Teachers' Perceptions of the Effects of Nature-Based Learning on Junior Level Students

By

Olivier Gautheron

A research paper submitted in conformity with the requirements
For the degree of Master of Teaching
Department of Curriculum, Teaching and Learning
Ontario Institute for Studies in Education of the University of Toronto

This work is under a Creative Commons Attribution-Non-Commercial-No Derivs 4.0 International License

Copyright by Olivier Gautheron, April 2014
Abstract

Nature-based learning is a valuable interaction with the natural environment that teachers can easily provide to students. This study looks at the effects of taking junior level students to learn in a natural environment from their teachers’ perspective. Three teachers, who engage their students in nature-based learning regularly, were interviewed about their perceptions of the effects of this type of learning. This research shows that teachers see a positive effect on their students including increased engagement, risk-taking, a better enjoyment of school and a heightened stewardship towards their environment. The findings also suggest that teachers feel that they also change in terms of their attitude and behaviour in relation to the students while in the natural environment. The conclusion remains that these junior teachers perceive that their students benefit from learning in nature; however, whether this perception is due to a change in the students’ behaviour and attitude or simply to a change of the teacher's perception is still open for discussion.
Acknowledgements

I wish to acknowledge and thank:

Hilary Inwood, my supervisor, for her support and amazing feedback she provided throughout this research

My three participants, for giving me some of their time and knowledge

And my family, for always being there for me
Table of Contents

Abstract ........................................................................................................................................... 2
Acknowledgements .......................................................................................................................... 3
Chapter 1: INTRODUCTION .......................................................................................................... 6
  Introduction to the Research Study .............................................................................................. 6
  Purpose of the Study .................................................................................................................... 6
  Research Questions ...................................................................................................................... 7
  Background of the Researcher ...................................................................................................... 7
  Overview of the Research Paper ................................................................................................. 8
Chapter 2: LITERATURE REVIEW ............................................................................................... 10
  An Overview of Nature-based Learning ....................................................................................... 10
  Effects on Children ..................................................................................................................... 14
  Nature-Based Learning Implementation ....................................................................................... 18
Chapter 3: METHODOLOGY ........................................................................................................ 21
  Procedure ..................................................................................................................................... 21
  Data Collection ............................................................................................................................ 21
  Data Collection and Analysis ...................................................................................................... 22
  Ethical Review Procedures ......................................................................................................... 23
  Participants ................................................................................................................................. 23
  Limitations ................................................................................................................................... 24
Chapter 4: FINDINGS ..................................................................................................................... 25
  Participants .................................................................................................................................... 25
  Theme 1: Teachers’ Beliefs about Nature-based Learning .......................................................... 26
  Theme 2: Teachers’ Perceptions about the Effects of Nature-based Learning on the School’s Community .............................................................................................................. 31
  Theme 3: Teachers’ Perceptions of the Effects of Nature-based Learning on Student Behaviour ........................................................................................................................... 33
  Theme 4: Teachers’ Perceptions of the Effects of Nature-based Learning on Students’ Attitude ........................................................................................................................................... 36
  Theme 5: Teachers’ Perceptions about the Integration of Subjects and Grades with Nature-based Learning .......................................................................................................................... 37
Chapter 5: DISCUSSION OF THE DATA ..................................................................................... 40
  Teachers’ Perceptions of Student Behaviour and Attitude in Nature ........................................ 40
EFFECTS OF NATURE-BASED LEARNING

Teachers' Perception of their Attitude and Behaviour .......................................................... 42
Teacher's Perceptions of Interaction between Community and Nature-based Learning ........................................................................................................... 43
Implications/Recommendations .................................................................................................. 45
Limitations ................................................................................................................................ 46
Further study .............................................................................................................................. 46
REFERENCES .............................................................................................................................. 48
APPENDICES .............................................................................................................................. 52
Appendix A: Letter of Consent for Interview ............................................................................ 52
Appendix B: Interview Questions ............................................................................................... 54
Chapter 1: INTRODUCTION

Introduction to the Research Study

Many different strategies and methods exist for students to interact with nature in and outside of the classroom. Nature-based learning (NBL) is one of the ways for students to interact with nature, but comparatively, it seems to be the simplest. It consists of taking students to a natural environment during class time, or what is also referred to as learning in nature. In my own experience as a student, NBL has always been used as a reward or as a way of learning about nature. This study will be looking at a broader view of NBL to include any learning that occurs in the context of nature.

