Implementing a Nature-Based Approach in Elementary Schools

By

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ABSTRACT

The Master of Teaching Research Project is a qualitative study that addresses the topic of implementing a nature-based approach in elementary schools. The existing literature highlights the benefits of exposing young children to nature, and suggests possible downfalls if children do not have opportunities to meaningfully engage with the outdoors and natural materials. However, much of the literature focused on an early childhood setting instead of a school environment. With this in mind, the main research question that guided this study was: How does a small sample of elementary teachers implement nature-based learning with their students? Data was collected through semi-structured interviews with two elementary school teachers currently working in Ontario. Findings suggest that a nature-based approach can be integrated into a range of schools, regardless of the school environment. In addition, nature-based educators from this study addressed ways in which teachers can incorporate the outdoors along with natural materials, while still connecting these experiences to the Ontario curriculum. Findings also show that a teacher’s perceptions of the outdoors and their willingness to incorporate nature-based experiences play a significant role. Implications for the educational community and personal practice are discussed, and recommendations are made for school boards, educators, parents/caregivers, as well as areas for further research in this field.

Key Words: Nature-based education, nature-based approach, outdoor education, environmental education
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CHAPTER ONE: INTRODUCTION

1.0 Research Context

Researchers have conducted numerous studies on children being exposed to and interacting with nature in a meaningful way. The findings of such reports suggest that there are significant benefits with having children engaged with natural materials, along with being in an outdoor environment. For instance, there is an increase in a child’s cognitive and social skills, physical and health benefits, children develop positive environmental attitudes, and these experiences can lead to greater academic success (Dowdell, Gray, & Malone, 2011; Rios & Brewer, 2014). Some of the specific benefits that are identified with contact to nature are; improved awareness, reasoning, observation skills, co-ordination, balance, and reduced sickness (Driessnack, 2009; Dowdell et al., 2011). The benefits listed above will be further explained in Chapter Two.

With all of these recognized benefits children should be exposed to nature as much as possible; however, this is typically not the case. It has been shown that “Young children are becoming increasingly separated from the natural world as their access to the outdoors diminishes” (Dowdell et al., 2011, p.24). Especially in areas with an increase in urbanization and amplified fears about child safety, many young children have less contact with the outdoors (Dowdell et al., 2011). In addition to this, children’s free time is also being influenced by their reliance on technology, as having time with their electronics becomes more important than going outdoors. Moreover, for many children, the first public place that they frequently access and come to know is their school, these school experiences become a dominant force in a child’s life (Wilson, 1997). With this abundance of time spend in a school setting; the importance of having experiences with nature during school hours is amplified (McClintic & Petty, 2015). In one
study it was reported that having access to the outdoors and having opportunities to interact with natural materials inside the classroom, accompanied with a supportive teacher created “a richer environment for learning and influences children’s opportunities for social interactions and natural play” (Dowdell et al., 2011, p.33). Additionally, Dyment and Bell (2008) add that there is a growing body of evidence that indicates that when given the choice, children prefer to play in a more natural setting, whether it is provided indoors or outdoors; this could be due to the diverse play behaviours these environments cater to, as children are able to manipulate the materials and engage in more challenging and flexible play (Dowdell et al., 2011).

For many years, the field of early childhood education has recognized the importance of providing children with experiences in the outdoors and opportunities to interact with natural materials. Wilson (1997) reports that “Most early childhood educators are well aware that young children learn by interacting with their environments” (p.191). According to the Ontario Day Nurseries Act of 1990, which is a regulation provided by the government that all licensed childcare centres must adhere to, it states in section 53 subsection 4(d) that “each child over thirty months of age that is in attendance for six hours or more in a day plays outdoors for at least two hours each day, weather permitting”. On top of this time spend in the outdoors, many early childhood educators also provide opportunities inside their classroom that allow the children to engage with natural materials (McClintic & Petty, 2015). With such an emphasis on experiences with nature in early childhood settings it is astonishing to see that for many years there has been a disassociation between natural exposures in a school setting. It is important to note that this disconnection is not due to the interest of the students, as Ballantyne and Packer (2002) concluded from their study that “Both primary and secondary students appreciate opportunities to get outside of the classroom and into the natural environment” (p.228). Clearly
more initiatives need to be taken to create a link between schools and learning in the outdoors and utilizing natural materials. One such initiative that has been taken was a report created in 2007 to advise the government of Ontario around teaching and learning about the environment. In 2009, the Ontario government decided to move forward with the recommendations proposed in the report and created a policy framework for environmental education called *Acting Today, Shaping Tomorrow* (Ontario Ministry of Education, 2009). This document brings about an importance of schools taking more initiative with teaching about the environment and providing exposure to the outdoors. However, more progress needs to be made as this document does not explicitly say the benefits of interacting in the outdoors and with natural materials, and leaves the possibility for teachers to interpret this policy framework in a variety of ways. Understanding this policy framework is imperative to this study and thus will be highlighted in more depth in Chapter Two.

### 1.1 Research Problem

There is an abundance of evidence that supports the claim that both outdoor experiences and interactions with natural materials have a positive correlation with a child’s whole development (Dowdell et al., 2011; Lugg, 1999, CCL, 2009; Driessnack, 2009; Wilson, 1997; Rios & Brewer, 2014; Swiderski, 2006; Ernst, 2012; Dyment & Bell, 2008). In spite of these numerous benefits, many schools, primarily the teachers themselves, are not providing students with adequate opportunities to explore and learn from the natural world around them (Dowdell, Gray, & Malone, 2011; Rios & Brewer, 2014). An increasing amount of children are growing up in urban environments, leading children to be less involved in outdoor play as natural environments are less accessible (Dowdell et al., 2011; Wilson, 1997). Dyment (2005) sums it up by saying “Paralleling the growing understanding of the positive impacts of outdoor learning
is a growing realization that many opportunities for outdoor learning for school students has decreased substantially in recent years” (p.29). Additionally, author Richard Louv (2005) remarks that “a child in nature is increasingly becoming an endangered species” (p.97) this is why creating natural areas in schools is a necessity (Wilson, 1997).

As mentioned above, there are numerous advantages of having students exposed to nature whether it is providing opportunities to learn in the outdoors or by having natural materials available in the classroom for the students to manipulate; conversely, there are disadvantages to the students that arise when there is lack of natural exposure. Research based studies show that the effects of this disassociation with nature lead many children to develop fears and discomforts with the outdoors, a disregard for the environment, along with diminished senses, attention difficulties, and an increase in behavioural challenges in the classroom (Dowdell et al., 2011; Wilson, 1997; Rios & Brewer, 2014), these negative outcomes will be discussed further in Chapter Two. Furthermore, it is also important to highlight that in order to have a sustainable future we need to educate the students on the importance of this issue, as well as, expose students to natural experiences so that they can develop respect for the environment (Hill, 2012; Wilson, 1997). Rios and Brewer (2014) concluded in their study that the detachment of nature that is observed in most classrooms is creating a society that will fail to acknowledge the importance in preserving the natural world. As Louv (2005) suggests “Our society is teaching young people to avoid direct experiences in nature” (p.2). Researchers address that most schools do not provide unstructured learning opportunities in the outdoors, schoolyards are often overlooked for educational purposes, the quality of schoolyards typically lacks in green areas, along with, more plastic and less manipulative materials provided inside the classroom (Dowdell et al., 2011; Rios & Brewer 2014; Wilson, 1997; Dyment & Bell, 2008).
It is interesting to note that although not having access to the outdoors in schools is a major issue of this disconnection to nature, a study conducted in elementary schools across Canada found that schools that are fortunate enough to have more natural school grounds are not being utilized to their fullest learning potential. Many of teachers from this study reported that the school grounds are mostly used for physical education and science, while other subject areas are rarely taught outdoors, whereas some teachers reported to not using the school grounds for their teaching at all (Dyment, 2005, p.35). As Dyment (2005) explains, “When a green school ground is not used as an outdoor classroom, important opportunities to maximize the potential are lost” (p.42). Perhaps these results are due to the lack of understanding and awareness to the benefits of exposure to nature. Nevertheless, a more unified knowledge of the importance of contact with the outdoors and natural materials, along with more explicit links to all curriculum areas needs to be widespread across Canada.

1.2 Research Purpose

The primary purpose of this qualitative study is to discover how Ontario elementary teachers are incorporating a nature-based approach within their teaching practice. More specifically, I set out to examine how these elementary teachers are able to blend natural environments and materials with direct links to the curriculum. I also am interested in discovering what outcomes teachers have observed from adapting to a nature-based approach. A strong body of evidence indicates that contact with nature is vital during all stages of development, particularly early and middle childhood (Dyment & Bell, 2008); yet, feelings about nature tend to decline between the ages of nine and ten. Thus, making it even more imperative that teachers find ways to integrate nature with their teachings. A secondary purpose for this research is to highlight the benefits of having students interacting with nature and promote
greater awareness of this issue in the field of education. Additionally, I want to create a more unified concept of what a nature-based approach is in a school setting is, as this concept has been understood in a variety of ways by the education community (Lugg, 1999). My goal is to not only to create a better understanding of the importance of having nature-based learning experiences both in and out of the classroom, but also how to successfully execute these findings in my own teaching practice. I am also interested in sharing my findings with fellow educators so that more students are able to benefit from exposure to nature.

1.2.1 Research questions

The main question guiding this study is: How does a small sample of elementary teachers implement nature-based learning with their students? Sub-questions to further support this study include:

- Why does this sample of teachers believe it is important for students to have the opportunity for outdoor education and nature-based learning, and where in the curriculum do they locate these opportunities for learning?
- What benefits have teachers observed by having students either exposed to natural materials indoors or being engaged in outdoor experiences?
- What strategies have teachers found effective in bringing nature into the classroom?
- What approaches have teachers found useful when creating learning experiences outside?
- What challenges/obstacles have teachers faced when integrating a nature-based approach and how have they overcome these challenges/obstacles?
This study also aims to promote the importance of exposing students with direct learning experiences outdoors and opportunities to interact with natural materials inside the classroom. In addition, these findings should serve as a guide to influence and support teachers on integrating more natural practices with their teachings.

1.3 Background of the Researcher

The topic of integrating a nature-based approach in elementary school classrooms is a somewhat particularly new interest of mine. However, the idea of educating children with the use of nature has been a practice that I have been passionate about for several years. It was during my college years while I was completing an Early Childhood Education (ECE) program that my desire for nature integration first arose. During my first year of college one of my practicums was with a preschool class that offered natural materials inside their classroom, as well as, the educators took the children outdoors to learn. It was amazing to see the learning opportunities that took place while outside. This childcare centre, located in Ontario, had a magnificent outdoor play environment for their children as they had access to a large space with open grass, surrounded by an abundance of trees, and a nearby river that attracted many living creatures. With the support of the early childhood educators the children were able to access all of these areas and freely explore their environment. My time spend at this childcare centre was during the end of fall and the beginning of winter, this time frame served as a wonderful learning opportunity for children to have first-hand-experiences on seasonal changes. On many occasions I saw the children’s outdoor learning extend inside the classroom as natural materials were brought inside for further exploration and discoveries. After completing my college program I became a Registered Early Childhood Educator (RECE) and immediately began working in the field. As an RECE I have had experiences working with toddlers, preschoolers, and school-age
children, with all of these age groups I ensured that I provided natural materials in my classroom. By doing so, I was able to observe how the children manipulated the materials and on many occasions I witnessed children choosing natural resources over the store bought toys that were also available in the classroom. In addition to this, I also took the children outside whenever possible; it is always a pleasure to observe children playing in the outdoors. While working as a RECE I have had countless occasions to observe children develop a natural curiosity for what they see happening outdoors, with my support I take the children’s interest and create learning opportunities to enhance their understandings. In my perspective, I have personally seen children become more engaged in what they are learning when there is a connection to the outdoors.

While working as a RECE, I also continued my education at a university where I obtained my Bachelors in Early Childhood Studies. Towards the end of program I was enrolled in a curriculum development course that was taught by a professor who was an advocate for exposing children to nature. My professor would continuously share research on the benefits of having a nature-based approach; with this information I was able to make connections between the research findings and what I observed in my own practice. In addition to this, my professor connected me with a kindergarten teacher who was teaching in an Ontario school who used a more natural teaching style. I set up a visit with this teacher and it was there that I was able to see nature integration being done in a school environment. The teacher showed me numerous examples of how she brought nature into her classroom, along with a tour of her outdoor classroom. Given that it was for a kindergarten class, the students had their own gated play area outside. With the support of other kindergarten teacher and local parents, the teacher created an outdoor classroom that was set up with learning centres (e.g., math, drama, science, etc.) that are typically seen inside a kindergarten class. The kindergarten teacher described that since adapting
to this nature-based approach she has seen the students benefit greatly. Specifically, the kindergarten teacher reported that she believed that there was an increase in student’s engagement and attention spans.

It has long been known in the early childhood field that there are numerous benefits of having children exposed to the outdoors and interacting with natural materials. With that being said, myself and other educators have used nature as a tool to extend children’s learning. As I started to volunteer and complete practicums in elementary schools I was shocked to discover that there is such disconnect from students and nature. Additionally, I have also noticed that much of the nature-based approach research caters to childcare centres. I personally have seen the value in having children learn through a nature-based approach and I believe it is crucial that school teachers are also made aware of the benefits of exposure to nature. It is my hope that this research study helps to support school teachers in adapting to a nature-based approach, as well as contribute to the field of research that is focused on elementary schools. I want to inspire teachers to fall in love with a natural-based teaching style just as I have, and have the motivation and support to create a more engaging environment that all students can benefit from.

1.4 Preview of the Whole

To respond to the research questions, I will be conducting a qualitative research study using purposeful sampling to interview two teachers about the strategies they have found to be helpful in creating nature-based learning both in and out of the classroom. This research study is organized into five chapters. In Chapter Two I review the literature in the areas of integrating the curriculum with nature both in and out of the classroom, I give an in-depth analysis on the benefits of exposing students to a more natural environment, and examine the barriers that may arise with adopting to this nature-based approach. Next, in Chapter Three I elaborate on the
research design, including information about the two participants and the limitations. In Chapter Four I report my research findings and discuss their significance in light of the existing research literature, and in Chapter Five I identify the implications of the research findings for my own identity and practice, and for the broader educational research community. I also articulate a series of questions raised by the research findings, and address areas for future research.

