as stated by Foran (2005) “the outdoors is a natural place for people to create opportunity that opens our existence to relationships with others and with our world” (p. 152).

The Effect of the Outdoor Classroom on Literacy Skills

In a recent case study, Eick (2012) described the interactions of the students and their teacher in a grade three classroom in the Southeastern United States. The purpose of the study was to examine whether the nature-study approach conducted in an outdoor hands-on environment impacted the students' state test results in reading and writing (grammar). Eick (2012) conducted interviews and gathered stories from both the teacher, Susan, and her students. In addition, Eick (2012) also gathered a variety of forms of data including observations, interviews, lesson plans, as well as his own journal entries (he was a researcher/participant).

State test scores in literacy (reading and grammar) for the students in Susan's class showed that 15 of 16 children met the academic content standards. As their teacher, she also observed improved writing skills from her students when their writing was connected to their outdoor learning experiences. She reported that those opportunities "motivated them to write more, and more coherently than ever before" (p. 798). This study found that the nature-study approach where science (outdoor learning) was interconnected to in-class science curriculum and language arts activities benefited students' attitudes, as well as their test scores.

These findings highlight the importance of this teaching approach. By relating their hands-on authentic experiences to their indoor classroom learning, students were able to make meaningful connections with the information at a deeper level. This was due to the fact that the two styles of learning opportunities complemented one another and the students could use their personal experiences to help them place the text-based learning in context with their understanding of the real world.

The Outdoor Classroom Effect on Math and Science Achievement

Waliczek, Logan & Zajicek, (2003) carried out a qualitative study to investigate math and science in the outdoor classroom in Santa Fe, New Mexico. Whereas the study by Eick (2012) focused on one teacher and a single grade three classroom, this study included 21 teachers and 175 students from five different schools. In addition, the students in Eicks's study had outdoor/nature-study opportunities every day, where in the Waliczek et al. (2003) study the student groups participated in a 3-4 hour environmental program. A variety of data was collected, including interviews and surveys. The data from the interviews was analyzed and the responses to the program used Bloom's Taxonomy as a theoretical framework. The objective of this study was to investigate the impact of the outdoor environmental activities on children's critical and creative thinking, in addition to their attitudes toward math and science.

The findings indicated strong support of learning occurring in math and science for students enrolled in classes taking part in the outdoor classroom program. Some of the responses occurred in Bloom's highest level of learning (evaluation and synthesis) in ideas relating to problem solving and testing. Themes that were supported by the data included positive attitudes in math and science in the program as well as the notions of experiential learning where, according to Sebba (1991) "children directly experience and manipulate a natural environment" (as cited in Waliczek et al., p. 687). This theme was also evident in Eick's (2012) narrative study in the words of the teacher (Susan) "this science content was connected to the context of the outdoor classroom and the children's direct experiences with nature and the outdoors" (p. 797).

Klemmer, Waliczek & Zajiczek (2005) also completed a qualitative study using a large sample of students from multiple schools across grades 3, 4 and 5 in Temple, Texas with 647

students participating from seven different elementary schools. The purpose of this study was to evaluate whether students who participated in a school garden program would demonstrate higher achievement scores on the State test, TEKS (Texas Essential Knowledge and Skills).

Klemmer et al., (2005) utilized an experimental group design where some students participated in a school gardening program in addition to their in-class science (direct) instruction. The authors compared this group to a control group who received direct, traditional science instruction (no hands-on outdoor experiences). At the end of the term, both groups completed the State TEKS exam.

The findings revealed that the students who participated in the school garden program scored significantly higher than the students who did not. The results also showed no significant difference between the scores of males and females who participated in the program, indicating that the gardening program was an equally effective teaching method for both genders. Another finding that the research revealed occurred after the results were separated into grade levels. These results indicated that while the garden curriculum was generally effective in raising science achievement scores, it was especially strong for boys in the grades 3 & 5 and for girls in grade 5 compared to traditional classroom-based methods alone. However, while this is an interesting finding, it is important to note that no reasons were reported that accounted for the improved learning occurring within the specified grades or gender groups.

The recurring theme throughout all the studies was the value of the hands-on experiences, whether they were held in an outdoor classroom/nature-study or a school garden. When these learning opportunities were purposefully connected to students' prior knowledge/experience as well as to their textbook learning, it was of great benefit to them in that it enabled them to both

reach and retain a deeper level of understanding. These academic achievements were demonstrated in state tests (Klemmer et al., 2005 & Eick, 2012) and by an improvement in attitude, motivation and self-confidence (Eick, 2012). According to Adams & Hamm, (1998) “gardens can serve as living laboratories in which students can see what they are learning and in turn, apply that knowledge to real world situations” (as cited in Klemmer et al., 2005, p. 452).

Similarly, in the study by Eick (2012), the teacher used the outdoor classroom and the study of nature as an application for scientific principles the children were learning during their classroom-based science curriculum. The benefits of the outdoor classroom approach should not be judged solely on improved test scores. These hands-on experiences are meaningful learning opportunities for students. This is supported by Eick (2012) where the classroom teacher “witnessed a heightened motivation to read, write and draw in those children who also struggled most with engaging in literacy activities” (p. 800).

The Outdoor Classroom Experience

Acquiring ecological literacy (vocabulary) and environmental science knowledge.

An additional component of the outdoor classroom approach is that the experiences provide many students with the opportunity to gain competency with the use of ecological literacy (vocabulary) skills, which enabled them to gain, discuss and further develop their knowledge of environmental science, which by definition is the “science that is directly relevant to everyday life and the environments in which it is experienced: the interdisciplinary scientific study of the environment and environmental problems; the set of sciences involved in this” (www.oed.com).

Another qualitative study was conducted by Upadhyay and DeFranco (2008) where they examined the acquisition and retention of ecologically-based vocabulary and environmental

science understanding over time, using four classes at two different elementary schools. Unlike the Eick (2012) study where the class was in the Southeastern United States, the current study was located in the Midwest. Similar to Eick (2012), this study also researched the students in the third grade and the students in both studies were from similar economic backgrounds (free or reduced lunch programs). However, while Eick (2012) focused on a single class, there were 108 participants in the current study. Upadhyay & DeFranco (2008) studied four grade 3 classes from two elementary schools. There was one treated group and one control group in each school. The researchers asked the teachers in the control group to teach environmental science using the traditional teacher-centred approach, while the treatment group received hands-on activities to support the text-based science curriculum. The hands-on activities were purposefully connected to their personal lived experiences. In the control group, similar hands-on activities were provided, however the teachers were explicitly asked not to provide connections to the students' prior experiences. All the teachers were asked not to teach environmental science outside of the specified times. This approach was in contrast to Eick's (2012) study where cross-curricular connections were a common occurrence and connections to the students' prior experiences were encouraged and supported. The data in the current Upadhyay & DeFranco (2008) study was collected using pre/post surveys. The first post survey was administered immediately after the unit was completed. The second post/retention survey was given three months after the initial post-test was completed. Interviews were also conducted with the students as well as the teachers. The findings revealed that although the students in the treatment group gained less vocabulary than the control group, they also showed less loss of the vocabulary than the control group did.

The results from this study also supported the idea that students who engage in hands-on activities and are able to connect those experiences to their prior lived experiences as well as to the textbook-based learning, are more able to learn, retain it and reach a deeper level of knowledge and understanding of the concepts. This connection-based result was also seen in all the previously reviewed studies.

Farmer, Knapp & Benton (2007) examined the long-term effects of environmental knowledge. The researchers used a phenomenological analysis to determine the effects of a field trip over time. The researchers received permission to interview the grade 4 participants a year after their trip. Farmer et al., (2007) gathered data from 30 students from a school in eastern Tennessee. This study differed from the previous studies, as the results were based on a single day, multi-activity excursion to a National Park. The findings showed that the students used ecological vocabulary in their descriptions and were able to recall environmental knowledge learned the previous year.

The studies reviewed all support the concept that providing students with outdoor hands-on experiences is beneficial to their academic achievement. Especially evident, is the level of effectiveness when students have opportunity to connect their lived experiences in nature with their in-class textbook-based science curriculum. The results of the studies also revealed that when environmental education is connected in a cross-curricular approach, the students are able to achieve deeper levels of understanding as well as retain environmental vocabulary and science knowledge.

Section Two

“Children’s place attachments are important for what they contribute to the quality of their lives and the enduring effects they leave after childhood is over” Louise Chawla (1992)

In relation to one of my project objectives, the question of whether the development of a personal concept of place (an emotional and physical attachment/connection) to nature is imperative in order for young people to truly achieve meaningful environmental understanding. The groundwork of meaningful environmental education begins with students developing a connection to nature on a personal level. This relationship is formed when a sense of place between nature and themselves is nurtured and allowed to grow and blossom.

A Sense of Place: Definition and Development

In this section the literature related to the idea of place (and its impact on environmental education) will be examined. It will begin with a definition and a description of a sense of place as it applies to an outdoor setting. The research surrounding the development of a sense of place and its impact on the level of meaning students are able to achieve in environmental education will be examined. In addition, the manner in which pedagogical teaching methods can help support the development of this connection to a place in nature and how this can be used as a foundational lens through which students (and teachers) can view environmental issues, both locally and globally will also be discussed.