Purpose of the Study

This research aims at exploring the effects that teachers witness in their junior level students while engaging with them in a natural environment. This will be done by interviewing three teachers who take their junior level classes outside to spend time in nature on a regular basis. From these interviews, information will be collected to draw conclusions about the how teachers feel NBL is affecting their students.

This study will benefit the educational community as it will bring the effects of NBL to the fore to be critically discussed and analyzed. With the Ontario Ministry of Education recently implementing a framework called Acting Today, Shaping Tomorrow to increase exposure to environmental education (Ontario Ministry of Education, 2009), having a detailed record of the perceived effects of NBL will be beneficial for any teacher considering it for their class. This study also aims to spark an interest in teachers
about NBL and its potential benefits in engaging students in natural environments. This may help children to make a better connection with nature; a connection that many feel the current generation of children is lacking.

Research Questions

This paper is centred around the main question: What are teachers’ perceptions of the effects of nature-based learning on junior level students? From this main question, several sub-questions were derived. These sub-questions helped to deconstruct the main question and led to more focused interview questions. The sub-questions for this research were:

- Why and how do teachers engage their students in nature-based learning?
- Do teachers believe their teaching style to be different when engaging in nature-based learning?
- Do teachers believe that nature-based learning has an effect on the school’s community?
- Do teachers who engage in nature-based learning feel that natural environments are beneficial for all students?

Background of the Researcher

As a researcher I bring a strong background in the field of Environmental Science, which I studied for four years at McGill University. There I had many classes dealing with the natural environment in terms of plants, animals and resources. I also have a
certain interest in this topic from years of experience working at the Macdonald Campus Farm in Sainte-Anne-de-Bellevue as a tour guide. This experience has shown me how students behave when they are engaged in nature. I have seen many teachers express their surprise by how engaged their students can be when they are doing something outside of the classroom in contact with plants, animals and other forms of wildlife.

As an elementary student, I rarely had the opportunity to learn in a natural environment, and deeply regret not having a strong connection to nature in my youth. Therefore as a teacher candidate in a faculty of education, I found myself often wanting to take the students outside but was unsure how to justify the need to be outdoors as part of the school day. This background has led to my research interest in NBL and outdoor education. I have developed a real interest in NBL due to its simplicity, its potential to create a lasting bond with nature, and its facility to integrate with any subject or grade level. I feel that as a prospective teacher, I would like to use this teaching approach, and therefore would like to know more about it from the points of view of practicing teachers.

**Overview of the Research Paper**

This research paper will be divided into five chapters. Chapter 1 is focused on the introduction, the purpose of the study, the research question and sub-questions and an overview of the paper. The second chapter is the literature review which identifies and analyzes the existing literature about NBL in a comprehensive way. Chapter 3 discusses the methods I used in order to gather information about my research questions, as well as the methods I used to interview teachers and in the analysis of the data. The fourth chapter explains the findings that were obtained from the different interviews and how
they compare to each other. The final chapter, the discussion, will critically analyze the findings that were obtained and draw insights from them.
Chapter 2: LITERATURE REVIEW

An Overview of Nature-based Learning

NBL is often grouped with similar concepts such as place-based education, environmental education, outdoor education and environment-based education (Louv, 2008). Even if there are subtle differences among them, they all emphasize a first-hand, experiential type of learning.