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction to the Chapter

In this chapter I review the literature in the areas related to exposing primary and junior students to nature within the regular school environment, with a further in-depth focus on Ontario elementary schools. More specifically, I examine the numerous definitions that are used in nature research, such as; the term nature itself, environmental education, outdoor education, and greening. I start by reviewing the policy framework that influences a nature-based approach in Ontario elementary schools, as this study’s primary focus is within this province. Next I review the literature in the area of the benefits of exposing children to nature, and I also consider the consequences that may arise to lack of natural experiences for students. Next, I analyze research on some of the obstacles that teachers and administration might face in order to effectively provide natural experiences that include curriculum expectations. Finally, I examine some of the physical barriers that traditional school grounds could pose and potentially affect adapting to a successful nature-based approach.

2.1 Definitions

The definitions that will be addressed in this section are all terms that are commonly found in research regarding children’s interaction with nature. These terms are also very relevant
within this study as it gives a better understanding as to what defines a nature-based approach, and what elements and methods go into this nature integration.

2.1.1 Nature

By looking up the word nature in a dictionary, the term is described as anything to do with the outdoor world; this could be plants, animals, or landscape (Referencecom, 2016). However, when conducting research on nature, specifically in regards to children and their education the definition of nature becomes more complex. Davis (2010) for example, conceives nature as having three components when discussing this term in relation to school, which includes:

- education in the environment which is about providing children with opportunities to have contact with nature to foster wonder, empathy and love for the outdoors;
- education about the environment which involves learning the scientific knowledge behind the process occurring in the environment;
- education for the environment which refers to taking action to care for the environment. (as cited by Dowdell et al., 2011, p.26)

This definition is useful for this study as it highlights the key aspects of nature within in a school setting. This explanation is also important as it describes exactly what the word nature refers to in relation to a nature-based approach. Louv (2005) categorizes nature in his book ‘Last Child in the Woods’ as being “imperfectly perfect, filled with loose parts and possibilities, with mud and dust, nettles and sky, transcendent hands-on moments and skinned knees” (p.97). Many of the studies around nature-based education make reference to Louv’s work and definition of nature. With Louv’s work being so prominent in the field, his definition of nature is the one that I will adopt in my study.
A nature-based approach includes all elements outlined in this section; it is having students outside learning, along with bringing in natural materials in the classroom for students to manipulate. The term nature-based approach will continuously be stated throughout this study. Nonetheless, there are still other approaches and terms that are useful to clarify as they are similar concepts to integrating natural elements within the Ontario curriculum.

2.1.2 Greening

The term greening is another prominent word in the literature on integrating natural experiences into elementary schools. It is important to emphasize that the use of greening in this literature is to signify a movement. Dyment and Bell (2008) give a detailed explanation of greening:

School ground greening is a growing international movement that focuses primarily on the design, use and culture of school grounds, with a view to improving the quality of children’s play and learning experiences. Schools around the world have embraced the notion of school ground greening and are transforming hard, barren expanses of turf and asphalt into places that include a diversity of natural and built elements, such as shelters, rock amphitheaters, trees, shrubs, wildflower meadows, ponds, grassy berms and food gardens. (p.953)

Another way greening is described is when schoolyards restore natural habitats, for instance, by planning trees or vegetable gardens; ultimately it is adding nature to a school environment (Dowdell et al., 2011). The movement of greening focuses on having “students, parents, teachers, neighbourhood residents, and school and city officials work to upgrade physical work
to upgrade the physical environment and to re-establish the natural habitats that existed prior to asphalt” (Dyment, 2004, p.1)

Moreover, the term greening refers to the actual process of changing the elements of a school ground to make the schoolyard more natural. Whereby the term green school ground is used to describe a schoolyard that has had an intervention and thereby the school ground has an increase in natural elements. A simple explanation of green schoolyards is an environment that contains trees, grass, gardens, and/or different types of vegetation (Strife, 2010, p.183). However, interestingly enough a school that is beside a lake or forest is not considered to be a green school ground because no form of intervention has taken place (Evergreen, 2002). Canada is one of the many countries that school ground greening is being implement in (Dyment & Bell, 2008), for this reason the movement will be brought up later in the study as a useful strategy to further enhance a nature-based approach.

2.1.3 Outdoor education

Another term that is commonly used throughout research on nature and education in regards to schools is outdoor education. A definition of this that is most frequently denoted is in Ford’s (1981) research as education that is “in, for and about the outdoors” (as cited by Lugg, 1999, p.25). A more in-depth explanation is that outdoor education serves as a model for educating students on maintaining sustainable life on earth; facilitate critical thinking about the environment, specifically the destructive practices that are currently being implemented, and to create individuals who continually contribute to the environment in a positive way (Copper, 1994; Brooks, 1993; Martin, 1998). A crucial aspect of outdoor education is that it is a method that is used only outdoors; nevertheless, it is still a vital influence on successfully integrating nature with the curriculum. Even with the limitations, it still provides useful support for teachers
implementing a nature-based approach and will be discussed deeper in this chapter and throughout the research study.

2.1.4 Environmental Education (EE)

Throughout the literature another definition that is most commonly recognized is environmental education (EE); the root of this term is very similar to that of outdoor education. EE is a word that is not only seen in research but also used in the field of education; yet, there is no universally accepted definition but rather a wide variety of working explanations that are ordinarily referred to by researchers and teachers (Dyment, 2004; Canadian Council on Learning [CCL]; Riordan & Klein, 2010). What counts as EE is a topic of much debate within education and research (Hart & Nolan, 1999). The first and most frequently mentioned a definition of EE was introduced by the world’s first conference on EE in 1977 called Tbilisi Declaration (UNESCO’s). This definition describes EE as "A learning process that increases people’s knowledge and awareness about the environment and associated challenges, develops the necessary skills and expertise to address the challenges, and fosters attitudes, motivations, and commitments to make informed decisions and take responsible action" (as cited by CCL, 2009, p.2). It is important to mention this definition as it is one of the oldest; nevertheless, over the years the description has been altered by many researchers and the term has evolved to include other various components, such as making connections to students’ lives, recognizing natural spaces that are in close proximity to the school, and advocating for the importance of protecting the environment and all species that encompass it (Dyment, 2004). For this study it will be helpful to discuss other meanings of EE to gain a better understanding of how this term identifies within elementary schools in Ontario. For instance, sometimes EE is referred to in a simpler concept such as a “dynamic process in which pupils and teachers are engaged together in a
search for solutions to environmental problems” (Riordan & Klein, 2010, p.120). This definition is helpful especially to many educators who are first starting to discover EE; though, it does leave out other important points; this specific explanation can be viewed as more of a short term goal of EE. When examining the more long term goals of EE, one of the key ideas is that it should create and foster a deep exploration and appreciation for the environment within each student that they can take with them long beyond their time in the classroom (Wilson, 1997; CCL, 2009). Another definition of EE that is presented in the research is EE “is a vital tool that helps young people understand the nature and complexity of environmental challenges and builds their capacity to take appropriate action” (Seema, Anju, Bhagyshree & Neelima, 2014, p.271). Another definition of EE that is worth consideration is by the Ontario Ministry of Education, as this study has a huge emphasis on Ontario elementary schools. The Ontario Ministry of Education (2007) supports the definition of EE that is presented in a report called *Shaping Our Schools, Shaping Our Future*, which states that it:

> is education about the environment, for the environment, and in the environment that promotes an understanding of, rich and active experience in, and an appreciation for the dynamic interactions of:

- The Earth’s physical and biological systems
- The dependency of our social and economic systems on these natural systems
- The scientific and human dimensions of environmental issues
- The positive and negative consequences, both intended and unintended, of the interactions between human-created and natural systems. (p.6)
As it is seen EE includes a variety of components and has been interpreted in an overwhelming amount of ways by different researchers. For the purpose of this study I will focus on EE that requires students and others in the education community to examine issues within the context of both the local and the global environment. It also challenges them to develop the knowledge, skills, and attitudes they will need to cope with an increasingly complex world and will enable them to find new solutions in building a healthy society. (Seema, Anju, Bhagyshree & Neelima, 2014, p.271)

In relation to this definition, Strife (2010) reports that a central goal of EE “is to motivate human engagement and action in resolving environmental problems” (p.179-180).

Furthermore, when reading through the literature EE and outdoor education are sometimes used interchangeably with one another; nevertheless, they might both share similar concepts there is still a critical difference between the two terms. As stated above, outdoor education is based solely on experiences that take place outdoors, while EE can pertain to experiences outside and inside a classroom. EE can be delivered within the indoor setting through the use of books, computers, discussions, presentations, etc. Even with the differences, both EE and outdoor education are important initiatives that are being placed into elementary schools and hugely impact incorporating nature with the curriculum. Lastly, another factor that is different about the two approaches is that in recent years EE has become increasingly important in elementary schools, so much so that a policy framework that was mentioned in Chapter One, surrounding EE was put into effect in Ontario schools (Ontario Ministry of Education, 2009); this policy will be discussed next.
2.2 Ontario Policy Framework

Many researchers and individuals involved in making decisions regarding Ontario’s education system are becoming increasingly more aware of the importance of educating young children on the environment. In June 2007, an expert panel created a report called *Shaping Our Schooling, Shaping Our Future* that outlined thirty-recommendations for schools regarding environmental education; after careful consideration the government of Ontario decided to move forward with this report. In 2009, a policy framework by the Ontario Ministry of Education called *Acting Today, Shaping Tomorrow* was put into place. This particular document is acknowledged that EE is imperative to student’s learning and must be taught, along with stating actions the Ministry of Education and schools will take (Ontario Ministry of Education, 2009). Within this policy framework it states:

that there is no universal model for the implementation of environmental education. Although there is overall agreement on principles and supporting concepts, specific goals and processes must be defined locally to meet the differing environmental, social, and economic conditions that exist in Ontario communities. Accordingly, the framework will guide school boards and schools towards the development of the skills and knowledge needed to implement environmental education in a community-centred context. (Ontario Ministry of Education, 2009, p.4)

The aim of this policy framework is to promote students understanding of the environment and also encourage environmental responsibility among everyone. Similarly, “This framework will enable Ontario’s young people to develop the skills, knowledge, and perspectives they will need to become engaged and environmentally responsible citizens” (Ontario Ministry of Education, 2009, p.25). The importance of discussing this policy framework in this research study is that
with this document put forth elementary teachers are now required to teach about the environment, in hopes that they are exploring environmental issues teachers will be encouraged to go outside more frequently with their students and bring nature indoors. Although this document is a step in the right direction as it starts to get students more involved with the environment, it does leave out the benefits of having children exposed to nature. It is possible that a teacher would be able to teach EE indoors and never bring natural materials into the classroom or create learning experiences outdoors. Therefore, without these components students will have the chance to become responsible for their environment but miss out on an enormous amount of benefits that are entailed with nature exposure, these advantages will be discussed next.

2.3 Benefits of Nature Exposure

A modest body of research has explored how the exposure of nature can impact children in a variety of ways. In this section of the chapter, I review some of the research that investigates how children interacting in a natural setting, and/or manipulating natural materials can have a positive influence. I first start by reviewing the areas where major benefits are observed within children. Next, I explore some of the other reported benefits of nature exposure.

2.3.1 Children’s development

An abundance of studies have been conducted that outline the benefits of having children of various ages exposed to nature (Dowdell et al., 2011; Lugg, 1999, CCL, 2009; Driessnack, 2009; Wilson, 1997; Rios & Brewer, 2014; Swiderski, 2006; Ernst, 2012; Dyment & Bell, 2008); nonetheless, this paper will focus on children between early and middle childhood. It has been noted that students have been positively impacted by being in proximity to nature and having opportunities “to manipulate elements in ways that are not possible or permissible in the home,
such as construction with found objects and playing in dirt and puddles” (Wilson, 1997, p.192). Much of the findings show evidence that children who have opportunities to interact with a more natural environment can lead to enhanced cognitive abilities and improve physical, and social/emotional health (Driessnack, 2009; Wilson, 1997; Rios & Brewer, 2014; White, 2004, & Fjortoft, 2001, Dowdell et al., 2011). More specifically, children who have direct contact with nature tend to have increased attention spans, problem-solving abilities, self-discipline and self-regulation, as well as, improved awareness, reasoning, observation skills, creativity, concentration and imagination (Driessnack, 2009; Dowdell et al., 2011). The exact physical benefits include improved co-ordination, balance and agility while specific health benefits are reduced sickness and a speedier recovery (Fjortoft, 2004, Dowdell et al., 2011; White, 2004, as cited by Dowdell et al., 2011). Driessnack (2009) also adds that student’s mental health can significantly improve as “access to natural play areas helped to reduce stress in children” (p.73).

Furthermore, more detailed studies have been done which found that allowing students to have copious amount of time interacting with natural materials and being outdoors appears to reduce the symptoms in attention-deficit/hyperactivity disorder (ADHD) (Driessnack, 2009; Dyment & Bell, 2008). One specific study on ADHD reported that the “greener” the natural setting, the greater relief from symptoms associated with this diagnosis (Driessnack, 2009, p.73). According to Nancy Wells (as cited by Louv, 2005) she discovered in her study that children being close to nature, in general seems to boost their attention span. Louv (2008) explores a possibility that if numerous studies have shown signs that nature therapy or just nature exposure in general can reduce symptoms of ADHD, then perhaps “ADHD may be a set of symptoms aggravated by lack of exposure to nature” (p.109). Interestingly enough, another study suggested that not only students who have ADHD will reap the benefits, but similarly students who “have
difficulty learning in a formal school environment, are reluctant learners, [or] who have
difficulty concentrating” will also be greatly influenced (Dyment & Bell, 2008, p.960). These
benefits to student’s development can positively affect children’s learning in schools, although
there are also specific academic gains with exposing students to nature that will be mentioned
next.