What a Sense of Place is...

According to Kudryavtsev, Stedman, & Krasny, (2011) a sense of place, in the context of environmental education research that employs a psychological approach, suggests that it “is a combination of the two principal and complementary concepts: place attachment and place meaning” (p. 230). Definitions of these two terms are as numerous as there are scholars of a sense of place. However, as stated in Kudryavtsev et al. (2011), “we can generally agree on the two main components of sense of place. Place attachment reflects how strongly people are attracted toward places, while place meaning describes the reasons for this attraction” (p. 233). One of the main themes that consistently appeared throughout the literature on sense of place was the significance of childhood access to, and the variety of experiences in natural settings and how these early encounters created a lasting impression on those individuals. The importance of, and the opportunity to develop a physical and emotional connection to a place in nature is clearly evident when, according to Ellis (2003), “children could physically manipulate and explore the environment with intensity—unbound by adult rules of order, neatness and propriety—enjoy individual challenge and group play, or find refuge from the interpersonal tensions of social relationships” (p. 4).

This integrated experience of place is also seen in other research. According to Bowers (2009), it is “the patterns of...natural phenomena that we encounter with all our senses. That is, sight, sound, smell and touch. Thus, the landscapes we move through are experienced as multi-dimensional; they are ever part of our memories and stories” (p. 411). This idea of a sense of place taking root in childhood and creating a lasting impression is reported in a study by Eick (2011) where a former student returned to share with her third grade teacher that she is now majoring in environmental biology because of her experiences with Susan (teacher) “down at the

creek” (p. 880). Fortunately, this type of shared experience with place can also occur beyond elementary school. This is evident by the narratives shared by middle and high school students and teachers described in Foran (2005) “When I looked across the dam I was overwhelmed. Something inside me swelled. This knowing or connection was revealed to me when I caught the eye of Samantha. It was in her eyes and smile; it radiated from her face...there was innocence and intensity in our exchange that held personal meaning” (p. 154).

Developing a Sense of Place...

The impact that a sense of place has on a student’s environmental understanding can be a powerful and enduring experience. According to Kudryavtsev et al. (2011) attachment to place “can be developed through an *experiential approach* that utilizes 1) direct experiences with places, especially long-term, frequent and positive experiences and an *instructional approach* where 2) learning about places [is] from indirect sources rather than direct contact” (p. 236). The authors also stated that place meaning can be “developed through 1) first hand experiences in places (*experiential approach*) and 2) from written, oral and other sources, including communication with other people (*instructional approach*)”(p. 237). Kudryavtsev et al. (2011) suggests that combining the two approaches may be “an effective strategy to nurture place meaning and strengthen place attachment” (p. 240).

In the past, science education in schools was mostly focused on the imparting of facts, using broad science topics using a teacher-centred approach. This information was textbook-based and its purpose was to cover specific outcomes and then to measure the academic understanding using written tests. Currently, the subject of environmental education is being incorporated as valuable part of the science curriculum in today’s schools. It is moving toward

being taught using a methodology that combines direct instruction with first-hand experience. For example, this means learning about erosion and then having the opportunity to actually go and witness this issue first hand in their local community. Students can investigate the cause, see the impact, and work toward creating some possible solutions. This is important because this type of technique (including cross-curricular connections) supports students in developing a sense of place as part of a deeper and more meaningful understanding of the environment as a whole.

Pedagogical Methods and a Foundational Lens...

Providing these types of learning opportunities is important because as stated in Hill, Wilson & Watson, (2004, as cited in O'Sullivan & Taylor) "...our particular approaches in teaching/ learning are informed by ecology and our deepest and most profound understandings of nature" (p. 47). The studies reviewed in this section support the concept that providing students with experiences that enable them to develop a sense of place has a positive impact on the level of meaning and comprehension they achieve regarding the environment. Especially evident, in the successful development of place, is the need for students to be able to connect their lived experiences to their in-class textbook-based curriculum. The inclusion of frequent nature-based experiences are essential in schools, as so many of our students are choosing the virtual world over the natural world, by choosing to spend their time in cyberspace instead of in an outdoor space. Reconnecting young people with nature, starting with a sense of place is critical, as local and global environmental issues are more meaningful when they can associate them with their personal relationship with the natural world. If our students are to grow up to be informed, knowledgeable and protective citizens of the environment, it is crucial that they have a sense of place in the environment; that they have a personal relationship founded on a physical and

emotional connection to nature. This connection to natural spaces or sense of place is a blend of the attachment to place (what it is that attracts them to it) as well as the special, personal meaning that the place holds for them.

Section Three

“I am the Lorax, I speak for the trees. I speak for the trees, for the trees have no tongues” (Dr. Seuss)

In the third section the term stewardship, as it relates to the environment will be defined. Next, the research regarding the most effective teaching methods to nurture stewardship attitudes and behaviours will be examined. Lastly, the factors involved in why stewardship matters will be explored.

What is Stewardship?

According to Wikipedia, this term “refers to the responsible use and protection of the natural environment through conservation and sustainable practices.” This seems like a simple definition that barely scratches the surface of such a multi-layered word. What follows is a much more in-depth description that has an educational context from Rewilding Vancouver (2014):

Environmental stewardship is a principle that recognises the need to conserve and restore natural ecosystems for the benefit of current and future generations of all species. Environmental stewardship moves from simply respecting the environment toward responding and actively taking responsibility for human and ecosystem health. It’s a commitment to act in an environmentally, socially and economically sustainable manner. Stewardship refers to a wide range and scale of actions by individuals, communities, groups and organisations working alone or

collaboratively, to promote, monitor, conserve and restore ecosystems in accordance with guiding principles. These principles are based on current scientific evidence with emphasis on protecting biodiversity and ecosystem integrity (pp. 8-10).

How Do I Teach Stewardship?

As an educator, I wonder about how my students will become “responsible” and “protective” of natural spaces, especially when the amount of time many children spend outside is diminishing at an alarming rate. Upitis, Hughes & Peterson (2013) state that:

In order for children to develop habits of environmental stewardship, children must first connect to nature – including physical, emotional, spiritual, social, and intellectual connections. Some of these connections may lead to a sense of ownership, which in turn, may compel children to protect the places that they resonate with most (p. 94).

This makes sense, as a relationship with nature is gained through hands-on personal experiences that become the building blocks of a foundation that includes developing knowledge and understanding, as well as a sense of place (emotional/spiritual). Spending time with friends, family or other trusted adults in a natural space while sharing and exploring, can provide the social connections that are the basis for memories that can last a lifetime. Upitis et al., (2013) also put forward the concept that “environmental education has embraced the notion of environmental stewardship directly” (p. 94). These experiences are crucial to the development of future stewards. In order to become responsible and protective of something, one must first experience it, know it, and value those “in situ” experiences to the point that they become personally meaningful. Once that level of care and meaning has been achieved, they become

memorable moments and the desire to add to those cherished times and to protect the locations where they first took place is born.

Tooth and Renshaw (2009) suggest that “there are five experiential elements essential to outdoor and environmental education, namely, a) being in the environment, b) real life learning, c) sensory engagement, d) learning by doing, and e) local context (as cited in Upitis et al., 2013, pp.94-95). Further evidence that supports this view has been found by Chawla (2008) where it has been demonstrated that:

The most effective forms of environmental education are those that encourage children to know, value, and protect the diversity of life...that learning the diversity of life helps foster habits of stewardship, and is contingent on *learning to see*: learning to see communities of plants and animals, details of their individual existence and interactions, and patterns of their ever changing habits (p. 98).

The previous studies have supported the idea that in order for students to become stewards of the environment, they first must be connected to the natural world on a number of levels. According to Blanchard & Buchanan (2012):

When children are involved in educational projects that help them build knowledge about environmental issues and provide outlets for environmental stewardship, they may begin adopting behaviors that can reduce negative impacts on the environment or begin actively undertaking responsible stewardship actions (p. 234).

This learned relationship can be fostered through an outdoor or environmental education program that provides young students with many diverse experiences in natural settings. These opportunities should include hands-on activities that engage the senses of students. Students also need the chance to problem solve, learn by doing, be involved in real life learning situations, and

do so while working individually, in partners or in small groups and sharing their challenges, successes and questions. Students will also benefit from visiting a variety of local locations; discovering and exploring the local natural spaces helps to build the students' awareness of the natural places in their community. This awareness can potentially lead to increased visitation, familiarity and attachment to that place. From this place attachment, a sense of ownership can develop; thus the park or the woods becomes *my park* and *my woods*, which may illicit a desire to care for, protect and conserve these dwindling green spaces.

According to Chawla & Cushing (2007) other vital aspects of environmental education that are directly related to stewardship that can be developed by educators, are building a positive attitude about the environment, opportunities to learn and practice action skills, and the influence of a teacher or other adult who shows an interest in nature and its protection. The action skills referred to by Chawla & Cushing (2007) are carefully selected in order to be appropriate to the grade level of the students involved. The important factor is to choose an environmental stewardship goal and then, with the students, co- create an action plan to achieve it. These goals can be related to preserving or protecting something or an area on the school grounds, in the community, or to address environmental issues somewhere else in the world. The success the students feel they have achieved impacts their level of interest and commitment to their cause, as well as their view of themselves as effective stewards. The starting point of the development of these attitudes and actions may be initially sparked by a teacher. Numerous studies show that having a role model who exhibits the interest, passion, as well as the responsible and protective behaviours of someone interested in nature can leave a lasting impression on the interests and actions of children.