For the purpose of this paper I shall offer my own definition of NBL deriving from the definitions of similar terms found in the literature. NBL is an education method that uses immersion in a natural environment as a context for learning. The content of what is being learned is not defined, as NBL does not require the learning to be of a specific subject. The natural environment, or what will be referred to as ‘nature’, is an area of any size outdoors that contains parts of the natural world. Examples of nature could be a forest, a grass field, city parks, or trees that line city streets. NBL focuses on teaching in the environment but it does not necessarily teach for or about the environment. In other words, nature itself can be, but does not need to be, the main subject of the lesson. More importantly, nature is the place where the lesson occurs. Although not a defining feature, a by-product of NBL is the stimulation of the senses.

In the literature NBL appears under many categories as it is a more general concept than other educational methods that involve nature. For example, the definition for environment-based education that closely resembles nature-based education is offered by Ernst (2012), which reads "a form of school-based environmental education that uses the environment as a context for integrating subjects and a source of real world experiences." (p.73). Although this definition is very similar to NBL, it does have one major difference. In NBL, the environment in which learning takes place must be natural;
in environmental education, learning can take place in natural or built environments. Therefore, environmental education, and other similar concepts, can be cited in this literature review only when they are used in nature.

NBL can take many forms. One example of a nature-based lesson could be having the class read a book while lying on a patch of grass. As mentioned before the book itself does not need to be about nature, but students would feel the warmth of the sun, the touch of the grass, the chill of a breeze, the smell of freshly cut grass, the sounds of the wind blowing as they were reading. A different example of NBL would be teaching the class about environmental stewardship by having the class engage in a real-world activity in a park. There, students have the freedom to touch the bark of trees, feel the cool of the woods on their skin, smell the pine trees, and hear the sounds of birds. As is evident, the range of senses used in NBL would rarely be stimulated to such an extent in an indoor classroom. Immersion is a natural environment is central to NBL because it differs from the classroom context and allows for changes in the students and teachers’ behaviours and thoughts.

The growing need for NBL is a response to the changes occurring in the lives of the North American youth, as compared to the previous generations. In his book, *Last Child in the Woods*, Richard Louv (2008) describes a difference between his childhood and the childhood the following generation is experiencing. He notices specifically how the children of his generation spent a considerable amount of time in tree-houses. In the childhoods of a newer generation, however, Louv notices the lack of children playing outside in tree-houses. He attributes this change to the modern obsession on safety. One side-effect of this obsession is the highly structured play areas in parks that remove themselves from nature. To further separate the modern child from nature, technology is
often used as entertainment by children instead of using a natural play area. According to Kimbell et al (2009), this technology driven lifestyle is deteriorating children's connection with the land.

Children in contemporary society are also changing due to shifts occurring in the school system. Recess, a time for children of all ages to play, is slowly being phased out. In the first decade of the 21st century, due to a push for higher test scores and a fear of liability, 40% of schools in the United States have been eliminating or considering eliminating recess (Louv, 2008). When recess is allowed, it usually occurs on sterile asphalt, disconnected from nature (Sobel, 2005). These shifts in the school system are not without consequence for today’s youth. I have seen evidence of this happening especially in urban schools where recess often takes place on a paved courtyard, and students would rather be connected online than with nature.

The Back to Nature Network advocates for the use of NBL. It is an organization that is "committed to fostering our children's connection with nature" (Back to Nature Network, 2014) and is geared towards advocating for outdoor experiential education. In its guide to teaching in nearby nature, it lists three main objectives (Kilburn, 2012). One of the points is to provide teachers with simple and practical ways to teach outdoors, in combination with using an indoor classroom. Further into the document, this objective is discussed as one of the "The Big Ten of Outdoor Experiential Education." (p.4). This approach finds support from others who advocate for going into nature on a regular basis while still using an indoor classroom for some lessons (Kilburn, 2012).