2.3.2 Academics

An emerging amount of literature signifies that by having students engaged in either EE
or outdoor education within the elementary schools that there tends to be “positive student
outcomes in core subject areas” (Ernst, 2012, p.73). When students have opportunities to engage
in natural experiences there is an “increase in ability to think creatively and critically and
improved performance on standardized tests” (Dyment, 2005, p.28). More specific academic
benefits that have been reported are; standardized test scores in math, reading, writing, science,
and social sciences improve, and overall grade point averages increase (Swiderski, 2006; CCL,
2009). Additionally, one of the greatest reported academic benefits is with science achievement,
as the research indicates that direct outdoor learning experiences help students to develop
positive environmental attitudes that can result in higher success with this subject (Rios &
Brewer, 2014). Nonetheless, it is crucial to note that although science reaps the most benefits,
other formal curriculum subjects can be taught outdoors, this includes “reading, writing,
mathematics, science, art, environmental education, health, drama and social studies” (Dyment,
2005, p.30). Learning in the outdoors can sometimes create more of a meaningful context for
students, especially children who do not learn best in a classroom, this results in a positive
increase in their academics. This informal learning environment can intrinsically motivate
students to engage in the lessons and the curriculum (Dyment, 2005, p.30), as they have “an
increased motivation for learning” (Ballantyne & Packer, 2010, p.219). A study conducted in the States by Eick (2012) reported that a third-grade teacher discovered that since using the outdoor classroom, she “witnessed a heightened motivation to read, write, and draw in those children who struggled most with engaging in literacy activities” (p.800). This classroom teachers observation shows not only the significance of the research but also the value in integrating a nature-based approach in elementary schools.

2.3.3 Play

Exposing students to nature clearly impacts student’s development and academics but there are other reported benefits. One such other benefit is that students who are exposed to nature, especially those with access to a green school ground, have increased play opportunities (Dyment, 2004, p. 2). Dowdell et al., (2011) supports the notion that a more natural environment has “been associated with enriching the quality of play as they encourage more active, imaginative and constructive play, promote more courteous behaviour and strengthen the link between play and learning” (p.26). Dyment (2004) builds off of this idea and suggests that a natural setting “that has elements of complexity, plasticity, and manipulability allow children to engage in a variety of significant ‘world-making’ play behaviours such as fort building, role-playing, cause-effect actions as well as constructive play” (p.28). Louv (2008) agrees with this notion of more complex play as he found that children in areas that are less dominated by asphalt and play structures demonstrate “more fantasy play, and their social standing became based less on physical abilities and more on language skills, creativity, and inventions” (p.88). Not only is there an increase in the types of play that emerge in natural schoolyard, majority of children prefer to play in an outdoor environment (Dyment, 2004, p.24). In addition to this, the outdoors “offers tactile elements and flexible resources with which to experiment and discover real life
hands-on learning” (Waite, 2011, p.75) all of which helps to support students in more complex play behaviours.

2.3.4 Children’s health

Many studies like those mentioned above address that there is a strong correlation between natural settings and increased play experiences, other researchers have found that there is link between contact with nature and students health. More specifically, “evidence suggest that exposure to nature mitigates or buffers childhood stress that can lead to depression and other mental disorders” (Waite, 2011, p. 184). Louv (2008) agrees that although nature cannot have a significant impact on students who suffer from severe depression, it can however “relieve some of the everyday pressures that may lead to childhood depression” (p.50). One possible reason that we see emotional befits in students who are surrounded by natural settings is that the green spaces tend to promote social interactions which can lead to social support (Louv, 2008, p.51), and be seen as a less overwhelming school setting as it is not as formal as a typical classroom. Moreover, natural schoolyards tend to have increase in the amount of trees that are available; this leads to greater shade areas for students to use throughout the day, as the weather in Ontario can get very hot. During recess and learning experiences outdoors children can be exposed to very extreme temperature which can lead to skin cancer, or heat exhaustion, by having an abundance of shade this can reduce the likelihood of both (Dyment, 2004, p.34).

2.3.5 Greater environmental awareness

In addition, not only is interactions with the outdoors linked to greater health for children, exposure to nature can help students “to develop appreciation and empathy for the natural world” (Rios & Brewer, 2014, p.234-235). Research further indicates that the most important factor in developing such a personal concern for the environment comes from active participation in the
outdoors and manipulating natural materials, as it helps students gain knowledge about our natural surroundings and grow feelings of connectedness and care for every organism, all while emerging and maintaining positive environmental behaviours (Wilson, 1997; CCL, 2009). Ballantyne and Packer (2010) agree with this research as they state that “one of the most effective ways of reaching students with an environmental message is to engage them in experiences in the environment, particularly experiences which enable them to observe the evidence of environmental problems and the impacts of these on wildlife, habitats and human beings” (p.218). Ballantyne and Packer (2010) conducted a study in South-East Queensland where questionnaires were sent out to students between the ages of 8 to 17 to see their experiences on being able to participate in outdoor environmental education programs. One 10 year old reported that “I have realized that we need to care for the animals” (Ballantyne & Packer, 2010, p.225). While a 9 year old stated that “I thought plants and animals were boring but they are very interesting” (Ballantyne & Packer, 2010, p.225). Both of these statements taken from elementary aged students have a strong connection with what the research is stating, learning in the outdoors leads to greater respect and appreciation for the environment (Wilson, 1997; CCL, 2009; Ballantyne & Packer, 2010). Although, it is important to highlight the numerous benefits that exposure to nature brings to students, it also arises the question as to what can happen to children if they have minimal to no exposure to nature? It is of equal value and crucial to this study to acknowledge the negative impact that lack of natural experiences can bring to primary and junior students, as this supports why EE has become a relevant component within the educational context in Ontario elementary schools. The consequences to minimal or no exposure of nature to children will be discussed next.
2.4 Consequences of Minimal Nature Exposure

I have discussed in great detail the importance of implementing a nature-based approach and have addressed the significant benefits that this type of learning style can lead to. In this section of this chapter, I explore the possible negative consequence of lack of exposure to nature can have on young children. First I will explore a term that was created by Louv (2005) known as nature deficit disorder (NDD) and what this diagnosis entails. Along with, children developing a discomfort with the outdoors and having less appreciation for the environment.

2.4.1 Nature Deficit Disorder (NDD)

Nature Deficit Disorder (NDD) “is not an official diagnosis in the International Classification of Diseases and Related Health Problems (ICD-10-CM). Instead, it is a label used to address the increasing cost to children as they are increasingly deprived of direct contact with nature and the experience of unstructured free play in the out-of-doors” (Driessnack, 2009, p.73). Louv (2005) deemed the term NDD in his book Last Child in the Woods, essentially it is used to describe the costs of alienating humans, predominantly younger children, from nature (as cited by Swiderski, 2014). Louv (2005) further states that NDD is “a disturbing trend that does indeed have health implications, particularly for children, such as diminished uses of the senses, attention difficulties, and higher rates of physical and emotional illness (as cited by Tucker, 2006, p.13). Additionally, Louv (2005) believes that this disassociation from nature can lead to increased levels “of childhood obesity, attention-deficit disorder, impaired social skills (including increasing violence), and alterations in mental health (including depression)” (as cited by Driessnack, 2009, p.74). Fundamentally, NDD has damaging effects on children and unconsciously shapes adults and families (Swiderski, 2006). This is just one trend that has been observed with minimal nature exposure to children. Although, this label does outline several
disadvantages associated with minimal nature experiences, there are still more consequences that were not brought up with NDD and will be discussed next.

2.4.2 Discomforts in the outdoors

Further consequences have been found when students have lack of exposure to natural materials and the outdoors, for instance, it can be a potential source of stress and anxiety when students are taken away from natural environment and materials (Driessnack, 2009). Moreover, as previously mentioned children with plenty of opportunities to be exposed to and explore nature develop a deep care for the environment; however, without students having these natural experiences, there is an increased likelihood that they will develop fears and discomforts about the environment. These uncertainties about the environment will hinder student’s abilities to better understand and care for the natural world (Rios & Brewer, 2014). Eick (2011) builds on this idea and states in his research that “having little to no outdoor play restricts children’s mobility in nature and thus limits their capacity to expand their environmental literacy” (p.789-790). In addition to this, the lack of understanding about the environment due to minimal exposure to nature also puts students “at a disadvantage in learning ecological concepts” (Eick, 2011, p.70), as the environment and biology have a strong correlation. Although it is vital to expose children to nature there are some challenges of doing so in a school environment that will be examined next.

2.5 Challenges of Integrating a Nature-Based Approach in Elementary Schools

When teachers integrate more direct natural experiences within an educational context, there are several challenges that the educators may have to overcome. In regards to adapting to a nature-based approach teachers attitudes and beliefs play a role in this implementation, along
with lack of training and resources, the physical school environment, administration, and rules. All of these possible obstacles will be elaborated on in this section.

2.5.1 Teachers attitudes and beliefs

The literature claims that for many teachers integrating nature with the curriculum is viewed as an extra component to their already hectic school schedules and responsibilities (Tal & Morag, 2013; Ernst, 2012; Riordan & Klein, 2010). This leads to some teachers believing that having nature integration is an unnecessary burden that requires too much effort, as well as time and energy on their behalf (Tal & Morag, 2013; Ernst, 2012; Riordan & Klein, 2010). Additionally, studies reported that various teachers consider implementing more natural experiences to be too demanding on their personal time, along with, requiring a higher emphasis on supervising and ensuring student’s safety while outdoors, and an increased amount of paperwork (Zink & Boyes, 2006; Riordan & Klein, 2010; CCL, 2009; Wilson 2008, as cited by Dowdell et al., 2011). According to the Canadian Council on Learning (CCL) (2009):

Many teachers are reluctant to address environmental education and name various reasons for avoiding environmental topics, including; lack of resources, inexperience, lack of confidence and insufficient support. In recent years, an overloaded curriculum and emphasis on testing and standards were added to the list of reasons that prevent teachers from spending too much time on “extra” topics such as environmental education. (p.3)

Moreover, the literature highlights another key issue in regards to teacher’s perceptions on a nature-based approach, in particular, outdoor play (Dowdell, Gray, & Malone, 2011; Rios & Brewer, 2014). Elementary schools do provide opportunities to go outside, for example; recess periods, several gym classes, and even with teacher’s discretion classes are permitted to head
outdoors. Nevertheless, these times outside may be beneficial since children are being exposed to the outdoors, in certain circumstances these experiences are not reaching their full learning potential. A study conducted by Wilson (2008) found that some teachers viewed outside experiences as a “down time”. Instead it is important that teachers value the outdoors for the opportunities it provides for interaction and exploration of the environment and hands-on learning about the life cycles of plants, animals, the seasons and the weather” (as cited by Dowdell et al., 2011, p.33). Dyment (2005) conducted research in Canadian elementary schools through the use of questionnaires and interviews and found that many participants indicated that they were concerned about losing control of the students while in an outdoor classrooms, whereas an indoor classroom offers familiarity and security. One teacher from the study stated that “Outside is an open area, it’s not a classroom, there’s less control with your students… because obviously outside is a different place … so it’s harder to teach in that environment. So maybe some people are hesitant to teach out there” (as cited by a teacher participant in Dyment, 2005, p.38). In addition to this, Dyment (2005) also found that many teachers believed that there were limited curriculum links to the outdoors; the only obvious connection was in science, while a subject such as math was more likely to be solely taught indoors. Another finding from Dyment (2005) study shows that many teachers feel the pressure to teach for standardized testing, which in the participants views meant that there was “little room for outdoor learning” (p.38). Similarly, Moseley, Reinke and Bookout (2003), found in their study of 72 elementary teachers from the states, that many of the participants felt “ineffective at teaching environmental studies outdoors” (p.3).

It is useful for this study to acknowledge these views some teachers may have on integrating nature because it presents one of the barriers for a successful implementation of a
nature-based approach. It is also important to recognize that these claims mentioned above, may be opinions of some teachers but do not reflect the views of all teachers. Other research identifies that there are many educators who are not familiar with the topic and it can become a huge challenge to teach an area out of their comfort zone (Moseley, Reinke & Bookout, 2002; CCL, 2009; Riordan & Klein, 2010; Lugg, 1999). Moseley et al., (2002) support this idea as many teachers reported in their study that that they “do not think they have the knowledge or abilities to teach environmental education” (p.10) or are equipped with adequate understanding on integrating nature in the classroom. Another teacher viewpoint accredited within the literature is that there are indeed many teachers who hold positive attitudes about integrating more natural materials in their classroom, together with EE, but struggle with successful implementation as they lack the suitable resources and proper training needed (Riordan & Klein, 2010; CCL, 2009).

It is evident through the academia research that trainings and resources provided by the school to support teachers on integrating nature is limited; however, there are some programs out there for educators. For instance, in the Greater Toronto Area there are various trainings offered by an organization called EcoSpark (n.d.). EcoSpark offers training to teachers who wish to learn more about natural experiences they can provide their students with (EcoSpark, n.d.)In addition to these workshops, teachers are also able to take additional qualification (AQ) courses on EE. Nevertheless, all of these resources still hold barriers for teachers as many are offered out of school hours, are a personal cost to the teacher, and don’t cover all the components required to have an efficient nature-based approach.

2.5.2 School and district administration

Wenzhong (2004) discussed that the elementary school principal plays a critical role in policy decision when it comes to school’s management and education. An elementary school
principal also plays a vital part in influencing aspects of integrating nature, specifically with EE; therefore, such principals should be an active participant and initiate that teachers have more natural experiences for their students (as cited by Ernst, 2012). In Dyment’s (2005) study on Canadian elementary schools found that some schools teachers reported that they did not have the support of their principal, one teacher stated that “if your principal doesn’t support you, you’ll never use it [outdoor environment]” (p. 39). Likewise, as mentioned earlier it is of high importance that teachers receive more formal training, both theoretical and practical, in order to feel more component in providing these natural opportunities (Lugg, 1999), in order for this to occur school and district administration must get involved (CCL, 2009). Furthermore, another issue that some teachers revealed as hindering a successful nature-based approach was the school rules. Some elementary schools have rules in place that create a barrier for teachers being able to take students outside during class time (Zink & Boyes, 2006). School and district administration need to closely examine their school rules and if needed adjust accordingly to allow flexibility of teachers taking their students outdoors, thus making incorporating natural experiences with the curriculum much easier on the educator. However, even if teachers are able to bring their students outside and creating meaningful learning experiences, the elementary school grounds might be another obstacle that an educator will have to overcome.