Why Does Stewardship Matter?

Stewardship matters because the environment matters. Caring for and protecting the natural world is a way to give a voice to what has none. Studies cited in Chawla & Cushing (2007) show that “from half to over 80% of the respondents identify childhood experiences in nature as a significant experience” (p.440). The findings also suggested that in addition to “nature activities in childhood and youth, examples of role-models such as teachers that demonstrate an interest in nature predisposes people to take an interest in nature themselves and later work for its protection” (p. 440). In nature, children learn about themselves, the world, their impact on it and their place in it. They gather experiences that build their kinesthetic, visual, and auditory knowledge. It provides a living classroom to connect and bring to life the information in their textbooks. As stated by Louv (2008) “the protection of nature depends on more than the organizational strength of stewardship organizations; it also depends on the quality of the relationship between the young and nature—on how, or if, the young attach to nature” (p. 156). Spending time outside on a regular basis enables students to develop a sense of place in their community. It is also a positive influence on their well-being; a respite from their over-scheduled, frenetic lives. It offers an opportunity to disconnect from the myriad of technological devices and the virtual world, to literally unplug and to use this chance to re-discover and reconnect with the wonders of nature. In today’s busy world, finding time to spend outdoors is challenging. Author Richard Louv offers another point of view; he suggests seeing:

Nature as antidote. Stress reduction, greater physical health, a deeper sense of spirit, more creativity, a sense of play, even a safer life—these are the rewards that await a family when it invites more nature into children’s lives (p. 163).

Stewardship is our lifeline to ensuring that the environment has a voice and that we listen and heed its message. Today's child environmental stewards are the next generation of role models that will become the guardians of our natural places. Without stewards now, who will speak on nature's behalf? Without stewards, we may run the risk of future generations visiting nature only as an exhibit in a museum, or as just another virtual experience.

We need to protect what remains of our natural spaces, for the many gifts it gives us all, especially our young. Stewardship matters because the natural world matters to us all.

Stewardship is the language of the natural world and we *all* need to speak it and listen to the wisdom of its words.

A final piece of prophetic advice from the Lorax regarding why stewardship matters...

“unless someone like YOU cares a whole awful lot, nothing is going to get better. IT'S NOT.” (Dr. Seuss)

Chapter 3: Personal Project

“Natural settings are essential for healthy child development because they stimulate all the senses and integrate informal play with formal learning. Multisensory experiences in nature help to build the cognitive constructs necessary for sustained intellectual development...”
Robin Moore (1997)

Learning Outdoors

In this chapter I will describe how I came to the realization that I needed to provide my students with a greater number of unstructured and structured learning experiences outdoors. Specifically, that my grade three and four students would benefit from an increase in both the frequency and consistency of opportunities to explore the natural environment, as well as by engaging in a variety of activities that included and supported cross-curricular connections. I will relate the experiences of teaching and learning in nature’s classroom using a basic lesson plan format framework. Each of the lessons will feature an outdoor location, learning objective(s), and cross-curricular connections. Each example will focus on one of the following; literacy(reading & writing), math, science, a sense of place, and environmental stewardship, and include how each focus topic can also be connected to other subject areas such as art, as another means to reinforce student learning, as well as to demonstrate student understanding.

My Rationale

After years of watching my students become increasingly disconnected from nature, I concluded that I needed to do something to help them rediscover and reconnect with the natural environment. I decided that I needed to find a way to integrate more outdoor experiences into the

curriculum. As demonstrated in Chernos (2007) and Eick (2011) that when presented with the opportunity to explore, play, learn, and just *to be* in a natural setting, this possibility can provide a rich and meaningful adventure for children of all ages. I wanted an approach that could help create a learning experience that engaged all their senses, encouraged curiosity, and deepened their level of thinking and understanding; one that expanded it beyond the surface memorization level, and instead stimulated the development of a personally meaningful context which combined and connected academic information with authentic multi-sensory experiences. I believe that we all benefit from spending time in nature, and that it impacts the health and wellbeing of our minds and bodies. The research studies (Bowers, 2009; Foran, 2005; Kudryavtsev et al., 2011) and the literature (Louv, 2008) I have read, my personal experiences, as well as those I have shared with my students over the years have confirmed this. Conversely, current research and literature (Louv, 2008; Suzuki, 2013a; Suzuki, 2013b; Suzuki, 2012) also documents the significant negative effects that the loss of this relationship with nature has on school-aged children. After reading these numerous studies that reported the positive results that occurred in outdoor learning settings, I was both inspired and motivated to take my students outside the classroom walls and into the natural world where they would have the opportunity to connect their academic learning with personal experience, to develop a meaningful sense of place, and to acquire a desire to maintain and protect natural spaces in their community.

My Perspective

Educating naturally. Even before I began my Master's journey, the issue of many young people's diminishing relationships with nature has continued to concern me. As I taught a new group of students each year, I was witnessing this loss and its consequences on a first-hand basis. More and more of my students were not playing outside in their yards, or in their

neighbourhoods, or visiting natural locations in their communities. Also distressing to me was that my students did not seem to see anything wrong with this. Instead, during their free time they were mostly choosing to spend it in some form of cyber space, rather than in some type of green space.

I was also becoming increasingly aware of the serious impact that the issue of time has had on the lack of a connection many young people have with nature. For some students, the time outside of school is incredibly scheduled; between music lessons, dance recitals, sports practices, games, or tournaments, and tutoring, their amount of free time is at a premium. While not suggesting that these after school interests are not valuable, one cannot help but wonder about the substantial number of activities some students are participating in, and whether that hectic pace is a healthy or a reasonable one. When many of these students do have some free time, an escalating number of them choose to spend it in front a screen, rather than being outdoors. At the other end of the spectrum, are the students who for a variety of reasons, do not participate in any organized activities. For many of them, an even significantly greater amount of their free time is being spent staring at a variety of screens; including TV, computer/tablet, cell phone, or some form of gaming device. A U.S. survey by the Kaiser Family Foundation found “young people are engaged with entertainment media for an average of seven and a half hours a day. Over seven days, that’s longer than the average workweek!”(Suzuki, 2012, para.6) A survey conducted with young Canadians by the David Suzuki Foundation in 2012 found that “70 percent spend an hour or less outdoors” (Suzuki, 2013a para. 4). In addition, that “when they are out, it’s usually to go from one place to another. In other words, it’s just a consequence of trying to be somewhere else” (Suzuki, 2012, para. 2). It is important to note that it is not technology itself that has become the thief of time that could be spent outdoors (or) in nature. Rather, it is

the disproportionate number of hours that many young people choose to spend engaged with it, to the exclusion of many other activities. Suzuki (2013a) states that “it’s not that kids don’t have time to be outside. It’s just not part of their lifestyle” (para 5). Regardless of the reasons, the end result is that students are spending less and less time outside connected with nature and that this deficiency is negatively impacting many different aspects of their lives.

This is important because spending time outside, whether it is exploring tide pools on a beach, hiking in a forest, walking through a field, or ambling along the bank of a creek, all of them are opportunities for young people to learn using their full range of senses. Knowledge and deep understanding were reached through trial and error and discovery, after multiple attempts and failures, as well as from the successes. These adventures combined to build a repertoire of background knowledge and experience. These collections of skills and proficiencies could then be used to connect with textbook learning. Being able to use prior experiences to help make meaningful connections with new information enables the student to reach a deeper level of understanding, to recall the material, as well as to apply it in a variety of other contexts. As my students spend less and less time outside, they have fewer experiences they can draw on. This impacts their academic learning, as they have a reduced amount of real life/world experience with which they can associate with their specific subject “book learning.” This connection was clearly illustrated in the studies by Chernos (2007) and Eick (2011).

The issue of a lack of time is also seen in the classroom, as the mounting number of subject areas, skills and content that are expected to be taught by the teacher and learned by the students is resulting in very little flexibility in the schedule. However, the benefits of providing outdoor learning opportunities are worth the investment of the time needed (Bowers, 2009; Eick, 2011, Farmer et al., 2007; Kudryavtsev et al, 2011; Upadhyay & DeFranco, 2008).

Another area where the loss of time in nature is felt is in the lack of a sense of place or attachment to a place that many students experience in today's world. My research of the literature shows that many people of the previous generation have memories of a "special place" from when they were young and that connection has been a lifelong one (Chawla & Cushing, 2007). This place was a setting or location where they spent time on their own or with friends on a consistent basis. Their place and the combination of sights, sounds, smells and types of experiences that they had there, left an indelible impression on these individuals – a cherished and lifelong memory. Without spending time in a "place" – it is not surprising that many children are missing out on the opportunity to attach to a particular location or to find personal meaning in a specific place. Not only does this mean that they are deprived of experiencing a feeling of belonging to something bigger than themselves, they also are denied the emotional connection with something other than themselves.