2.5.3 Schoolyards

Through the literature it is evident to researchers and teachers alike that children, especially young children learn while interacting with their environments; however, according to Olds (1989) some spaces inspire children “to pause, play and stay awhile” (as cited by Wilson, 1997, p.191), while other environments don’t foster such attributes. A simple visit to most typical schoolyards and playgrounds would show that the quality of these environments is poor
in terms of opportunities to engage in meaningful learning experiences (Wilson, 1997, p.192). Dyment (2005) found that many Canadian school grounds were poorly designed and limited the amount of outdoor learning that took place. Churchman (1986) adds that a visit to most school grounds “leaves one with the strong impression that the schoolyard is perceived as an area that is ‘not school,’ as intended mainly for the time when there are no classes” (as cited by Wilson, 1997, p.192). Likewise, Evans (2000) noticed that “children are less involved in outdoor play today because of their traditional playgrounds” (Dowdell et al., 2011, p.24). However, schoolyards can be an area that promote educational opportunities, but this is often overlooked in favour of having “large open spaces that are easy to maintain” (Dowdell et al., 2011, p.26). These large open environments not only lack in providing meaningful learning, but also do not promote high levels of physical activity as many students view conventional schoolyards to be uninteresting and not suited to play vigorous games (Dyment & Bell, 2008). In addition, outdoor settings also play a role in how students view the world of nature and their role in it, thus it would be beneficial to have schoolyards that are “esthetically pleasing natural environments where young children can manipulate and explore” (Wilson, 1997, p.192). It is apparent that despite these typical school grounds being easy to maintain, they need to be altered in order to best suit the educational and physical needs of the students, “it is recommended that school grounds are designed to maximize children’s contact with plants and animals” (Maller, 2009, p.538).

In order to have outdoor school environments that promote more educational opportunities, as well as an increase in physical activity, elementary schoolyards should adapt to greening their outdoor spaces (Dyment & Bell, 2008), a term defined earlier. Other reasons why schools should consider implementing a greening approach is that these environments “can
enhance the safety of school grounds by calming student traffic, by softening play surfaces, by promoting more civil and cooperative behaviour and by inviting greater community involvement and sense of ownership in the school ground” (Dyment & Bell, 2008, p.959). In a Canadian based study conducted in various elementary schools across the country, it was reported that 84% of the survey participants found that greening their schoolyards encouraged students to explore their natural world, along with increased levels of physical activity, and students were engaged in more meaningful experiences (Dyment & Bell, 2008). Another vital reason elementary schools should begin to implement greening practices (if they have not already done so), is that with an increase in urbanization and fears of child safety many children are having less access to natural spaces (Dyment & Bell, 2008), making it even more crucial that schools become a place that provides such natural exploration. However, it is important to acknowledge that there are still obstacles that schools could encounter when deciding to green their schoolyard. For instance, lack of time and/or money, as well as participants to support this initiative the greening project could fail (Waite, 2011; Dyment, 2005).

2.6 Conclusion

In this literature review I looked at research on nature integration with primary and junior students, with an emphasis on Ontario elementary schools. This review elucidates the extend in which attention has been paid to examining the benefits of exposing children to nature, and the downside of minimal natural experiences. Furthermore, this literature review also analyzes the many factors that go into a successful nature-based approach that integrates curriculum expectations, such as; teachers’ knowledge on the subject, the lack of training and resources for educators, traditional school grounds, and the role of administration. With all of the positive outcomes outlined in this literature review of having natural experiences for students, it raises
questions about why incorporating natural materials in the classroom and outdoor learning experiences is not prominent in all Ontario elementary classrooms. The findings of this literature review point out the needs for further research in the areas of changing conventional school grounds, providing more accessible training for teachers in regards to efficiently implementing a nature-based approach, and to promote greater awareness within education contexts as to the benefits of exposing students to natural experiences with the school environment.

In light of this, the purpose of my research is to learn how teachers are able to provide their students with more natural experiences while successfully integrating these opportunities with curriculum expectations. This study will also examine how some teachers are able to overcome such barriers that were examined in the literature review. Furthermore, this research study approaches the issue of providing adequate opportunities for students to be exposed to nature while integrating the curriculum by conducting two semi-structured interviews with primary and junior teachers in Ontario. It is my hope to create more awareness among educators of the benefits of exposing children to nature and provide teachers with various ways of applying a nature-based approach that also meets the expectations outlined in the Ontario curriculum.

**CHAPTER THREE: RESEARCH METHODOLOGY**

3.0 **Introduction to the Chapter**

In this chapter I describe the research methodology. I begin this section by reviewing the research approach and procedures, followed by the instruments used for data collection. Next, I explain the participants involved in my qualitative study; more specifically I elaborate on my sampling criteria, sampling procedures, and provide a description of each participant. I explain data analysis procedures and review the ethical considerations pertinent to my study. This section
will also disclose any methodological limitations that have arose during my study, along with the strengths of the methodology. Finally, I conclude the chapter with a brief summary of key methodological decisions and my rationale for these choices given the research purpose and questions.

3.1 Research Approach and Procedures

This study was conducted using a qualitative research approach to investigate how a small sample of elementary school teachers in Ontario are integrating a nature-based approach in their classrooms, and the perceived outcomes this method has had on their students. In particular, this study involves a literature review and two semi-structured interviews with elementary school teachers. Qualitative research seeks to understand a social wonder within the perspective of the participants, in this case the classroom teachers. Additionally, qualitative research is more flexible and responsive than quantitative research which focuses on inventory, questionnaires, or numerical data to draw conclusions (Merriam, 2002). The phenomenological nature of qualitative research allows the researcher to gain insight on practical ways elementary school teachers are able to implement a nature-based approach in their own practice and the experiences they have had (Campbell, 2014). A qualitative research approach was best suited for this study given that the literature review explores the benefits and challenges of a nature-based approach, yet lacks the practicality for a classroom teacher; therefore, first-hand teacher experiences were crucial for this study. In addition to this, a qualitative approach “collects open-ended, emerging data that is then used to develop themes” (Campbell, 2014, p.3) these themes will help to create a foundation for integrating natural experiences within the Ontario curriculum. The study is accompanied by an interview protocol (located in Appendix B) that consists of various open-
ended questions that are intended to support the researcher in gathering data that pertains to this study and gain better insights of the common experiences amongst the participants.

The procedure of this research comprised of a comprehensive literature review, which provides the academic background of this study. Next, data was collected from two detailed interviews with participants who met the sampling criteria outlined by the researcher, which will be explored later in this section. During these face-to-face semi-structured interviews, participants answered a series of open-ended questions. These recorded interviews were then transcribed to allow the researcher to develop themes based on the responses given by the participants (Campbell, 2014). The emerging themes that were discovered will be explored in more thorough descriptions in Chapter Four.

3.2 **Instruments of Data Collection**

Interviews are the most common and familiar form of data collection when conducting a qualitative research study (King & Horrocks, 2010; DiCicco Bloom & Crabtree, 2006). As I am most interested in learning how teachers are able to implement a nature-based approach in a typical school classroom, interviews are the best approach as it produces the most applicable information for this study, as it allows the researcher to get to know and understand the interviewee better (DiCicco Bloom & Crabtree, 2006). There are three major types of interviews that can be used in a qualitative study. For instance, an unstructured interview consists of researchers observing the participants and taking observation notes as they watch from afar, sometimes the researcher joins the interviewee on the activity. Individual in-depth interviews have focused questions that yield relatively similar experiences amongst the participants; however, the interviewer must be prepared to differ from the set of questions depending upon the interviewee’s response. While semi-structured interviews have predetermined open-ended
questions, and typically take place outside of daily events, and have are scheduled in advance, they can be done either individually or as a group (DiCicco Bloom & Crabtree, 2006). In addition, semi-structured interviews provide an opportunity for the participants to share their own personal understandings and experiences (King & Horrocks, 2010). Furthermore, the format of semi-structured interviews allow for the researcher to plan questions that are relevant to the main purpose of the study, while still allowing an opportunity for participants to elaborate on the topic and share any knowledge or experiences that may have been unforeseen by the researcher.

For the purpose of this particular research semi-structured interviews are best suited, and are the primary instrument used for data collection for this study. More specifically, the interviews are conducted individually to allow time to explore and understand the teacher’s personal experiences more in-depth. The two semi-structured interviews were face-to-face, took place outside of the teacher’s classroom, and were approximately forty-five minutes in duration each. My protocol for the interviews (located in Appendix B) is organized into four sections. First inquiring about the participants background information in relation to teaching, followed by what the participants believe is the definition of a nature-based approach and how they are able to implement these experiences into their classroom, then exploring any challenges that the participants have encountered, supports that they have, and finally any advice they have for teachers interested in this approach. Examples of questions include:

- What do you believe is the role of nature in students learning?
- How do you incorporate the outdoors in your teaching?
- What natural materials are included inside your classroom?
- Do you encounter any challenges with implementing a nature-based approach?
3.3 Participants

In this section I review the sampling criteria that I established for participant recruitment for this study. It is not practical to study a whole population, as this would be very time-consuming and some participants may not provide relevant responses. For this research it was crucial that I made my sampling criteria purposeful, I pursued out participants that had relevant experiences to my research topic (King & Horrocks, 2010). Next, this section reviews the range of possible avenues for teacher recruitment that I have explored. Lastly, I have provided a section where I go into detailed descriptions of the two participants and explain how they met the sampling criteria for this study.

3.3.1 Sampling criteria

The following criteria were used to determine eligible participants for this study:

1. Teachers who work with students anywhere from Kindergarten to Grade 6 (primary/junior) in Ontario elementary schools.

2. Must have access to an outdoor setting that is used frequently to have learning experiences with their students.

3. Must incorporate natural materials in their classroom.

4. Must have a dedicated commitment to implementing a nature-based approach in their teaching practice.

5. Must be working in Ontario elementary schools for a minimum of five years.

The above criteria were carefully chosen and applied to this study because the research only uses a small sample of teachers it was vital that the participants had experiences and beliefs that were relevant to the main purpose of this study. Since the literature review discusses the
benefits of exposing young children, twelve and under, to nature it was crucial that the participants in this study are working with the age group that is reflected in the research. Another important component was that the teacher is able to not only access and outdoor environment but utilize it as a learning experience. In the literature review it was disclosed that part of implementing a nature-based approach requires that educators provide learning opportunities for their students in an outdoor environment. In addition, a nature-based approach also involves that educators are able to provide natural materials inside their classroom to allow for the students to be exposed to nature throughout the duration of the school day. The fourth criteria is probably the most vital component pertaining to this study, as the focus of this research is on implementing a nature-based approach, it is crucial that the teachers involved in this study see the value in this model and have infused this approach into their teaching practice. Lastly, a requirement is that teachers have been teaching in Ontario elementary schools for at least five years because this will provide a better opportunity for teachers to recall on examples of how they integrated nature into their teaching, and the outcomes they have observed over time.

3.3.2 Sampling procedures/ recruitment

Since this study has a very detailed focus a small sample size is appropriate, as long as the participants chosen are able to adequately answer the questions (Marshall, 1996). As mentioned above for the focus of this study it is important that I engage in purposeful sampling and find participants that most closely match my sampling criteria (King & Horrocks, 2010). To recruit participants I will be attending nature-based workshops that discuss practical strategies that teachers can use to implement more natural experiences in their classroom, as this will allow me the opportunity to be around teachers who have an interest in the focus of my study. In addition to this, I will also hand out my information to these organizations so they can distribute
my information to individuals they feel are suited for this study. This will hopefully avoid any teachers from feeling pressured to partake in the research, and instead come voluntarily. Furthermore, I work as a supply Registered Early Childhood Educator (RECE) for before and after school programs in various schools, I will also provide my information to the principals at these schools for them to distribute to teachers they believe are suitable for the study. Once again this tactic is used to ensure that teachers do not feel obligated to contribute to the research but instead want to and willingly participate.

Due to the constraints for this study I will also be employing a convenience sample. A convenience sample requires less time and effort, as it involves selecting the most accessible individuals. However, there is a downside to this sampling type as it can result in poor quality (Marshall, 1996). Since I am immersed in a community of teacher candidates and mentor teachers I will rely on my existing contacts and networks to recruit participants. In order to avoid having a poor quality sample all possible recruitments that come out of this sample must meet the sampling criteria that are outlined above. To ensure this, I will provide my sampling criteria to my contacts and networks in hopes that they are able to find teachers who closely match my required conditions.

3.3.3 Participant bios

The first participant for this study, Carol, has been teaching for the past 30 years at the same school. The school in which Carol teaches at is an eco-school that is located in a rural area, the schoolyard is full of greenery, and she has access to an outdoor classroom that she helped to create. Carol is currently teaching as a kindergarten teacher in the full-day program (FDK) this is her 6th year doing so, and also her final year teaching as she will head into retirement the following school year. Previously, Carol taught Grade 1 for 22 years, Grade 2 for 1 year, and
Grade 3 for 1 year. The demographics of her FDK classroom are 1 teacher to 14 students, who are mostly boys, two of which have special needs and their own educational assistant.

The second participant that was interviewed for this study, Emma, has been teaching for 13 years at the same school. Emma teaches at a platinum eco-school that is located in a residential area, with access to a river and park nearby. Emma is currently teaching a special education program for students who are at least two levels below their academic grade level. This program runs for half-a-day in Emma’s own classroom; the other half of the day Emma is a SERC teacher and assists several students in their own classroom. Emma has been at this position for the past 3 years, previously Emma taught kindergarten for 5 years, ELL for 3 years, Grade 5 for 2 years, and was also a teacher’s assistant for several years prior to teaching. Emma’s special education program consists of 8 boys between Grades 4 and 5.

3.4 Data Analysis

Data analysis in a qualitative study typically occurs simultaneously with the data collection. This is done so that researchers are able to produce a developing understanding of the research question itself, and it can also alter the questions being asked during the interview (DiCicco-Bloom & Crabtree, 2006). While collecting this open-ended data during the semi-structured interviews, the data will be analyzed to look for emerging themes (Campbell, 2014). Assigning themes is just one step of the data analysis, it is also important for the researcher to go through these themes and identify similar phrases or ideas, along with major differences that arise, and to be able to make generalizations based upon these themes. Lastly, it is imperative to compare these generalizations with the already existing body of knowledge pertaining to the study (Miles & Huberman, 1994).
For my data analysis of my research I followed the steps outlined above. My first step was constantly examining my interviewee’s response for themes, and when themes were noticed that questions were altered accordingly. After I completed my two interviews I then began to transcribe the interviews and used my interview questions as an imperative tool. I then coded each transcript individually and identified categories of data and themes within the categories. From there I read the categories and themes beside one another – synthesizing themes where appropriate. Next, I analyzed and compared all themes to look for any commonalities and major differences amongst the participants, and begin to make generalizations. These results were then compared to the existing research on implementing a nature-based approach that was explored earlier in Chapter Two, the literature review.

3.5 Ethical Review Procedures

With any form of research there is always an ethical procedure that must be considered before beginning the study. Specifically with regards to the interviewing process, DiCicco-Bloom and Crabtree (2006) discuss that there are four main issues that must be addressed. First you do not want to cause any harm to the participants, for example some emotional issues may cause the interviewees to experience intense feelings, for my study this will not be an issue as my topic of research does not deal with a sensitive subject. There are no known risks involved with participation. Second, it is important that the researcher is confidential with the interviewee’s information, as the responses individuals give are based on personal experiences that may cause unwanted attention in their workforce. Since my topic of research required teachers to reflect upon any challenges or lack of support they have come across while integrating natural experiences it is crucial that their information remains anonymous. Participants were assigned a pseudonym and no identifying details will be released in the research paper. All recordings are
kept on password protected hard-drive that only the researcher will have access to, and they will be destroyed after 5 years. In addition all participants signed a letter of consent (located in Appendix A) before beginning the recording to ensure that I had received their permission to do so. A third ethical consideration is that interviewees are aware about context of the study. All participants were made aware of the topic before beginning the interview; in the letter of consent (located in Appendix A) it also outlines what the research study is focused on, addresses ethical implications, and specifies expectations of the participants. As the researcher, I also constantly reminded the participants that at any point they may ask questions about the study and remove themselves from the interview if they feel that it is necessary. Participants were informed of their right to withdraw from the study at any time in the research process, and were informed of their right to choose not to answer any question. Lastly, DiCicco-Bloom and Crabtree (2006) stress the importance that participants should not be exploited for personal gain. I expressed my gratitude to my participants and kept them informed about how my research is unfolding. I also presented them with a final copy of my research in hopes that they were are able to use the findings to better support their integration of a nature-based approach in their own classroom.

3.6 Methodological Limitations and Strengths

A qualitative approach is a valid research methodology, and is nor superior or inferior to quantitative research (Campbell, 2014). Marshall (1996) builds on to this idea by explaining that the research method should be determined by the research question. For this study, I wanted to learn how classroom teachers are implementing a nature-based approach; with this question I require the responses to involve personal experiences. In addition to this, since I have not been a classroom teacher, my participants may bring up information that I had not anticipated beforehand. Therefore, to best answer this research question a qualitative approach is the most
appropriate method for this study. The semi-structured interviews allow me to ask open-ended questions to my participants, this provides an opportunity for my interviewees to share personal experiences in regards to the study. In addition, by having face-to-face interviews I have the flexibility of altering the questions I asked based upon the responses I am given.

Although this qualitative research does have its strengths, there are some limitations to this study. For instance, in a qualitative study it is suggested that there is a potential risk of validity to the research, this is known as researcher bias. Due to the open-ended structure of a qualitative study it has been mentioned that a researcher can manipulate the results by being selective in their sample, the questions they ask, and by allowing their own personal views to come through (Johnson, 1997). In order to avoid this possible loss of validity Johnson (1997) recommends that a qualitative researcher constantly engages in critical self-reflection about their own personal biases and opinions. This step of engaging in self-reflexivity will encourage the researcher to be more aware of their biases and monitor them to ensure they do not come through in the research (Johnson, 1997). For the purpose of this qualitative research I will continually engage in the process of self-reflection, and have fellow teacher colleagues review my questions for the interview process (located in Appendix B) to help ensure that the questions are not leading. Moreover, another limitation of this research is that given the parameters of the MTRP we are only allowed to interview a few teachers, and it must not be done in a school setting. It would be beneficial to hear from more than just this small sample of teachers to see if their personal experiences are similar or if there are any major discrepancies. Given the small sample size, the findings from this study are not generalizable to a broader population. It would also be valuable to be able to observe the teachers in their classroom setting, this way it would be clearer as to how the teacher is able to incorporate natural experiences into their teaching practice, this
would also add greater significance to the research findings. Nonetheless, as DiCicco-Bloom and Crabtree (2006) mention when conducting semi-structured interviews in a qualitative study the interviews is usually the only data source. Another limitation of this restriction is the study lacks in diversity of viewpoints. It would be interesting to see how parents/caregivers feel about their child’s classroom teacher integrating natural experiences, as well as how students feel about the experiences.

3.7 Conclusion

In this chapter I began by reviewing the research methodology used for this study. I explained that this research is a qualitative study; I also explored the reasoning behind why this approach is best suited for this study. After, I explained that the main source of data collection for this qualitative study is semi-structured interviews with two classroom teachers. I also explored the benefits of having semi-structured interviews in regards to this study, for example this approach allows a researcher to ask open-ended questions that provide the opportunity for the participants to share personal experiences and examples (Campbell, 2014). Following this I provided the sampling criteria used to find participants for this study; teachers working in an Ontario elementary school for at least five years and is still active, have access to an outdoor setting, incorporate natural materials into their classroom, and committed to implementing a nature-based approach. Later, I shared the participant’s bios of the study to help the reader gain a better sense of who partook in the research and why they were an adequate interviewee. In addition to this, I stated that I would be using a form of convenience and purposeful sampling, and explained that due to the constraints of this research study these types of sampling were best suited to help get the required participants. I continued to explain how each interview would be transcribed and coded to look for individuals themes, before looking for commonalities amongst
the participants and the research. Subsequently, I reviewed ethical procedures that were taken into consideration such as; confidentiality of the participants, ensuring that no harm comes to the participants, the interviewees are aware of the context of the study, and that the individuals in the study are not exploiting for personal gain. Lastly, I stated the strengths of this qualitative study, such as being able to hear personal examples and observed outcomes of implementing a nature-based approach, while also acknowledging some limitations this study poses, for instance, possible researcher biases and lack of different viewpoints. In the next chapter, I report on the findings of the research.

CHAPTER FOUR: FINDINGS

4.0 Introduction to the Chapter

In this chapter, I present and discuss my findings that developed through data collected from two face-to-face, semi-structured interviews with Ontario elementary teachers who have aligned their teaching practice with a nature-based approach. The purpose of this qualitative research study is to explore strategies that elementary teachers have found useful and practical when integrating both outdoor learning experiences and bringing natural materials into their classroom, while making connections to the Ontario curriculum. In this section of the study, connections are drawn between participants' experiences and insights, and research outlined in Chapter Two literature review. The findings are organized into five main themes:

- Teacher participants indicated that they see the value in a nature-based approach and are able to find ways to incorporate this teaching style with the expectations of a traditional learning environment.
• Teacher participants recognize that there are numerous benefits in regards to students’ development and learning when they are given the opportunity to engage in meaningful outdoor experiences.

• Nature-based educators recognize that students do not always have accessibility to the outdoors, and use natural materials inside the classroom instead.

• Both teacher participants realize the value of using the outdoors to guide their students learning, and have found several strategies to apply when implementing outdoor learning experiences.

• Teacher participants indicated that they had no challenges to overcome when implementing a nature-based approach to learning, but advise precautions to avoid possible difficulties, in integrating nature with the traditional curriculum.

Within each theme there are also sub-themes that help to clarify and support the overall finding. With this knowledge, I hope to provide educators with a better understanding on how other teachers are able to implement aspects of nature with their teaching, regardless of the school location or the natural resources available to them. At the end of this chapter I will summarize my findings and make recommendations for next steps in the field of a nature-based education in elementary schools.

4.1 Teacher Participants Indicated that they see the Value in a Nature-Based Approach and are able to find ways to Incorporate this Teaching Style with the Expectations of a Traditional Learning Environment.

A supportive teacher can have a major influence on the types of opportunities children are exposed to. Typically the beliefs of the educators are what impacts the kinds of learning experiences teachers provide to their students. Both teacher participants expressed that a major
driving force for them to integrate natural experiences is due to the fact that they view the outdoors to be a positive influence on their student’s lives. For various reasons the educators felt that utilizing nature was an advantage for their students. Teacher participants saw the importance of the outdoors and identified numerous ways that they could use nature with the Ontario curriculum. First, both interviewees saw that they could use their appreciation for the environment and utilize it to enhance their students learning. Second, teacher participants acknowledged that aspects of outdoor learning experiences and using natural materials can be linked to the Ontario curriculum, especially in the area of science. Lastly, the educators recognized the importance of being able to assess students learning and how it can still be done but in a more informal way.

4.1.1 Educators implementing a nature-based approach have a deep appreciation for the outdoors, and view the environment as an advantage to their students learning.

Most often an educator’s teaching style is reflective of their own personal passions and desires. For Carol, it was an easy bridge between her private life as a farmer and her professional career as a teacher. In Carol’s words, speaking about her and her grade partners “we value the outside.” Carol went on to say that it is crucial for teachers to simply get outside and take advantage of what nature has to offer. It was clear that Carol’s appreciation for the outdoors came from a love of nature and her own experiences being outside. While Emma on the other hand, had a different appreciation for the outdoors, and saw this teaching style as a way to encourage students to value their surroundings and help to create a more sustainable future. Emma believed that “it’s a responsibility we [educators] instill in the students, so it’s a responsibility that they have that hopefully they bring with them when they are older and it’s trying to make a better place.” In Chapter Two it was mentioned that many teachers viewed
integrating natural experiences was extra work, too much effort, and unnecessary (Tal & Morag, 2013; Ernst, 2012; Riordan & Klein, 2010). However, in the case of Carol and Emma these views do not align with their own perception of outdoor learning. For Carol she stated “being outdoors makes learning happen so much more naturally with less work having to be put into it.” Emma echoed a similar idea as she shared “going outside helps my kids focus on the learning task, when I am inside it is harder for me to get them to pay attention.”

4.1.2 Teacher participants addressed that nature-based learning can be seen throughout all areas of the curriculum.

Carol being a full-day-kindergarten (FDK) teacher found that outdoor learning coincided with the philosophy of the FDK program, stating, “they [Ministry of Education] realize that the outdoors is your classroom” and the “FDK philosophy is to embrace the outdoors.” Carol went on to state that since FDK is inquiry-based and student-centered it was really easy for her to be able to connect students learning to the outdoors. More specific examples were given by Carol; for instance, in her class they used stones for patterning, and pebbles for estimation. While outside Carol encouraged students to bring notepads and sit on the stumps and to write about whatever comes to their mind, this is a Language Arts component. Teacher participants also indicated that the arts were an area that was easily linked to the curriculum as natural materials can be used to create wonderful art pieces. For example, Carol took her students on nature walks to collect natural materials that they were able to use indoors afterwards to create their own art piece. Similarly, Emma stated that when she was a kindergarten teacher she would also go on nature walks where students would gather materials “like an acorn, pinecones, or seeds, or anything they found that was interesting, they would make a collage with all of their natural materials and we would put a frame around it, this would showcase the beauty of nature.”
Moreover, Carol explained that her program had a placed a huge emphasis on integrating the outdoors with the science curriculum. For example, in their outdoor classroom the students found a chrysalis that they put into an incubator and students observed it hatch into a butterfly. This incident led into students learning about the life-cycle of a butterfly and habitats. Likewise, Emma noted that when she was a kindergarten teacher nature was a major influence in her science curriculum, and stated that she, too, would bring in cocoons and also did a lot of planting, although, with her junior students, Emma moved her focus to environmental education.

Over the last couple of years Emma has found that by connecting children to local environment issues it gives her students a voice. Each year Emma takes her students around the local school community and they “look for ways to improve the environment.” Once the students have chosen what area can be enhanced this becomes the big project of the year, with cross-curricular connections. For example, in the previous school year Emma’s students noticed a lot of garbage in their school community, so the students wrote a persuasive letter to the councilor in the area. The councilor received all of these letters and had the garbage removed from there and a sign was posted that there would be a fine if anyone litters. Emma explained that the role of nature in education is for students to share their voice because I keep telling them they have a strong voice and your opinion matters… it’s a responsibility that they have and they hopefully will bring with them when they are older, it’s trying to make it a better place.

Emma’s views on the importance of bring students outdoors and promoting environmental education align closely with the aim of the Ontario policy framework *Acting Today, Shaping Tomorrow* (2009) which is to promote students understanding of the environment and also
encourage environmental responsibility among everyone. Emma also identified another way of connecting outdoor experiences to language by integrating procedural writing. An example of this is when planting students can record the steps that are included with this task. Moreover, Emma indicated that one challenge she has faced with integrating natural experiences is that the curriculum is not nature-based, and “at times it can be hard to merge the two together.”

Similarly, in Chapter Two it was noted that in Dyment’s (2005) research study she discovered that many teachers did not see links between the outdoors and the curriculum. In spite of this finding, Carol was able to find numerous connections to the curriculum, and Emma had initial difficulty but was able to move past this challenge and make links between the two areas. The experiences shared by Carol and Emma show that it is possible for teachers to plan nature-based experiences that make connections between the outdoors and the Ontario curriculum. In addition to this, Dyment’s (2005) findings also show that numerous of these curricular connections were in the area of Science; however, Carol and Emma found links to Language Arts, Mathematics, Science, and The Arts. These curricular connections made by Carol and Emma will be revisited later on in this chapter.