If many of the young people of today are lacking a personal connection to a natural place, then they most likely will not tend to have any vested interest in maintaining or protecting natural places. In other words, if a natural place does not matter to them, why should they care about it? When I was young, I was very fortunate to spend a lot of time outside. This enabled me to gain a diverse assortment of experiences that I continue to draw on to help make sense of new information or to solve a problem (Gordon, 2008). These special places have a positive influence on my physical, mental, and emotional health and wellbeing. I have also achieved a sense of belonging with a specific natural setting; a sense of place that has grown to become part of who I am. This degree of attachment and care has cultivated an awareness and willingness on my part to respect, maintain and protect the places that have special meaning for me and to advocate for them so that they remain for others to discover the magic that they hold. Having a sense of place

also develops a generalized sense of respect for wild places and the need to ensure that they not only survive, but flourish. In the following section I discuss how an outdoor experience can be combined with curricular content.

The Natural Classroom

A few years ago, I was part of a group of teachers who were working together to find ways to improve student writing skills – their motivation and effort, as well as the amount and quality of their writing. With the assistance of the curriculum support teacher we decided to try a combination of a story, a field trip and then a culminating writing activity. We began by reading the book *Not a Stick* by Antoinette Portis (2007). Next, with our two classes together in a group, we headed off to a neighbourhood park just a short walk from the school, to begin our special stick hunt. We had prepared our students ahead of time regarding road safety and what behaviour choices were expected in the park. They also understood that their stick needed to be within a certain size range and be already on the ground (no breaking off branches). In addition to a play structure, this park had a forested area, two small ponds as well as two large fields. Once the students had chosen *their* stick, we all gathered on the smaller field. As a group we talked about the “stick story” and they were given time to explore with their stick, seeing how many different things it could become. After a while, we all gathered back at the same field and broke into small groups to share their stick stories. Too soon it was time to go back and the students were incredulous that they were able to take their sticks with them! The next day the students wrote and illustrated their favourite stick stories, glancing at, or holding their stick from time to time. Throughout this writing activity, instead of the often-heard variations of the students’ question of “How long does it have to be?” both of us heard comments such as “How long *can* it be?” and “Can we have more paper?”! We took pictures of the students with their sticks, before the sticks

were returned to the forest at another time. This excursion came to mind while I was researching outdoor learning. It speaks volumes regarding what a powerful learning environment the outdoor classroom and its natural materials can provide. As I continued to research the literature, I found that they all drew similar conclusions; that spending time in nature benefits kids, academically, socially and emotionally.

Local Natural Places as Outdoor Classroom Settings

I decided that if my intention was to support my students' reconnection with nature then I was going to have to get them outside of the classroom walls and into the natural world. Fortunately, the location of the school that I teach in and its surrounding area helped to make this goal more possible to achieve. My current school is bordered by a conservancy forest/woods that includes a variety of connected trails and a marsh (with a set of marked trails) that has been designated as a protected area, both within walking distance of the school (see the map at <http://www.cvmtb.com/maps/newoods.pdf>). In addition, we have a beach with tide pools a short drive away (too long of a walk for my students). I plan to base the outdoor learning experiences in these locations. Since they are all off school grounds, a permission form is required for all three places. Fortunately, the first two spaces are covered by a district walking permission form that is signed at the start of the year and a 48 hour advance notice note is all that is needed. To access the beach location, permission forms and rides from parents need to be arranged, which can be problematic. A lack of transportation can result in field trips having to be canceled, which is an unfortunate, but realistic fact of life. However, I choose to plan trips and hope that the rides work out, rather than not attempting to arrange these learning opportunities. Anytime that I take students off site, I bring my cell phone, a list of class contact numbers and a first aid kit, along with supplies for the specific exploration activity.

In the following sections of this chapter I present a diverse compilation of learning activities and experiences that I have (or will be providing) to my students in each of the local natural classroom locations. I will begin with literacy (reading & writing), followed by math, science, a sense of place, and finishing with environmental stewardship. As I relate these narratives, a description of the resources, curricular-based learning outcomes, as well as connections to other subjects that can be made will also be included.

Nature Literacy

When I was considering how to incorporate a literacy activity into an outdoor learning setting, I thought back to the success of the *Not a Stick* experience. The pairing of an introductory story followed by a hands-on experience with materials in a related location, and ending with a concluding task seemed like a good starting point. This combination provided a motivating and engaging environment where the students were learning throughout the activity, due to their full participation. I decided to try a similar formula for later in the spring. To introduce this literacy activity I plan on reading the book *On My Walk* by Kari-Lynn Winters (2009) to my class. The premise of the simple story is a child's walk through the streets and parks of Vancouver. The story focuses on the sights, sounds, tastes and textures that the characters encounter. The text is written using a children's level onomatopoeia. After reading the story, my students and I will take a walk through the conservancy forest that is located next to the school. We will focus on our senses – what do we hear, see, smell and feel. Prior to this trip, the students will understand that they will be expected to choose something during the walk that is an example of each one of these senses. They will have a clipboard for notes to describe their examples of using each of their senses. They will be in partners and will share access to an iPad to take pictures of each item (they will already know how to do this). This activity combines

creative writing using personal experience and demonstrating their understanding in diverse ways. Before leaving the forest, the groups will gather at a common meeting spot, known as The Big Rock. Here I plan to make sure all student pairs have their pictures and descriptions completed, before we head back to the school.

Over the next few days (the number of writing sessions will be determined by the students' needs), the students will work on writing their simple descriptions of each of their pictures. One part of this writing activity will be to use simple onomatopoeia (this will have been taught before this activity). The completed pages, with photos and text will be organized into a class book. I have made arrangements with the StrongStart teacher for my students to each share their page of the book with her young students and parents. StrongStart is an early learning program for children from birth to five years of age that is based in my school. The goal of the program is to help children get ready for the school experience as well as providing activities, ideas and information for parents and caregivers to support learning at home. As an extension to this activity, the students will use their pictures to make their own personal book. However, instead of using the photos, they will create drawings, using the photographs as a reference. Their descriptive text will be a little longer than their previous one, but will also include examples of onomatopoeia, or possibly alliteration. When these books are completed, I plan to have my students read them with their little buddies. Our little buddies are the grade one and two students that my class has paired up with for different learning activities.

An alternative book idea and natural place experience to further support student descriptive writing and book authorship can also take place at the marsh or at the beach. A jumping off point might be to read the book *In the Small, Small Pond* by Denise Fleming (1993). It features bright, simple, colourful illustrations of different wildlife found at the pond. I thought

that the marsh location might work just as well. This activity could combine art as well as writing. The text in the story is deceptively simple, as there are only four to five words on the page. However, they are extremely expressive; very similar to the onomatopoeia in *On My Walk*. For example, on the pages with the pond and tadpoles are the words *wiggle*, *jiggle*, *tadpoles wriggle*, on the pages with dragonflies are the words *hover*, *shiver*, *wings quiver*, and on the pages with the pond bugs are the words *circle*, *swirl*, *whirligigs twirl*. This encourages the students to be creative and judicious with their word choice without having to write an entire story.

Natural Mathematics

Math is everywhere you look. So I ask myself why should it only be taught inside the classroom? I can recall my own frustration as a student when I was learning algebra and thinking to myself “when am I ever going to use this in real life?” and “why am I learning things that only needed to be remembered to pass a test or exam?” Now that I am the teacher, I try to provide learning opportunities for my students that are meaningful, not just for a test and then forgotten. I purposefully design lessons to activate and build on students’ background knowledge and interests. These connections help them to engage with and to think more critically about the material. Such authentic connections can be made using the natural classroom. Recently, a colleague had booked some GPS devices from the district Learning Resource Centre for her class to use. She offered to share the devices with the students in my class. I was uncertain, not having used one before. Her response was that I did not have to worry, that her older students could be the “big buddies” and teach my younger students how to use them correctly. The more I talked with her about the GPS devices, the more connections I could make with past and current math topics. I could also see how other subjects across the curriculum might be included. Using a

hand-held GPS meant I could take the class outdoors to practice real life math, as well as other skills. In preparation for our GPS lessons, we reviewed what we had learned about measuring, distance, and estimation. We talked about the importance of number sense/place value and its connection to grids/mapping. We reviewed map directions and grid/mapping vocabulary. We also discussed the expectations of working in a group and listening to the big buddy class leaders on how to correctly use the GPS device.

At the beginning of our initial lesson, my class was divided into small groups, each with a big buddy leader from my colleague's class. They had prepared a scavenger hunt type of activity to teach my students the GPS-specific language and the order of steps needed to locate the position. For this introductory lesson, all the locations were spread out all over the school grounds. As each *waypoint* (specific coordinates) location was discovered, each team came to find myself and the other teacher. If they had the correct location name or riddle answer, a new waypoint was given. During this math activity, the leaders showed each group member how to enter in the numbers and follow the information on the screen to find out which direction to go. The readout is displayed in metres and so my students needed to pay attention to whether the number was increasing or decreasing, to ensure they were going in the right direction. The hidden *cache* (in this case a landmark or small piece of paper with a message or riddle on it) could be within a 12 metre radius of the GPS marked spot, so the students needed to estimate the distance around a potential location in order to be successful in their search. We were outside for 90 minutes and the students all wanted to stay!

My colleague then showed me how to mark waypoints to create my own scavenger hunt task. During our second lesson I kept all locations on the school field areas for safety, and we had some big buddy leaders with us in case a group got stuck. We followed the same routine as

before, with each group coming to me to report their answer, and if it was correct they were given their next location. If an incorrect answer was given, the group headed off for a second try, with a big buddy if they chose. Soon our time was up and we had to head back inside. I was noticing that my students were using the correct terminology when discussing our activity. I also was able to order a small set of books on Geocaching from the district Learning Resource Centre. In partners or groups of three, they read through them, discussing and questioning as they went.

For our third lesson, the next step was to *geocache* (for a definition of this term, please see <http://www.oxforddictionaries.com/definition/english/geocache>) in the woods. Our buddy teacher had some geocaches and she hid them afterschool one afternoon in the woods. The next day, after some conversation around safety and expected behaviour in nature, we headed out with our big buddies into the forest to try and transfer the GPS skills while actually geocaching. We met at the Big Rock and got into our same groups, reminding them if they heard either teachers' whistle, they needed to come back to the Big Rock right away. We followed the same routine – after finding the geocache and writing down the name or clue answer, the group was given a new waypoint. Near the end of the allotted time, groups were asked to collect the geocaches and we went back to class. The only complaint we heard was that they wanted to stay longer!

Later that week, I borrowed the geocaches from our big buddy teacher and hid them myself one afternoon. The next day my class entered the woods to begin our final GPS lesson; a geocaching adventure on their own. I stayed at the meeting place (the Big Rock) and sent off each group with a different waypoint to search for one of the geocaches. Near the end of our time, all the groups had located all the geocaches except for the same one. We went altogether to see if we could locate the missing cache. Unfortunately, it was not where I had hidden it, so this

became an opportunity for a teachable moment of why someone might take something that did not belong to them. As my students left for the day, I asked them to think about some possible reasons that might explain how and why this cache had gone missing. Also, since we borrowed the cache, was there anything we could or should do about it. The next day we had quite the discussion about what had happened. They finally realized that they were not going to know what actually happened, as well as learning something about the dangers of false accusations and rumours. We finally grudgingly accepted that loss or theft was an unfortunate risk involved in geocaching, fair or not. One student suggested that they could each donate a small item and that he would supply a container, and together they would be able to replace the missing one for the teacher from whom we had borrowed them. In the two previous excursions, my students had all brought small items to trade with the geocaches that their groups had successfully located. The next day, we got so many donations that we were able to replace the missing cache and add two more new caches as well.

Our culminating activity was to write a diamanté style poem, using all GPS and geocaching descriptive vocabulary. After the rough draft of the poem was written, they went to the computer lab to type it, choose the font style and print it out. Under the poem they glued their drawing of the GPS device that we had used.

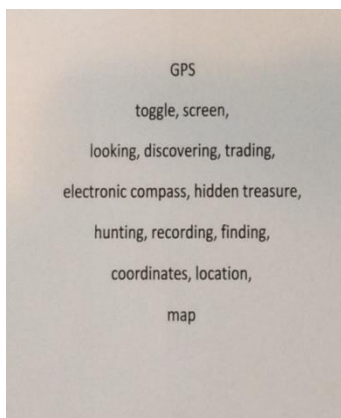


Figure 1. Possible example of student work



Figure 2. Possible example of student work

They had so much fun and were so engaged during these series of lessons. By the end of the classes, all my students could successfully use a GPS device, recall, define and use the related vocabulary correctly, as well as explain the math concepts that they used in each task. We completed this mini unit in October and my students have been asking when we are going to get to go geocaching again.

The Science of Nature

Science is nature...and nature is science, so teaching and learning about science in a natural environment is the perfect interactive and authentic “classroom” setting. Later in the spring, my class will be learning about different types of habitats – for example, what they contain, what lives there, what their diet is, what predators and prey can be found there. I plan to begin by building on their current base of knowledge surrounding three specific local types of habitats; a forest, a marsh, and a coastal intertidal zone, since these particular locations are close by (other habitat types could be chosen, depending on given location). We will chart their knowledge and what they wonder about. The students will explore non-fiction books on each habitat (one at a time), read related books (picture and text) using a combination of teacher-led, guided and independent reading activities, as well as partner and small group activity learning opportunities in different subject areas. The specific curricular connections may include a variety of reading skills for both, the fiction and non-fiction material, writing (non-fiction and personal experience), art (drawing), in addition to practicing the science skills and processes, as well as learning about the specific subject topics. The students will also watch DVD’s on each habitat, and have an opportunity to handle and learn to identify materials found in each location. Finally, the students will be able to participate in guest speaker presentations and their related activities.

Next, after we have built up our background knowledge and have created a list of questions we wonder about, we will visit each type of habitat location. To learn about the forest, we will explore the trails in the conservancy forest/woods to identify the surrounding flora and fauna, using our senses of sight, hearing/sound, smell and touch, and then consulting field guides to confirm our suppositions. We will see if we can explain how the inhabitants have adapted to live in this particular habitat. I plan to share some of the facts and stories I learned when I was a junior naturalist in Francis Park in Victoria. I am also in the process of arranging for a guest speaker from the Aboriginal Education Centre to come to our class and tell some legends about some of the animals that have special meaning for the local First Nations group. I can see this experience leading into the students being motivated to write their own legend about their favourite local forest animal. In addition, this would be a wonderful opportunity to learn about and create some First Nations artwork. After visiting the forest habitat, the students will construct their own forest habitat diorama/exhibit using found objects (that can be returned later). They will complete this sample habitat using co-created criteria and then we will present them in small groups. Part of this presentation will include sharing their wonder questions and providing the answers to these queries.

We will continue to follow this format (making any adjustments as needed) to learn about the marsh habitat, by first gaining and building on existing knowledge, utilizing a similar style of learning strategies used previously, and creating some wonder questions. Next we will take a trip (or trips) to the marsh where there are a number of marked trails to explore, ranging in distance from 15 minutes to 45 minutes in length. There is also a viewing platform. I can see using this space as a wildlife sighting opportunity. Students will have clipboards and other supplies to sketch the inhabitants that they see. I have arranged for a biologist from the Fisheries & Oceans

Department to come and talk to the class about the insects that are found in streams and marshes and their place in the food chain. I have invited her before and her presentations are hands-on and engaging. As a culminating activity, the students will also build a model habitat that contains specimens (plant and wildlife) specific to a local marsh habitat. Like the final forest task, the class will follow a co-created criteria list for their marsh habitat example. They will also present it, and share their wonder questions and what they discovered the answers were to their inquiries.

For our final habitat study, we will learn, visit and demonstrate our knowledge about the intertidal zone habitat. Like the two previous explorations, we will launch our investigation by using a combination of non-fiction books, texts, and DVD's, among other learning experiences to develop our background knowledge base. We have the AquaVan from the Vancouver Aquarium visiting our school in March, so that would provide an exciting and interesting introduction to our topic. We also have a biologist booked to take our class on a guided experience to the intertidal zone at a local beach. I have also worked with her in the past, and she arranges hands-on, engaging activities that promote full participation by all students. She also includes some type of activity task booklet as a "take away" from the trip. To complete the unit, the students will build their own version of this zone, using a variety of materials (nothing living) as they follow a co-created list of criteria. The final step will be to present their intertidal habitats, sharing their wonder questions and what they discovered the answers to be. I can also envision students writing and illustrating journal or reflection pieces after each habitat location visit.

For a future visit to this rocky beach, I would like to read the class the book *If You Find a Rock* by Peggy Christian (2000) ahead of our trip. Then when we go to the beach, they can search for their own special rock that has personal meaning for them. This book is filled with

wonderfully expressive vocabulary that will inspire some writing/poetry as the language evokes personal memories and emotions. One of my favourite lines from this story is on the last page. It says that if you find a rock that is not one of the kinds mentioned earlier in the story “but you like it anyway because it reminds you of a place, or a feeling, or someone important – then you have found a memory rock, and sometimes those are the best rocks of all.” I think that this line resonates with me so strongly because I have a special bowl that holds all my memory rocks for safe keeping. I also have a field guide on Pebbles and Stones that I will bring for those that are interested. Before our “beach art” trip, I also plan to show my students some video clips of rock sculptures/towers and rock/stone mandalas as inspiration for us to experiment with during our visit. They can sketch their creation (possibly take a photo or short video with an iPad) and then reflect and write about their experiences when we are back at school. A colleague has offered to loan me a book on nature art which is designed to be created with “loose parts” or “found objects” and then to eventually and naturally become part of its surroundings again over time. My connection to this is the sand castles and sculptures I have made on the beach...eventually the tide comes in and they become part of the ocean and the beach once again, and all that remains is the vivid memory of the experience.

A Place in Nature

According to Louv (2008), “if children do not attach to the land , they will not reap the psychological and spiritual benefits they can glean from nature, nor will they feel a long term commitment to the environment, to the place” (p. 159). I have been extremely fortunate to have had the opportunity to develop a strong sense of place with the natural environment.