4.1.3 Nature-based educators utilize more informal assessments when implementing outdoor learning experiences.

Both teacher participants indicated that assessments are a major focus for the Ontario curriculum and found that in regards to outdoor education, informal assessments were more applicable. Carol and Emma believed that oral communication from students was a valuable way to gauge student’s understanding. In addition to this, it was noted that observations and anecdotal notes were important assessment tools. Carol expressed that since adapting to a nature-based approach she found that she constantly would take pictures of students outside engaging in
learning experiences. Carol also reported that a useful assessment tool was to have students record their learning, either by students writing down the learning that took place on the printed pictures she took or journal entries after students were done outside. Additionally, teacher participants stated that the use of KWL (Know, Wonder, Learn) charts and wind charts were helpful when assessing student’s understanding. These charts were completed either individually on paper, or as a whole class through verbal discussions. As mentioned above, Carol conducted a science inquiry based on the life cycle of a butterfly. From this a KWL was used, a student communicated to Carol that “I know I learned the life cycle, and I know it started as a caterpillar, went into the chrysalis, it was a metamorphosis, and there’s a caterpillar,” Carol stated “there’s the assessment.” Moreover, Emma found that with her students another way to assess their knowledge was by having her junior students create a presentation on their big environmental project that was described earlier, and had her students presented to other grades. In Chapter Two it was noted that many teachers felt pressured to teach to standardized testing, leaving little room for outdoor education (Dyment, 2005). Neither participant shared this idea, but found instead that through their ongoing informal assessments they were able to recognize students’ knowledge. Being able to consistently check in on students learning helped the participants to create standardized tests and formal assessments when needed.

4.2 Teacher Participants Recognize that there are Numerous Benefits in Regards to Students’ Development and Learning when they are Given the Opportunity to Engage in Meaningful Outdoor Experiences.

Both participants spoke of several benefits that they had witnessed when engaged in outdoor education, and the overall impact a nature-based approach had on students’ growth. More specifically, participants highlighted that they were able to see an increase in students’
whole development. Secondly, participants believed that by simply being outdoors it was an advantage to students learning as the environment itself provided various advantages to children’s learning. Lastly, both teachers reported that there was a rise in positive feelings in their students when being in the outside environment. In addition to this, it is important to note that the participants acknowledged that they had students in their classroom with and without exceptionalities; regardless of the child’s learning needs, the benefits were consistent amongst their students.

4.2.1 **Nature-based educators believe that students overall development is enhanced when exposed to nature as the outdoor classroom.**

The importance of having students exposed to the outdoors was an idea that was accredited throughout both interviews. For Carol, she had recognized early on in her teaching career that “kids love outside,” with her students having such a passion for playing outdoors Carol decided to explore what possible benefits this approach had. Throughout her duration of teaching she was able to observe numerous benefits come from her students, these benefits seemed to be repeated every year regardless of the dynamic of the children she had in the school year. Carol summed it up by explaining that her belief behind students having opportunities to learn with and in nature is that “it helps children become whole.” This idea was echoed by Emma who believed that children grow in all areas of their development when being able to interact and connect with nature. An additional benefit highlighted by Carol and Emma was that they noticed an increase in almost all of their student’s attention spans. Emma acknowledged that with her group of students she had many students who were identified to have behavioural challenges. Emma discovered that while in the outdoor environment the challenging behaviours of her students decreased as they became more focused on learning and enjoying the fresh air. Carol
shared the same finding as she noticed with her students the children were able to concentrate, and follow through with their learning as they were more focused on the task when outdoors.

Correspondingly, research in the field of students exposed to natural materials and environments shows evidence that supports the ideas expressed by the participants. Much of the findings in such studies show evidence that children who have opportunities to engage in a natural environment can lead to enhanced cognitive abilities and improved physical and social/emotional health (Driessnack, 2009; Wilson, 1997; Rios & Brewer, 2014; White, 2004; & Fjortoft, 2001, as cited by Dowdell et al., 2011). Emma and Carol reported that they found an increase in their students learning and understanding of the material when it was connected to the outdoors, children had numerous opportunities to climb and run around as the open space allowed for it, they observed an increase in positive emotions and behaviours, along with greater interactions amongst peers. Moreover, Dyment (2005) found in her research study that there was a belief held by many educators that with outdoor classroom “there is less control of students and it is harder to teach in that environment” (as cited by Dyment, 2005, p.38); despite this assumption, Carol and Emma found there to be more control. Additionally, self-discipline, self-regulation, as well as, increased attention spans and improved concentration were consistently noted in research findings (Driessnack, 2009; & Dowdell et al., 2011), which supports the observations made by both participants.

4.2.2 Teacher participants addressed that the outdoor environment creates greater opportunities for students’ learning.

Both educators agree that, by utilizing the outdoor school environment and the natural materials they find around them, they were able to increase the type of play and learning their students have. As Carol stated, “kids’ brains are far more in-tuned to learning when they’ve been
able to be outside and when they can touch things and discover things on their own and instead of just learning with paper and pencil.” This statement aligns closely with Waite’s (2011) research as it was noted that the outdoors provides different elements and more flexible resources that allow students to experiment and engage in more hands-on learning. In addition to this it was expressed from Carol that by being outside, especially since their outdoor classroom opened up, she found that “many wonderful things emerge” and the environment is “just so open-ended,” which supported students in more complex play behaviours and endless learning opportunities. Furthermore, Carol acknowledged that with the FDK program being focused on student-inquiry, utilizing the outside and natural materials helped to enhance her emphasis on inquiry in her classroom. For instance, a student had found a bird feather outdoors; this material led the students into exploring what birds are around their community, researching the different kinds of birds and who the feather belonged to, creating bird’s nests, how birds survive cold winters, and even painting with bird feathers. Similarly, Emma shared the idea of student discovery but for her it was more centered on environmental education.

As discussed earlier, for Emma the highlight for her program was environmental sustainability. Since bringing students outside Emma observed there was an increase in students holding positive views towards the environment and creating a greater connection between themselves and nature. Emma reported that her students became more gentle when interacting with the environment and she could see a change in her students as they treated “the outdoors with more respect” as they held a “positive attitude toward the environment.” Research suggest that the most important factor in developing a personal concern for the environment comes from active participation in the outdoors and manipulating natural materials, as it helps students gain knowledge about the environment and grow feelings of connectedness (Wilson, 1997; & CCL,
2009). Mentioned above, Emma provided opportunities for her students to have an influence on
their local environment; this helps students to observe the impact their actions have which is
shown to be one of the most effective ways of reaching students and increasing their
environmental awareness (Ballantyne & Packer, 2010).

4.2.3 Educators expressed that when their students are outside learning, children have
more positive feelings about themselves and how they view learning.

Although educators cannot clearly identify what students are feeling, there are indicators
that can be observed that help teachers gauge if students are enjoying their learning; such as
engagement, facial expressions, and comments made by the students themselves. Carol
recognized that when she spends the majority of the day implementing learning experiences in
the outdoor classroom the students seemed to have more fun compared to school days that was
mainly indoors due to weather restraints. Carol also expressed that the best thing about bringing
her students outdoors was “just the wonder and the excitement in their [student’s] eyes, that’s
awesome itself.” Moreover, Emma proclaimed more individualistic feelings her students gained
from interacting and learning in a natural environment. In Emma’s view having students being
able to make a difference in something in their school community, such as litter, gives her
students a boost in their self-esteem, as they are able to see first-hand the impact their actions
make. In addition to this, Emma admitted that, after completing their environmental project, her
students felt empowered. Due to the constraints of this research study, students were unable to
report on their own feelings; however, Carol and Emma give a good overview of what a child
may be feeling when learning with a nature-based approach. In Chapter Two there was no
indication of students perceptions on outdoor learning, Carol and Emma’s ideas help to give a
sense of how children perceive nature-based programming.
4.3 Nature-Based Educators Recognize that Students do not Always have Accessibility to the Outdoors, and use Natural Materials Inside the Classroom Instead.

Emma’s school environment lacked in natural green space; because of this it required Emma to become more creative when integrating nature-based education. For instance, providing space for students to write near some of the trees located in the schoolyard, or when possible going on walks around the school community. In addition to this, Emma would find ways to bring nature into her classroom, so that her students were constantly having exposure to the outdoors. For instance Emma would always have loose materials around the room for students to use, especially in art, for example using bark to make picture frames. In addition to this, in Emma’s classroom she always would have “plants and wood pieces around the room,” the students would “help to take care of the planting.”

Similarly, Carol also stressed the importance of having natural materials inside her classroom, with planting also being one way of doing so. Along with having various plants around the classroom, Carol explained that each year she would “put beans into plastic bags with paper towel and we [Carol and her students] hung them up on the window, and would watch them sprout.” After the beans had sprouted, Carol would transplant the beans and have them climbing up the trellis located inside their classroom. Resembling Emma’s loose materials art, Carol also provided her students with natural materials in the classroom that they would use to make art pieces, some of which got hung on a big branch above their cubby area. Likewise, Carol had loose natural materials available in the classroom for other curriculum areas, such as, making patterns with the materials, stones with the alphabet, and pebbles for estimation. Furthermore, Carol spoke of the use of the windows in her classroom, as she suggested that classrooms should use as much natural light as possible. Carol acknowledged that she was
fortunate enough to have a significant amount of windows in her classroom, and due to the location of the school and where her classroom was situated she was able to have wonderful natural views for her students. Since Carol was fortunate enough to have these views she used them to her full advantage. In particular, Carol would put birdhouses outside along the windows “to try and invite birds in so we can watch birds from our window.” Additionally, Carol described that she purposely set-up her science-inquiry table right up against the window, students referred to this area as the sunshine table. Carol explained that students’ inquiry was typically based on a topic of nature, with this in mind she would leave out books and materials related to the current inquiry. It was helpful for Carol to have this natural inquiry by a window to further support students learning. In one example Carol spoke of how the season of winter is usually explored after the first snowfall; Carol would set-up her science inquiry accordingly, and while students learned about winter they were able to make the connections to the snow and trees they were viewing from right outside their window. Carol summed up the importance of bringing nature indoors by stating that, it is important to use what is “right outside our door and bringing it in to guide us in our learning.” It is evident that both interviewees realize that using nature as a teaching tool does not have to be isolated to learning outdoors; educators can find ways to incorporate aspects of nature into students learning experiences inside the classroom.

Chapter Two described that a visit to typical school grounds in Ontario shows a less “green” environment, thus making it difficult for educators to plan learning opportunities as the quality of these schoolyards are poorly designed and limit the amount of learning experiences students engage in (Wilson, 1997). Emma’s description of her school yard closely relates to the research on Ontario school environments. Despite these claims, it was found that Emma was able to find ways to integrate nature by bringing natural materials inside her classroom.
supports nature-based educators, such as Carol and Emma, in bringing natural materials indoors, as numerous studies have shown evidence that there is a positive correlation with a child’s whole development when simply exposed to natural materials regardless of the setting (Dowdell, et al., 2011; Lugg, 1990; CCL, 2009; Driessnack, 2009; Wilson, 1997; Rios & Brewer, 2014; Swiderski, 2006; Ernst, 2012; Dyment & Bell, 2008). In regards to utilizing classroom windows, Dyment (2005) concluded that having nature visible through a window and using natural light can also lead to positive impacts of student’s overall development. Participants indicated that they were fortunate enough to have numerous classroom windows and would constantly use natural light over fluorescent lights.

4.4 Both Teacher Participants Realize the Value of Using the Outdoors to Guide their Students’ Learning, and have Found Several Strategies to apply when Implementing Outdoor Learning Experiences.

Carol and Emma have demonstrated a strong passion and desire to find ways to incorporate the environment with the Ontario curriculum. It is important to note that the participants for this research study work in schools that are completely different from one another, in terms of the school location, the type of schoolyard, and the access they have to natural elements. Despite these major differences, Carol and Emma have been able to find strategies that allow them to implement nature-based learning. First, teacher participants highlighted the significance of making the most out of the resources available to educators, regardless of the quantity of natural elements. Furthermore, both interviewees agree that when integrating a nature-based approach in elementary schools it should be student led. In addition to this, Carol explained how her personal life has an impact on her connection to the environment and plays a critical role when implementing outdoor learning experiences.
4.4.1 Nature-based educators recognize that the location of the elementary school and the resources available to the teachers plays a critical role when bringing students outside to engage in meaningful learning opportunities.

Aforementioned in Chapter Three, the school in which Carol was teaching is located in which she describes as “in the middle of a corn field, more or less, on a beautiful rural property”. In addition to having access to an enormous amount of greenery, large grass areas, mud/sand pits, hundreds of trees, and a small forest, Carol has been a team leader at her school and with the help of her husband and other colleagues she has used the advantages of her school and created an outdoor classroom. Recalling Chapter Three, the outdoor classroom is the outside environment which teachers have set-up to allow for formal learning outside to happen. As Carol stated, “It [the outdoor classroom] is a beautiful… beautiful thing, and it’s ongoing, we [school staff] have a real focus on learning outside.” Moreover, Carol went into detail about how she has gotten the most out of her outdoor learning space, for instance, Carol had her husband bring in “beautiful tree stumps for children to sit on while they’re taking notes or to sit on while watching the teacher use the board that’s outdoors.” In addition to the tree stumps, in the outdoor classroom there are planters that all students in the school are able to take care of and observe grow; there is a fossil dig in one area, an apple tree, and “little natural waterways in the spring.” Furthermore, along the fencing of the playground Carol installed hoses, funnels, and tubes, for children to explore, for instance using this water wall for measurement.