This connection has been a continuous cord that has wound its way throughout my life. While each separate strand represents an attachment to a particular location or a specific reason

for the level of meaning it holds, they are too intertwined to determine the importance of one component over the other. In other words, this lifeline or “line of life” connection to natural places has enriched my life from the time I was very young. One place that embodies the duality of attachment and meaning for me is the ocean. Most of my earliest memories of outdoor places are connected to the sea and its shore. My affinity has evolved through a kaleidoscope of the visual, auditory, kinesthetic and emotional aspects of this place. It is where I first discovered the pure joy of creating castles of sand and collecting all kinds of “treasures” to make my imagined land a reality. It was where I was mesmerized by the amazing world contained in a single tide pool. It is also where I go now to find perspective and to just be...and to breathe. My senses are soothed by the sound of the waves lapping the shore and the scent of salt air. Sometimes I will cradle a sun-warmed stone in my hand, letting my fingers run repeatedly over its surface, tumbled smooth as glass by the ocean’s power. When I sit gazing out at the water, I am almost hypnotized as I let handfuls of the fine sand slip through my fingers; my mind calms and my thoughts wander and I let them. Other times, as I walk, pieces of driftwood catch my eye. It is hard to believe the amazing textures and shapes were created by the artistic hand of nature. I find myself wishing these wooden sculptures could talk and share their tales of adventure as they travelled in the sea until they came to rest, here in this place.

In researching this topic I discovered that my connection to the ocean could be described as both a strong sense of place attachment (level or degree of the attraction to place) as well as place meaning (the reasons for that attraction) as evident in Bowers (2009) and in Kudryavtsev et al. (2011). This literature also revealed how to encourage and support the development of this personally meaningful relationship between children and nature. The recurring issue of time reappears once again. The research found that the key to fostering and acquiring a sense of place

(attachment and meaning) is frequent, long term, positive experiences. Furthermore, that these interactions are both informal and formal encounters, where the child is free to interact and engage all their senses, as they build memories. My challenge is how do I provide these types of opportunities within the outcome-focused school setting? As I pondered this question, a voice inside of me kept whispering that at the heart of a sense of place is the emotional connection to it. The way that this relationship is formed is by having the opportunity to just spend time in a local natural space, exploring, discovering, and engaging with all the aspects of it, using all of your senses to truly gain a thorough and in-depth understanding of the particular area. It is through the experiential knowing of a place, the sharing and connecting with it that creates personal memories that will be cherished. It will be these moments in time that have the potential to become lifelong reminiscences. As I re-examine my own sense of place and how that meaningful attachment was developed, I also revisit the research. I come to the realization that I need to provide my students with the chance to spend time in local natural spaces on a regular basis. Each trip is filled with possibilities...what might they see, hear, feel (touch) or smell? What adventures await them? The anticipation of what they might do, or the sheer delight of not doing anything and embracing the art of stillness...of just being in a place and losing yourself in it by becoming part of it, all help to form the foundation of a sense of place. I decide to take my class on a walk through the woods or along a trail in the marsh at least once a week. We will combine formal and informal learning experiences in each spot, balancing the more purposeful learning times with informal exploration chances. For example, in the woods, we might have a tree and plant identity activity and then have an independent exploration time, where the students can create using "loose parts," sketch or write about something that intrigues them, or just simply read silently under a tree while the breeze ruffles their hair and birds sing in the background.

This type of structured/unstructured schedule can also be easily transferred to the marsh as well. This style of program would also be successful at the beach, with the variety of objects, textures and “loose parts,” it is a veritable shopping spree for the imagination. However, since we have to arrange rides to get there, the frequency of our visits there would be affected, but would definitely be worth the effort.

The two main points that the literature (Louv, 2008) and the studies (Bowers, 2009; Eick, 2011; Farmer et al., 2007; Kudryavtsev et al, 2011; Upadhyay & DeFranco, 2008) reiterated over and over again were the importance of time – enabling students to spend time in a natural place, and the influence and impact that having a personally meaningful relationship with that place can have on their lives. This is where the distinction between “doing” and “being” is most evident. According to Suzuki (2013b) “We have become increasingly urban and disconnected from the natural world” (para.2). As adults, we are aware of the restorative power of spending some time in nature can have. It allows us to regain our perspective, to rejuvenate our self-regulation abilities, to just clear our minds. While students may not be able to articulate their experiences in this way, it doesn’t mean that this is not valuable. Research has found that access to green space has a definite impact on a child’s ability to concentrate, control impulsivity, and experience more positive emotions and less anger (Louv, 2008). Although these benefits may not be easily evaluated on a report card, the impression they leave is an unquestionably positive one, for both the student, as well as the natural places. Once someone attaches to a place, it is more likely that they will work to protect it. If they form this connection while they are young, the possibility that they will become interested and involved in some level of environmental stewardship is much greater.

Environmental Stewardship

Being nature's voice. Becoming an environmental steward is an opportunity to advocate for natural spaces and the wildlife that inhabit those green places. When I think about what a steward of the environment is, I picture someone who not only respects and appreciates the beauty and magic that nature embodies, but one who is willing to take some level of action to protect it. This commitment might be small steps to aid in the preservation of local places in their community, or possibly joining a group actively involved in global issues. As I read the research, the variety of studies all shared many similar documented findings. Blanchard and Buchanan, 2012; Chawla and Cushing, 2007; Upitis et al., 2013 all found that students' outdoor/environmental education experiences provided the initial foundation from which the potential to develop stewardship habits could grow and mature. In order to successfully foster these habits or behaviours, the student must first connect to nature on a variety of levels including physically, emotionally, socially and intellectually. Building a connection to nature in this way nurtures a personally meaningful relationship. This association includes being engaged in experiences that involve hands-on, multi-sensory, authentic experiences. Stewardship habits thrive when these encounters are linked with the opportunity to practice action skills that are related to preserving or protecting a local natural space (Chawla & Cushing, 2007).

Another common factor was the presence of an adult mentor of sorts, a trusted person who modeled the interest in, and the desire to protect natural spaces. I used the conclusions from the previous studies as guiding principles during the design of the stewardship practices. In order to have a successful stewardship goal, it must fit the grade level of the students involved. It also needs to include a co-created action plan that will enable the students to achieve it. Attaining

success, especially at the beginning, motivates the students to continue and is a factor in whether or not they choose to participate in future stewardship endeavours (Chawla & Cushing, 2007).

Keeping these elements in mind, the initial foray into environmental stewardship began at the start of the school year with our grade 3/4 class and was based at the school. We partnered with a grade 2/3 class to take on the responsibility of recycling the juice and water bottles from all the classes. The students were concerned that all the drink containers would end up in the landfill and that was unhealthy for the earth. So the students made a plan that included how they were going to collect and recycle them all. The students knew that fruit flies and missed collections had been problems in the past. So with teacher support, they devised the “snip and drip” method to eliminate the fruit flies. This meant that the juice box straw was thrown out, the corner of the juice box was snipped off and the juice rinsed out. These steps have all but eliminated the extremely unpleasant odour and stickiness caused by a pool of fermenting juice in the bottom of the storage bag which attracted the fruit flies. The students also designed and created posters that illustrated each step. In small groups they visited each class to deliver the drink recycling buckets, demonstrated how to “snip & drip” and to leave an informational step-by-step poster. Each Friday, the student partners followed their schedule and went to each classroom, collected the bucket, sorted the containers, snipped and dripped any that needed to be, and returned the cleaned bucket back to each room. Other students were responsible for keeping track of the totals of each type of container. The other teacher and I take turns bringing the full bags to the recycling centre.

The students agreed at the beginning of the year that the funds earned from collecting were going to be donated to a cause or charity in the community. Most of the funds from the first term were donated to Everybody Deserves a Smile (EDAS), an organization that supplies gift bags of

winter hats, gloves, scarves and socks and other necessities to the homeless people in the Comox Valley. The students have not yet decided where they are going to donate next: they are considering the Vancouver Island Marmot Recovery Foundation or some way to support Brooklyn Creek (a designated fish habitat). Our class also has gone out once a month to collect litter to make sure our school community is clean and tidy.

In an effort to continue to support stewardship habits, my entire school population will be participating in the Great Beach Clean-up of one of our local beaches or the Estuary. I am also in the process of booking a speaker from the Aboriginal Education Centre to come and take us on a guided talk and walk through the woods and surrounding area, teaching us about native and invasive species – how to identify each type as well as their benefits and dangers and what actions we can take to prevent further expansion of the non-native plants. Knowing my class, they will want to get involved. To help them with an action plan, I will be arranging for the volunteer organization Broom Busters to come to the school, bringing with them the expertise and the tools necessary for the job. We may have to partner with our big buddy class to accomplish this goal. We have students in the class (and school) that have seasonal allergies, so participating in an activity that helps reduce the number of a pollen producing plant that is not native to this area will be a satisfying experience. We have also been invited to attend the release of salmon fry with another class into a local designated fish habitat creek. I am planning to arrange for the kit from our liaison from Fisheries and Oceans that enable us to do catch basin marking by painting a fish next to it as a visual reminder to people that this grate drains into our rivers and ocean. There is a new subdivision across the street from the school that has not been marked yet. This would work out well, as drivers would not be needed, just some parents to help out with road safety.

Naturally Educating...

I believe that these activities will help my students build a relationship with nature on a variety of levels that result in a positive attitude toward nature, as well as a genuine desire to spend time exploring local natural places. By spending time together engaged in authentic, multi-sensory hands-on learning tasks, and modelling respectful and protective behaviours, I am optimistic that my students will choose to participate in actions that support, preserve and protect natural places in our community. And maybe, just maybe, they will choose to be nature's voice and use Dr. Seuss's character, the Lorax for inspiration and "speak for the trees"...

In the next chapter I will begin with a brief summary of my project and then reflect on my Master's journey. In particular, I will examine how my professional thinking has changed or been reinforced, as well as how I anticipate my graduate experience will affect my colleagues, school, and district. Finally, I will conclude with three recommendations for other educators who are considering engaging with my project topic.

Chapter Four: Reflection

“What would our lives be like if our days and nights were as immersed in nature as they are in technology?” Richard Louv (2011)

Project Summary

I believe that spending time in, and having a personal connection with nature is imbedded within who we are as human beings. There is something truly organic and authentic about gaining an understanding of ourselves and our world when we experience the outdoors through hands-on, multi-sensory experiences. However, currently “screen time” is being chosen over “green time” and the impact of this disconnection from natural places that many young people are experiencing is becoming a worldwide topic of concern. I want to give them back the gift of time: to have the opportunity to genuinely connect physically and emotionally with nature. These experiences will benefit them academically, socially/emotionally and physically, as well as by developing their own sense of place, and potentially, the desire to become caring stewards of natural places.

In an attempt to remedy this growing deficiency in “green time,” the goal of my project is to incorporate more nature-based experiences into my teaching by creatively connecting the curriculum with real-life outdoor encounters. I have focused on the subject areas of literacy (reading & writing), math, science, a sense of place, and environmental stewardship, which correspond with the research studies in my literature review. I plan to utilize local spaces or “natural classrooms” to provide opportunities for my students to engage in authentic learning experiences that enable them to make connections between their textbook-based knowledge and their real life-based experiential understanding.

For each of the curricular areas, I have created a lesson outline that includes a specific outdoor location, learning intention(s), the materials and resources needed, as well as suggestions for options or ideas that explain how to make connections across the curriculum.

To help my students develop a sense of place, I presented a combination of formal and informal interactions with natural surroundings to help them establish an attachment to place. This means that students will benefit from *being* as much as they will from *doing* in nature. To provide these opportunities, I have included a greater amount of both unstructured, as well as structured time when taking my class outside to one of the nearby natural places. I also plan to have my students visit these spaces for completely informal exploration experiences to support the development of their own personal relationship with a natural place.

The final topic of my project is the subject of environmental stewardship. The research studies I read found that there were three important components to promoting stewardship behaviours in school-aged students. First, they needed to have a connection (intellectual, physical, emotional and social) with nature. I hope to encourage this by arranging more frequent excursions outdoors where my students can engage in a variety of informal and formal activities. Second, an adult mentor that demonstrates an interest in and a desire to protect natural places is required. To provide this, I will involve my class in on-going discussions about the importance of caring for our environment and also consistently model appropriate stewardship choices and behaviours. The third element is an action plan, where the students are included in the setting of a goal that is realistically achievable. This is an important factor, as the level of success that they attain is a motivating influence. If students feel that they have been involved in setting and accomplishing their goal, then they are more likely to continue to participate in future stewardship activities. I believe that I have included all of these aspects when organizing both

informal and formal stewardship opportunities so my students are able to gain an understanding that these actions can be part of their lifestyle choices, as well as through their participation in specific, environmentally-related activities.

How my Professional Thinking has Changed

Throughout my Master's journey, I learned about many different aspects concerning the history of, and the influence that society has on, the subject of curricular studies. The course on Indigenous Pedagogies made a significant impression on me. During my teaching career I have never really felt entirely comfortable teaching about a culture of which I was not a member. My concern was how to present information in a culturally accurate and respectful context. This was effectively addressed through discussions and activities based on the document First Peoples Principles of Learning. These experiences helped me to focus more on *the ways of knowing*, rather than on the specific information. I also found that this perspective would enable me to effectively incorporate this point of view as a more cross-curricular, multi-sensory component, rather than keeping it isolated in social studies content.

Reinforcing my Professional Beliefs

Even before I began my Master's program, I was seeing evidence of the declining relationship many young people had with nature. It seemed that each year my students were sharing fewer and fewer stories of their outdoor adventures, and spending more and more of their time indoors. The ever-increasing connection many young people were having with the electronic entertainment world was resulting in the rising disconnection they were experiencing with natural places. My concern regarding this issue was both personal, as well as from the perspective of an educator.

Personally, I knew first-hand how a meaningful relationship with nature can benefit many different aspects of one's life; intellectually, physically, mentally, and socially/emotionally. For me, it began when I was a young child and has become a part of who I am, as well as part of my life. As a teacher, I was witness to the impact that the loss of a personal connection with the natural environment was having on my students' learning as well as their lives. Over the years, I began to see my students have more and more difficulty connecting the academic concepts to personal experiences. Through conversations with my classes, I soon realized that these challenges were related to the lack of outdoor, multi-sensory experiences my students were able to draw from based on their background knowledge. Throughout these discussions, one of the main reasons for their lack of time outside, was tied to the amount of time they were spending inside occupied with electronic pursuits.

In the last few years, the concept of nature kindergarten has become quite popular. I followed this development closely, interested in how it would be received and potentially where it might lead. This change in emphasis for (early) education was intriguing to me. I found myself wondering if the positive reception in early primary learning might extend to the higher grades as well.

When it came time to choose a project topic, my decision was clearly evident. I was curious to delve into the literature to see whether there had been any studies conducted with students in the higher grades. In addition, I wondered whether my own ideas and experiences, personally and professionally, would be consistent with results found in the research studies. I had previously read the book *Last Child in the Woods* by Richard Louv (2008) and I was interested in what the research literature had discovered. My personal and professional impressions were reinforced by each study I read. It was very gratifying to have my instincts and

opinions continuously supported and validated by the outcomes recounted in each study. There were documented findings that confirmed the positive influence that spending time in natural surroundings has, and how these experiences can contribute to the lives of all students, regardless of their grade level. Some studies explored the academic benefits, while others examined the impact of developing a sense of place with nature, and how such a connection affects a student's perception and participation in environmental stewardship.

The Impact of my Graduate Experience

I foresee my graduate experience providing a motivating and enlightening influence on my teaching career. In addition to confirming my beliefs regarding the significance of young people having a connection with nature, the studies also revealed how the various schools integrated outdoor experiences and programs within the curriculum that enabled students to enhance their understanding of academic and social concepts. I plan to incorporate many of the authentic nature learning opportunities into my own teaching.

Another way that my Master's program has affected my teaching is that the issue of improving student connection with nature has become an even stronger focus of my professional development choices. My school district is currently participating in a program known as Professional Learning Communities (PLC's). A PLC is "an ongoing process in which educators work collaboratively in recurring cycles of collective inquiry and action research to achieve better results for the students they serve" (DuFour, R., DuFour, R., Eaker, R., & Many (2006) para. 1). In my school, the group I have joined has an outdoor learning and play space focus. Our group would like to see a dedicated outdoor classroom setting as well as an outdoor play space on or close to our school grounds. In fact, we feel so strongly that this is a necessary learning environment for our students that we are in the process of attempting to reclaim some

natural space that was originally part of our school property. In this location, we envision an outdoor classroom or meeting space for students and teachers to gather before and after an exploratory experience. This outdoor learning place should blend in with its surroundings, with seating space made from fallen logs or stumps. Situated nearby, would be our play area. Our concept of an outdoor play space is one where children can climb, jump, balance, investigate, discover and imagine using items found in a natural setting. Picture climbing/play structures for a variety of age and ability levels designed by Mother Nature – they would use natural materials, textures and elements that are encountered in the local environment. It would be a place where kids could develop strong and healthy minds and bodies.

However, the wheels of bureaucracy grind excruciatingly slowly. While we wait, our group is creating a resource for outdoor learning activities from kindergarten to grade seven. This will contain user friendly activities and suggestions for all kinds of outdoor learning experiences. It will list the supplies needed, the amount of time required, and suggest some possible location choices. We are also in the process of gathering a variety of items that might be needed when learning outdoors. We have a number of donated backpacks that we have organized to establish a class set of “nature backpacks” which contain supplies that would be needed on an outing, such as a clipboard, paper, magnifying glass, ruler, a sit-upon, pencils and crayons. We are also putting together “teacher/leader backpacks” with specialized items like field guides, first aid kits, and emergency contact class lists. Our goal is to have a teacher choose an outdoor learning experience, possibly from the resource binder, outfit themselves and each of their students with a nature backpack, and be on their way. Our hope is to make teaching and learning outdoors easily accessible and to help put natural wonder, curiosity, discovery, exploration and

the opportunity to know, with all your senses, as well as your head and your heart, back into education.

Across our district there are other schools that are also working toward similar goals surrounding the idea of outdoor classrooms and connecting kids with nature as a part of the curriculum. I have been in contact with some of the teachers involved in this subject and found that they all are willing to share ideas and resources. There has been an increase in the number of nature classroom oriented professional development opportunities as well. I believe that all of these factors strongly suggest that the interest in nature experiences in schools exists beyond kindergarten, and that students of all grade levels will benefit from the opportunity to gain a meaningful connection with nature.