Moreover, an important issue that Carol brought up was that many FDK programs in most Ontario schools have children in kindergarten in a fenced area, with minimal to no green spaces. Emma could relate to this as unfortunately her school had minimal exposure to natural materials, and the school had no plans in greening. Even though Emma had less green areas
available to her, similar to Carol, she utilized what was available to her when implementing outdoor learning experiences. For example, with permission from the principal and the parents/caregivers of her students, she would go on walks around the school community and explore natural areas that were around them, such as; “a nearby park, which has a river running right through it.” Additionally, Emma emphasized the importance of being prepared, especially when going outdoors to engage in meaningful experiences. As earlier noted, Emma takes on an issue each school year, such as the litter, in order to keep her student on task when outdoors. Emma co-created a checklist for her students consisting of “items we feel we should look for, if things are unsafe, aren’t clean, if things are just visually unappealing, cut the grass, and other things they can go around and look for.” Emma believed that by having the checklist she was able to have her students focused on the task. This strategy of being prepared when going outdoors is echoed by Carol. As mentioned above, Carol encourages students to bring out notepads for writing purposes, along with iPads to document students’ creations and learning. As outlined in 4.1.3, being able to document students’ learning is an important tool when assessing outdoor education. Additionally, Carol discussed using what students find outside (sticks, for example), can be used with her FDK students to practice writing their name in the dirt, or to collect and make a bird’s nest. The most crucial takeaway that both participants shared is that nature-based education can happen in any Ontario elementary school regardless of the environment the school is situated on. Expressed by Emma, who has less access to natural spaces, “you can do it anywhere, your school doesn’t need to be in the middle of a forest, it doesn’t need to be near all these trees and what not, you can do it anywhere.” Similarly, Carol who has availability to a high range of green area stated that nature-based education “can happen anywhere, you just got to know your surroundings, and how you can adapt to it.” It was evident
in the literature review in Chapter Two that many of the studies focused on schools that were exposed to an abundance of green space. Carol and Emma explained that in their experiences the school location had little to do with implementing a nature-based approach, as this program can happen anywhere.

As Dyment (2005) pointed out in her research “When a green school ground is not used as an outdoor classroom, important opportunities to maximize the potential are lost” (p.42). Luckily for Carol’s students, the school has taken full benefit of their schoolyard. Similarly, Wilson (1997) found that it would be beneficial to have schoolyards that are “esthetically pleasing natural environments where young children can manipulate and explore” (p.192). Carol’s school ground aligns with Wilson’s (1997) description, and the outdoor classroom provides just what Wilson (1997) believed schoolyards are intended to be. Furthermore, in a Canadian based study it was found that 84% of participants found that since greening their schoolyards, students were encouraged to explore their natural world, increased their physical activity, and were more engaged in learning experiences (Dyment & Bell, 2008). Nonetheless, Emma’s school did not have an abundance of green exposure; however, the strategy Emma employed of exploring the neighbourhood coincides with one of the fundamental principles of EE, which involves students examining issues within the local environment (Seema et al., 2014).

4.4.2 Both interviewees facilitate an approach to nature-based learning that is led by their students, through focused questions and in-tune observations of the children.

Through her numerous years of teaching a variety of grades and programs Emma has found that the most important element when initiating outdoor learning experiences is that they are led by the students. Emma stated that educators should “let the kids take the lead, find out what they want to do, find out what is important to them, find out what their goals are about
nature, and have a discussion around it.” Emma continued with this belief by communicating that a teacher must follow what the students are into:

support what they are saying, work around what they are interested in, it will be a lot easier, life will be a lot simpler. If it comes from students they will be more engaged … just try and get outside whenever you can, and the learning will just follow.

Likewise, Carol who has been teaching in the primary grades for a number of years, shares the same approach that nature-based education should be guided by the students. Carol expressed the importance of using observation skills to understand and document students learning, accompanied with careful questioning an educator can expand on students own curiosity. For instance, Carol explains that something as simple as finding a stone that a student believes looks like a dinosaur tooth can lead into a whole inquiry around dinosaurs. This interest can then be utilized to its full potential by connecting it to areas of the curriculum and taking on a cross-curricular dinosaur inquiry. Dyment (2005) found in her research that learning outdoors can sometimes create more meaningful learning experiences, as this informal environment can inherently inspire students to participate in the lessons and the curriculum. Similarly, Carol and Emma shared that when learning with their students’ interests in mind they observed a higher increase in engagement and willingness to participate in the learning tasks.

4.4.3 One teacher participant expressed that educators’ personal views on nature can have an impact on how teachers approach outdoor learning experiences.

Carol excitedly proclaimed during the interview, “that’s it, it’s my lifestyle!” when referring to the connection between her home life and teaching practices. For Carol using the outdoors to guide students’ learning was something she always had a passion for. Carol grew up always being outdoors; from very early on in her life she had a connection with nature and
enjoyed engaging in activities outside. Once Carol began teaching she was always looking for ways to incorporate her love for the outdoors, along with her love for teaching. At the end of the school day Carol goes to her home which is situated on an agricultural area. Carol describes her house as being located in a farming community, as her husband is a farmer. Carol found that when adapting to a nature-based approach she was able to blend her personal life with teaching, and share with her students all she knows about the environment. Carol recognized that not all teachers share her passion for nature, and come from different lifestyles. Therefore, Carol believed that it is “difficult for some teachers that have a certain feeling about nature, you have to stay in here [inside the classroom], outside isn’t safe, outside you get dirty, and the children scatter.” Carol shared a story about a FDK colleague she worked with who held some of these views. Recently the school got a new FDK teacher who came from teaching in an urban area and her home is located in the suburbs. For this teacher, nature-based education was a new concept to her, which Carol guided her through the approach. The advice Carol gave to this new teacher was “you have to just embrace it and wait and see what wonders await.” Through modeling what a nature-based approach looks like to this FDK teacher, her views began to shift as she saw the value in using the outdoors to create learning experiences. As Carol declared “she now embraces the outdoor learning and is full of new ideas.”

Carols belief about some teachers viewing the outdoor learning environment as difficult corresponded with Dyment’s (2005) research, who found that some teachers prefer indoor classrooms. Teachers from the study reported that indoor classrooms offer familiarity and security. Many of the participants of this study also indicated that they felt unsuccessful at teaching outdoors, and that they would lose control of their students (Dyment, 2005). In addition to this, Carol’s story about her FDK colleague aligns closely with Dyment’s (2005) findings, yet
Carol explained how this teacher was able to shift her perceptions around nature-based learning. With more exposure and guidance to nature-based learning, teachers are able to see how effective this type of learning can be.

4.5 **Teacher Participants Indicated that they had no Challenges to Overcome when Implementing a Nature-Based Approach to Learning, but Advise Precautions to Avoid Possible Difficulties in Integrating Nature with the Traditional Curriculum.**

Both Carol and Emma reported that they personally did not encounter any issues when implementing a nature-based approach with their students. Nevertheless, participants shared insights on how new teachers to nature-based learning can overcome possible challenges, and what obstacles may arise. This section highlights strategies teachers can utilize when integrating outdoor learning in an Ontario elementary school. Nature-based educators emphasize the importance of communicating with the families in regards to what their program entails and the expectations of them and the children. Secondly, participants suggested that nature-based educators should work collaboratively with administration in order for the program to run smoothly. Lastly, teacher participants claimed that access to the outdoors can likely be an obstacle for new teachers to overcome when wanting to implement a nature-based approach.

4.5.1 **Both interviewees acknowledge that parents/caregivers’ perceptions on outdoor education can impact its implementation, and advised that communication is vital.**

Carol stressed that the “key for any good relationship is communication” and she applied this notion to her relationships with the parents/caregivers of her students. Carol hinted towards parents/caregivers becoming a potential source of problems if they do not understand the nature-based approach or bring students to school unprepared for the outdoors. To avoid any possible challenges with parents/caregivers, Carol says she would communicate:
with parents all the time, by writing in agendas about different things that happened in the
day, and they [parents/caregivers realize wow we’re outside and the kids go home dirty
but we’ve said when your child comes home dirty it means they’ve had a good day.

In addition to this, at the beginning of the school year, Carol would invite parents into the
classroom and explain what nature-based learning entails, and address what learning experiences
students will have the opportunity to engage in. Furthermore, during this time, Carol reminds
parents/caregivers of the Ontario seasons and that they will be going outside unless there is
extreme weather conditions, thus students must come to school fully equipped in the appropriate
clothing for the weather that day. Throughout the duration of the school year, Carol would send
home reminders to parents about what type of clothing is needed, especially during seasonal
changes.

Similarly, Emma reminisced about her years teaching kindergarten and shared the same
insights as Carol that teachers need to communicate with parents/caregivers. Emma mentioned
the viewpoints of some parent/caregivers she has dealt with in the past when teaching in
kindergarten. Emma identified that some parents/caregivers would not want their child going
outdoors during the winter months and would say, “Please don’t let my child go out its too cold.”
In order to deal with this Emma would discuss with parents/caregivers through face-to-face
interactions and newsletters the importance of sending their child to school in appropriate
outdoor clothing as they will be heading outside most days. Emma also communicated that if the
child is dressed warmly they will enjoy playing outdoors; nonetheless, during extreme cold
students would be kept inside. Furthermore, since Emma was teaching at a lower income school,
she would also have in her class extra outdoor clothing, such as hats, scarfs, and mittens for
children who either forget a certain item or did not have it.
It is important to highlight that the importance of communicating with parents/caregivers did not arise in the Chapter Two literature review; however, the importance of doing so to avoid challenges when implementing a nature-based approach arose from both participants. Moreover, in Chapter Three, when discussing the limitations of this research it was pointed out that due to the nature of this study the paper lacks in diversity as parents/caregivers viewpoints are not heard. Through Emma’s perception we are able to gain a sense of a viewpoint some parents/caregivers may hold.

4.5.2 Nature-based educators need to work collaboratively with administration as their views can interfere with using the outdoors as an informal learning environment.

In terms of administration Carol noted that at her school her principal is on board with a nature-based approach in all grades. In Carol’s words, “the principal is totally into it.” Carol shared that since her school principal advocated for nature-based learning it made creating outdoor experiences much easier. Likewise, Emma recognized that the using the outdoors as a learning environment was easy to implement at her school since the principal supported the approach. Nonetheless, Emma cautioned that it is important for a teacher to know their school regulations and let administration know when their class will be outside, and follow all safety procedures and perimeters of the school. By doing so nature-based educators can avoid possible challenges from arising with their administration. Additionally, a supporting factor for both participants that was outlined in Chapter Three is that their schools are eco-schools. Nature-based education has underlining principles that correspond with the fundamentals of an eco-school. Thus, having teachers utilizing the outdoors would be a good indicator for administration that their teachers are following through on one of the schools focuses.
Having supporting principals in the school is an important factor when implementing a nature-based approach as an elementary school principal plays a major role in influencing aspects of integrating nature (Wenzhong, 2004). To build onto this, Dyment’s (2005) research found that many teachers in her study did not have the support of their school principal; due to this factor, many teachers reported that they were unsuccessful in integrating outdoor learning experiences. However, with Carol and Emma having principal support they were able to successfully implement nature-based learning, which may have contributed to its success.

4.6 Conclusion

In conclusion, this study found that there is no universal way of implementing a nature-based approach in Ontario elementary schools. There are several factors that affect how a teacher integrates natural experiences with their student’s learning. It is evident from this chapter that both participants have many differences between them that impact how their program differs from one another. For instance, Carol is located in a rural area, with access to an outdoor classroom and an abundance amount of greenery. In addition to this, Carol is a FDK teacher where the philosophy embraces learning in the outdoors. In contrast, Emma’s school is located in a suburban area with less access to greenery, as a junior teacher her curriculum documents do not give a very in-depth guide to learning outside. Nonetheless, both participants reported on ways in which they were able to implement a nature-based approach in their schools. For instance, interviewees highlighted ways in which they incorporated outdoor learning with curriculum expectations, and strategies to assess students learning, which include more informal assessments such as KWL charts, observations, picture documentation, checklists, and verbal communication. In addition to this, participants indicated ways they were able to bring elements of the outdoors
indoor their classroom, for example, by utilizing the windows in the class, having plants, and loose natural materials available for students to manipulate.

Much of the research in nature-based education focuses on the importance of this approach and the perceived benefits, along with possible challenges that can arise when adapting to this teaching style. What was lacking in the research was how teachers would go about implementing a nature-based approach in their elementary school; regardless of the location. The findings from this study contribute to the research as participants addressed strategies that they have found helpful when integrating outdoor learning experiences, and ways in which they bring nature inside their classroom. This research study accomplishes the purpose that I initially set out to do, which is learn how Ontario elementary teachers implement a nature-based approach. The strategies I have provided supported elementary teachers in implementing a nature-based approach. In Chapter Five, I discuss the implications of my research study and my recommendations for the educational community.

CHAPTER FIVE: CONCLUSION

5.0 Introduction to the Chapter

In this chapter, I discuss the general implications and significance of my research study. I begin by reviewing my key findings on how elementary classroom teachers are able to implement a nature-based approach in their schools. Then, I discuss the implications of these findings, both for the educational community along with my own teaching practice and as a researcher. With this in mind I make recommendations, which may be utilized by other educational professions, such as teachers, designated early childhood educators, schools, and
school boards. Next, I explore areas where further research is needed. Finally, I conclude by summarizing my key findings and addressing their significance.

5.1 Overview of Key Findings and Their Significance

As discussed in Chapter Four of this study, nature-based educators see value in integrating the environment with students learning. Both participants believed that by utilizing the outdoors it would positively impact their students’ life. Additionally, both teachers indicated that through their experiences they observed their students grow an appreciation for the outdoors. Teacher participants expressed that the views of the teacher have a major influence on implementing an effective nature-based program. Participants agreed that it was vital for teachers to be motivated and have a desire to want to integrate a nature-based approach. If a teacher expresses disinterest or negative feelings towards the environment this in turn will impact the students view on learning in the outdoors.

Furthermore, teacher participants emphasized that when adapting to nature-based approach educators can make numerous connections to the Ontario elementary curriculum. Teacher participants highlighted links that they made in their own teaching practices, such as; Language, Mathematics, The Arts, and Science. -In addition to this, the participants identified that, due to the nature of this type of approach, more informal assessments had been used to check for students’ learning and understanding. Some informal assessments that were mentioned are using KWL (Know, Wonder, Learn) charts, observations, anecdotal notes, picture documentation, and verbal communication. Since adapting to a nature-based approach participants reported that they had seen numerous benefits in the groups of students they had taught over the years. Teacher participants shared that they saw an increase in the attention span
of almost all of their students, including those with exceptionalities, along with students showing excitement and willingness to learn.