Recommendations for Other Educators

I complete this M Ed project by making three tangible recommendations and meaningful resources for other educators. The suggestions I can make for others who are interested in the topic of connecting students and the curriculum with nature are:

- ✓ find ways to connect multi-sensory outdoor activities with other subject areas across the curriculum (e.g. math, poetry, art)
- ✓ take your class outside on a regular basis and include genuine, informal and formal learning experiences
- ✓ give your students (and yourself) the gift of time – so that they can have the opportunity to engage in authentic nature-based experiences, including embracing the art of stillness

Additional Resources:

Broda, H.W., (2011) *Moving the classroom outdoors: Schoolyard-enhanced learning in action*
Portland, ME: Stenhouse Publishers

Broda, H.W., (2007) *Schoolyard-enhanced learning using the outdoors as an instructional tool, K-8*. Portland, ME: Stenhouse Publishers

Ward, J., (2008) *I love dirt: 52 activities to help you and your kids discover the wonders of nature*. Boston, MA: Roost Books

Each of these recommendations and resources, as well as my broader M Ed project, is meant to be an achievable step towards connecting students with nature in a complex world. Having experienced my own journey as an educator throughout my graduate work, it is my hope that others will soon take the first or the next steps in their own journey.

References

- Adams, D., & Hamm, M. (1998) *Collaborative inquiry in science, math and technology*. Heineman, Portsmouth, N.H.
- Blanchard, P., & Buchanan, T. (2012) Environmental stewardship in early childhood. *Childhood Education* 87(4), pp. 232-238. Doi 10-1080/000094056.2011.10523184
- Bland, K., Lowry, C. & Slade, M. (2013) Evaluating the impact of forest schools: A collaboration between a university and a primary school. *British Journal of Learning Support*, 28(2), pp.66-72
- Bowers, C.A., (1998/2009) The classroom practice of commons education. In D. Flinders & S. Thornton (Eds.), *The curriculum studies reader (3rd Ed)* (pp.399-424). New York, N.Y: Routledge.
- British Columbia Ministry of Education, BC's Education Plan (2012-2013) Retrieved from http://www.bcedplan.ca/assets/pdf/bc_edu_plan.pdf.
- Chawla, L. (2008). Participation and the Ecology of Environmental Awareness and Action. In A. Reid, B. Jensen, J. Nikel, & V. Simovska (Eds.), *Participation and Learning: Perspectives on Education and the Environment, Health, and Sustainability*, 98–110, Netherlands: Springer.
- Chawla, L., (1992) Childhood place attachments. In I. Altman & S.M. Low (Eds.) *Place attachment (Human Behaviour and Environment: Advances in Research and Theory*, 12, 63-86, New York: Plenum Press.

Chawla, L. & Cushing, D. (2007) Education for strategic environmental behaviour.

Environmental Education Research, 13(4), 437-452.

Chernos, S., (2007) Go outdoors for education, *Education Today*, 19 (3), pp.14-17 <http://files.eric.ed.gov/fulltext/EJ792953.pdf>.

Cleaver, S., (2007) How green classrooms are reconnecting kids with nature. *Instructor* <http://files.eric.ed.gov/fulltext/EJ792953.pdf>.

Christian, P. (2000) *If you find a rock*. San Diego, CA: Harcourt Inc.

Day, B. (as cited in Cleaver, S., (2007) How green classrooms are reconnecting kids with nature. *Instructor* <http://files.eric.ed.gov/fulltext/EJ792953.pdf>.

Dr. Seuss. *The lorax*. New York, NY: Random House. (Original work published 1971)

DuFour, R., DuFour, R., Eaker, R., & Many (2006). What exactly is a PLC? *Learning by Doing: A Handbook for Professional Learning Communities at Work™*, pp. 2-4.

<http://www2.sd71.bc.ca/all-things-plc/>

Eick, C.J. (2012) Use of the outdoor classroom and nature-study to support science and literacy learning: A narrative case study of a third grade classroom. *Journal of Science Teacher Education*, 23(7), 789-803. Doi: 10:1007/s10972-011-9236-1

Ellis, J. (2003). Researching children's place attachments and space. *The Journal of Curriculum Theorizing*, 19(4), 118-133.

Environmental stewardship. (n.d.). In *Wikipedia*. Retrieved December 8, 2014, from http://en.wikipedia.org/wiki/Environmental_stewardship

- Farmer, J., Knapp, D & Benton, M. (2007) An elementary school environmental education field trip: Long-term effects on ecological and environmental knowledge and attitude development. *Journal of Environmental Education* 38(3), 33-42,
Doi: 10:3200/JOEE.38.3.33-42
- First Peoples Principles of Learning (2011). Retrieved from
<http://www2.sd71.bc.ca/abed/node/106>
- Fleming, D. (1993) *In the small, small pond*. New York, NY: Scholastic Inc.
- Foran, A., (2005) The experience of pedagogic intensity in outdoor education, *Journal of Experiential Education*, 28(2), 147-163.
- Geocache. (n.d.) *Oxford Dictionaries*. Retrieved March 31, 2015 from
<http://www.oxforddictionaries.com/definition/english/geocache>
- Gordon, M., (2008) Between constructivism and connectedness, *Journal of Teacher Education*, 59(4), 322-331, Doi: 10.1177/0022487010832139.
- Hill, B., Wilson, S., & Watson, K. (2004) Learning ecology. A new approach to learning and transforming ecological consciousness. In E. O'Sullivan & M. Taylor (Eds.), *Learning toward an ecological consciousness: Selected transformative practices* (pp. 46-64). New York, NY: Palgrave MacMillan.
- Klemmer, C.D., Waliczek, T.M., & Zajicek, J.M. (2005) Growing minds: The effect of a school gardening program on the science achievement of elementary students. *HortTechnology*, 15(3), 448-452

Kudryavtsev, A., Stedman, R., & Krasny, M. (2012) Sense of place in environmental education, *Environmental Educational Research*, 18(2), 229-250.

doi:10.1080/13504622.2011.609615

Louv, R., (2011) *The nature principle: Human restoration and the end of nature-deficit disorder*.

Retrieved from http://www.goodreads.com/author/quotes/90594.Richard_Louv

Louv, R., (2008) *Last child in the woods: Saving our children from nature-deficit disorder*.

Chapel Hill, North Carolina: Algonquin.

Manitoba Teachers' Society, www.mbteach.org/library/Archives/SpecialSections/10_ENVIRO-ED/classrooms.html

Moore, R. & Wong, H.H., (1997) *Natural learning: Creating environments for rediscovering nature's way of teaching*. Berkley, CA: MIG Communications (as cited in Louv, R.,

(2008) *Last child in the woods: Saving our children from nature-deficit disorder*). Chapel Hill, North Carolina: Algonquin.

Northeast Woods-Lazo Marsh Area Map. Retrieved March 2, 2015 from

<http://www.cvmtb.com/maps/newoods.pdf>

Pinar, W. & Irwin, R., (Eds.). (2005) *Curriculum in a new key: The collected works of Ted T.*

Aoki. Mahwah, N.J.: Lawrence Earlbaum Associates.

Portis, A. (2007). *Not a stick*. New York, NY: HarperCollins Children's Books.

Rewilding Vancouver: From sustaining to flourishing. An environmental education and

stewardship action plan for the Vancouver Park Board, July 2014. Retrieved from

<http://vancouver.ca/files/cov/enviromental-education-stewardship-action-plan.pdf>

Sebba, R. (1991) The landscape of childhood: The reflection of childhood's environment in adult memories and in children's attitudes. *Environment and Behaviour*, 23(4), 395-422.

Smagorinsky, P. (2007) Vygotsky and the social dynamics of classrooms. *National Council of Teachers of English*, 97 (2), 61-66, <http://www.jstor.org/stable/30046790>.

Suzuki, D. (2013, March 14). Healthy kids need time in nature [Web log comment]. Retrieved from <http://www.davidsuzuki.org/blogs/science-matters/2013/03/healthy-kids-need-time-in-nature/>

Suzuki, D. (2013, September 05) Teenagers need a balance [Web log comment]. Retrieved from <http://www.lets-go-outside-revolution.com/wordpress/tag/david-suzuki/>

Suzuki, D. (2012, December 14). Helping kids reconnect with nature. Retrieved from <http://www.straight.com/news/david-suzuki-helping-kids-reconnect-nature>

Tooth, R., & Renshaw, P. (2009). Reflections on pedagogy and place: A journey into learning for sustainability through environmental narrative and deep attentive reflection. *Australian Journal of Environmental Education*, 25, 95–104.

Upadhyay, B. & DeFranco, C. (2008) Elementary students' retention of environmental science knowledge: Connected science instruction versus indirect instruction. *Journal of Elementary Science Education*, 20(2), 23-37.

Upitis, R., Hughes, S. & Peterson, A. (2013) Promoting environmental stewardship through gardens: A case study of children's views of an urban school garden. *Journal of the Canadian Association of Curriculum Studies*, 11(1), 1-44.

Waliczek, T.M., Logan, P. & Zajicek, J.M. (2003) Exploring the impact of outdoor environmental activities on children using a qualitative text data analysis system. *HortTechnology*, 13(4), 684-688.

Windschitl, M. (1999) The challenges of sustaining a constructivist classroom. *Phi Delta Kappan*, (80), pp.751-755.

Winter, K.L. (2009). *On my Walk*. Vancouver, BC: Tradewind Books.