Teacher participants came from very diverse school environments and therefore had different access in terms of natural materials and green spaces. Regardless of this significant difference, both teachers were able to integrate a nature-based approach. Carol’s school was situated in a rural area and used this to her advantage by creating an outdoor classroom that students were able to utilize every day. Emma’s school was located in an area that had minimal green spaces. Despite this limitation, Emma was able to find other ways to integrate nature, one of which was utilizing local areas in the neighbourhood and taking her students on walks off of school grounds. In addition to this, teacher participants indicated that an important component of a nature-based approach is to bring natural materials into the classroom. Suggestions from the educators included; having plants around the room, having students do their own form of indoor planting, using natural materials such as pine cones, twigs, leaves, and rocks as loose materials, and using sturdy branches to hang natural materials. Teacher participants also identified that using natural light and taking advantage of classroom windows was vital. Teacher participants were in agreement that a nature-based approach should be student-centered as this type of learning will engage the students and lead to more positive outcomes. Moreover, nature-based educators recognized that the school administration and parents/caregivers can also be a contributing factor to how effectively the approach is integrated. Since this type of learning involves being out in the schoolyard it is important that the principal is on board with educators utilizing the outdoors as a learning space. Parents/caregivers should also be informed about the learning opportunities that take place outside so that they send their children to school in weather appropriate clothing.
5.2 Implications

In this section, I outline the implications of my research for both those in the educational community—including teachers, designated early childhood educators, and school boards. Next, I discuss the implications my findings have on my own teaching practice, as well as a researcher.

5.2.1 The educational community

The literature on natural learning opportunities, along with my participants’ experiences highlight the importance of integrating natural experiences across all elementary schools. Through the literature it was emphasized that by providing children with various opportunities to interact with nature it can lead to numerous benefits across all domains (Dowdell et al., 2011; Lugg, 1999; CCL, 2009; Driessnack, 2009; Wilson, 1997; Rios & Brewer, 2014; Swiderski, 2006; Ernst, 2012; Dyment & Bell, 2008). This finding was echoed by teacher participants as they observed their students being positively impacted by a nature-based approach. The strategies that were highlighted by teacher participants can be applicable to almost any elementary school setting. In 2009, a policy framework by the Ontario Ministry of Education called Acting Today, Shaping Tomorrow was put into place. This particular document is acknowledged that EE is imperative to students’ learning and must be taught, along with stating actions the Ministry of Education and schools will take to promote this goal (Ontario Ministry of Education, 2009). With this policy in effect in Ontario many educators are starting to integrate natural learning opportunities into their teaching practice. Thus, the findings of this study have a great significance to the educational community. Both participants acknowledged that in order for this approach to be effective it was crucial that they had the support of school administration and parents/caregivers. Specifically, in order for teachers to be able to take students out of their
regular classroom and go outdoors to learn it is important for the principal to be supportive of this approach.

5.2.2 Implications for myself as a teacher and a researcher

In this section I identify and discuss the implications for me as a teacher and as a researcher. I have gained a deeper understanding of what it is like to be a nature-based educator in an elementary school setting. I am mindful that with Ontario being so diverse in terms of school grounds that throughout my teaching career I may work at schools that have varying natural exposure. Regardless of what school I am teaching in I am aware that I can still implement a nature-based approach. I am confident that I have furthered my own knowledge in this field and am equipped with numerous teaching strategies to use in my own classroom. I have a deeper understanding that my own attitudes towards the outdoors can either positively or negatively impact my students’ perceptions on the environment and their overall success of a nature-based approach. With this I am committed to be reflective of my own personal attitudes and I am dedicated to constantly finding ways to connect the outdoors with my students learning and make the links between the environment and the curriculum. What I have learned from this study will also impact myself as a researcher. I consider myself to be a life-long learner; this research study is only the mere beginnings for me in gaining a sense of not only the importance of providing children with opportunities to interact with the natural world, but also how to implement these experiences in a school setting. As the field is constantly evolving it is important for me to continuously research this area and continue to find ways to implement a nature-based approach. The more research that is done in this field the more strategies and implications will come of it, my teaching practice will constantly have to shift in order to
accommodate for these new learning’s. I am committed to stay updated in this area and also continue to do my own research in this field.

5.3 Recommendations

In order for a nature-based approach to be more prominent in schools greater awareness of the benefits of this program needs to spread, along with a coherent guide on how to implement this approach. I have organized my teaching practice into three key areas: school boards, teachers and designated early childhood educators, and parents/caregivers.

5.3.1 School boards

- It is important the school boards and those in administration permit teachers to have access to the outdoors throughout the school day, and encourage teachers to create learning experiences that move beyond the four walls of a traditional classroom.
- Provide funding to utilize the green spaces on the schoolyard to turn it into an outdoor classroom. For schools that have minimal green spaces provide funding to allow the school to adapt the ‘greening’ movement that is outline in Chapter Two.
- Provide teachers with natural resources that they are able to bring into the classroom and use for students exploration.
- Provide workshops to teachers and designated early childhood educators that highlight the benefits children can receive by being exposed to nature, along with providing the staff with a comprehensive guide on how they can implement a nature-based approach in their own school. These guides should be applicable to all staff regardless of where their school is situated and what grade they are teaching.
5.3.2 Teachers and designated early childhood educators

- Create more nature-based opportunities for students; take students outside and create connections to their learning. Using the strategies outlined in Chapter Four educators can implement various learning opportunities with their students while still making links to the Ontario curriculum.

- Find ways to incorporate natural materials in the classroom, and allow students to use these materials to manipulate and for self-exploration.

- If applicable use classroom windows to let in natural light and invite students to make connections between observations they make from the window view to the learning that is taking place in the classroom.

- If applicable attend workshops that support educators in implementing a nature-based approach.

- Have open and regular communication with school principal and parents/caregivers so that everyone is supportive of a nature-based approach.

- Model to students how to be prepared for the outdoors – dress in weather appropriate clothing.

- Show positive attitudes towards the outdoors to encourage students to have positive interactions and perceptions of outdoor learning.

5.3.3 Parents/caregivers

- Send children to school every day in weather appropriate clothing to ensure they can have active participation in the outdoors and that their clothing does not hinder their learning.

- Hold positive attitudes about students learning outdoors and encourage your child to view the outdoors as a fun place to learn.
• Extend children’s learning by taking them to natural places that are around their home and help them research topics they are interested in. Encourage your child to take photographs of the natural areas they see, and bring in natural materials that they find to share their learning with their teacher and peers.

5.4 Areas for Further Research

In this section I outline areas for further research based on what I have learned from my research findings. One area for further research is the benefits of exposing children in junior grades to nature-based opportunities. Much of the literature has a significant emphasis on the importance of having children in the early years interacting with the environment and the outcomes of doing so. There is minimal research that is done on older children and if they also reap the same benefits of younger children or if their outcomes differ. Although I did learn about strategies my teacher participants used in order to create natural learning experiences and make connections to the curriculum I believe further research can be done in this area.

Both participants indicated that they had a principal who was on board and supportive parents/caregivers, they also acknowledged that communication with these parties was vital. However, this study was not able to address strategies and solutions for teachers who are have principals or parents/caregivers that are challenging their implementation of a nature-based approach. As a result, this would be an area that requires further research.

Lastly, while both participants made connections between nature-based education and certain curriculum subjects, some other subjects were not addressed such as Social Studies and Health & Physical Education. Thus, another area that requires further research is how a nature-based approach can make connections to these subjects.
5.5 Concluding Comments

In this chapter, I provided a short summary of my findings as outlined in Chapter Four, which included teachers who have a passion to educate using the outdoors and their commitment to integrating a nature-based approach. In addition to this, nature-based educators find this approach to learning to be rewarding for their students, as they find their class benefits greatly from this program and have higher engagement in their learning. My research found that the school setting had little to do with being able to implement a nature-based approach. The strategies and examples given by teacher participants were applicable to a range of elementary school classrooms. I then emphasized the significance of my study on my own personal teaching practice. This includes creating opportunities to bring natural materials into my own classroom for students to manipulate and explore, along with finding ways to facilitate outside learning experiences. Next, I outlined various recommendations that arose from my study, such as; school boards allowing educators to utilize the outdoor setting, teachers showing positive attitudes when interacting with nature, as well as parents/caregivers sending their child to school prepared for the outdoors. Overall, I feel this study provides a guide for teachers who wish to begin to adapt to a nature-based approach.
REFERENCES


doi:http://dx.doi.org.myaccess.library.utoronto.ca/10.1108/09654280911001185


APPENDICES

Appendix A: Letter of Consent for Interviews

Date:

Dear _______________________________,

My Name is Amanda Stornelli and I am a student in the Master of Teaching program at the Ontario Institute for Studies in Education at the University of Toronto (OISE/UT). A component of this degree program involves conducting a small-scale qualitative research study. My research will focus on integrating natural materials within the classroom, as well as provide outdoor learning experiences that meet Ontario curriculum expectations. I am interested in interviewing teachers who have at least five years’ experience in the field of teaching. I think that your knowledge and experience will provide insights into this topic.

Your participation in this research will involve one 45-60 minute interview, which will be transcribed and audio-recorded. I would be grateful if you would allow me to interview you at a place and time convenient for you, outside of school time. The contents of this interview will be used for my research project, which will include a final paper, as well as informal presentations to my classmates. I may also present my research findings via conference presentations and/or through publication. You will be assigned a pseudonym to maintain your anonymity and I will not use your name or any other content that might identify you in my written work, oral presentations, or publications. This information will remain confidential. Any information that identifies your school or students will also be excluded. The interview data will be stored on my password-protected computer and the only person who will have access to the research data will be my course instructor Dr. Angela MacDonald. You are free to change your mind about your participation at any time, and to withdraw even after you have consented to participate. You may also choose to decline to answer any specific question during the interview. I will destroy the audio recording after the paper has been presented and/or published, which may take up to a maximum of five years after the data has been collected. There are no known risks to participation, and I will share a copy of the transcript with you shortly after the interview to ensure accuracy.

Please sign this consent form, if you agree to be interviewed. The second copy is for your records. I am very grateful for your participation.

Sincerely,
Consent Form

I acknowledge that the topic of this interview has been explained to me and that any questions that I have asked have been answered to my satisfaction. I understand that I can withdraw from this research study at any time without penalty.

I have read the letter provided to me by Amanda Stornelli and agree to participate in an interview for the purposes described. I agree to have the interview audio-recorded.

Signature: ________________________________

Name: (printed) ________________________________

Date: ________________________________
Appendix B: Interview Protocol

University of Toronto
OISE | Ontario Institute
For Studies in Education

Introductory Script: Thank you for agreeing to participate in this research study and for making time to be interviewed today. This research study aims at discovering how a small sample of Ontario elementary school teachers implement nature-based learning with their students. More specifically, how the sample of teachers are able to integrate natural materials and the outdoors while linking these experiences to expectations of the Ontario curriculum, and the outcomes they have observed from adapting to a nature-based approach. This interview will last approximately 45-60 minutes, and I will ask you a series of questions focused on your experiences with implementing natural experiences both in and outside your classroom. I want to remind you that you may refrain from answering any question, and you have the right to withdraw your participation from the study at any time. As I explained in the consent letter, this interview will be audiorecorded. Do you have any questions before we begin?

Background Information
1. How long have you been a teacher?
2. What is your current position?
   a) What grade are you currently teaching?
   b) How long have you been teaching this grade?
   c) What grades have you taught before? How long did you teach each grade?
3. What are the demographics of your classroom? (e.g. size, gender)
4. Can you tell me more about your school?
   a. Does your school have any special focus on environmental education or outdoor learning? (e.g. eco-school programming)
   b. Is your school located in an urban environment /residential neighborhood?
   c. What outdoor space is available to you?
5. What experiences contributed to you developing an interest in nature-based learning?
   a. Personal experiences?
   b. Educational experiences?
   c. Professional experiences?

Teacher Perspectives/ Beliefs
1. What do you believe is the role of nature in students learning?
2. In your view, what does nature-based learning entail? How would you describe a nature-based approach to someone who has never implemented this method before?
3. Where can nature-based learning happen?
4. What are the benefits of nature-based learning in your experience? Why do you believe that students should have the opportunity to learn with and in nature?
5. In your view, is nature-based learning in schools? Why do you think that is?
6. How, if at all, do you think nature-based learning is related to environmental education?
7. Do you consider yourself to be an environmental educator? Why / why not?
Teacher Practices
1. What does nature-based learning look like in your teaching?
2. How do you incorporate the outdoors in your teaching?
3. What natural materials are included inside your classroom?
4. Can you provide me with an example or two of lessons that you have taught that involve bringing nature into the classroom space?
   a. What subject and grade were you teaching?
   b. What were your learning goals for this lesson?
   c. What opportunities for learning did you create and why?
   d. What outcomes did you observe from your students?
   e. What did you assess and how?
5. How often would you say you use natural materials inside your classroom?
6. What subject areas do you typically integrate engagement with natural materials inside the classroom into?
7. How do you introduce nature as a learning tool?
8. Can you give me an example or two of how you incorporate outdoor experience in nature into the curriculum?
   a. What subject and grade were you teaching?
   b. What were your learning goals for this lesson?
   c. What opportunities for learning did you create and why?
   d. What outcomes did you observe from your students?
   e. What did you assess and how?
9. How often would you say you go outside to teach lessons/have learning opportunities?
10. What subject areas more commonly involve you taking the students outside to experience nature?
11. What outcomes do you see, broadly speaking, from integrating more natural-based approach for teaching and learning?

Supports and Challenges
1. What range of factors and resources support you in your implementation of nature-based education? (e.g. access to outdoors, green spaces, leadership from administration, parents, demographics, field trips, guest speakers)
2. What range of challenges do you encounter with implementing a nature-based approach to learning?
   a. How do you respond to these challenges?
   b. How could the school system or leadership at your school further support you in meeting these challenges?

Next Steps
1. What goals, if any, do you have for developing your curriculum programming in the area of nature-based learning?
2. What advice, if any, do you have for a beginning teacher who is interested in incorporating the outdoors and natural materials in their teaching?

Thank you for your participation.