Other scholars have been advocating for the importance of NBL in different ways. Howard Gardner (2011) of Harvard University has developed a theory of the multiple intelligences that identifies the eight intelligences he believes to be central to learning:
linguistic, logical, spatial, bodily-kinesthetic, musical, intrapersonal, interpersonal and naturalist (Gardner, 2011). In Gardner's own words, the eighth intelligence is "the ability to make consequential distinctions among organisms and entities in the natural world" (Gardner, 2011, p.xiv). The naturalist intelligence arose when Gardner could not explain the success of certain biologists without doing some major adjustments to the original seven intelligences (Checkly, 1997). Professor Leslie Owen Wilson (2005) offers a list of ten descriptors for the abilities of people demonstrating the eighth ‘naturalist’ intelligence. Of these ten descriptors, the three listed as follows would be greatly enhanced through NBL. First, having keen sensory skills, including sight, sound, smell, taste, and touch is characteristic. Second, readily using heightened sensory skills to notice and categorize things from the natural world. And lastly, enjoying being outside, or liking outside activities like gardening, nature walks, or field trips geared toward observing nature or natural phenomena (Wilson, 2005). With these descriptors in mind, it is clear that students with the naturalist intelligence would thrive outside in nature compared to an indoor classroom.

In the policy framework for Ontario Schools Acting Today, Shaping Tomorrow (Ontario Ministry of Education, 2009) there is evidence of progress towards NBL. For example, in the strategy 2.1, "Build student capacity to take action on environmental issues", one of the actions for schools reads "enrich and complement students’ classroom learning by organizing out-of-classroom experiences and activities (such as naturalization of the school yard), as appropriate." (p.17) This gives teachers ‘permission’ to incorporate NBL in their curriculum.
Effects on Children

The benefits of NBL are difficult to find due to the fact that the literature surrounding it often uses similar terms like outdoor education and place-based education. (For the purpose of this literature review, most of the benefits mentioned will be from papers using the similar concept of environmental education that takes place in nature.)

When looking at NBL it is important to understand the effects it has on children that are being taught. In a study conducted by the California Department of Education (American Institutes for Research, 2005), a program was studied which experimented with an outdoor science school. The benefits of this type of NBL included increased academic performance, such as a 27% increase in the mastery of science concepts (p.31). These benefits were not limited to academic achievement, but were found in other skills as well, such as better cooperation and conflict resolution, gains in self esteem, problem solving, learning motivation and classroom behaviour. Educators in this program mentioned how the gains could be attributed to the "fresh start" opportunity the program allowed for the students (p. 35). Similarly, Louv (2005) describes how students in nature-based programs have better attendance records and behaviour than their counterparts in regular classrooms.

One effect of NBL described by Louise Chawla (1990) is how contact with nature enhances creativity. Through her research, Chawla found that the creativity of adults is well developed when exposed to natural settings as a child. Her research consisted of a survey conducted with adults which showed that the people who had jobs that required little creativity reported less influence of nature in their childhood. Comparatively artists, who have jobs where creativity is key, reported a higher emphasis of nature in their
childhoods. She further describes how early experiences in nature should not be limited to children who will use creativity regularly, but for everyone.

A study performed by Frank (2009) looked at the potential for outdoor experiential education to reduce stress in adolescent girls. The girls were learning in a natural setting, characteristic of NBL, and were regularly asked to write a personal journal for the researcher to understand how the girls were thinking. The journals showed a reduction in the girls’ stress and an improvement in their ways of managing stress. Frank’s conclusion after reading through the scientific literature of the topic is that this change in dealing with stress is caused by the journey of self-discovery that outdoor experiential education has to offer. Nature-based education therefore shows the potential to reduce stress and improve stress management.

NBL can also have an effect on the emotions of students. Miller (2007) studied a gardening program for kindergartners and found that the natural environment was a safe space for them to express their positive emotions and process their negative ones. Another study found that students’ emotional engagement was affected by nature indirectly through humor (Hoad et al, 2013). It was found that nature provides teaching and learning affordances, compared to the traditional indoor classroom, which allows for humor to be integrated to the class. Humor was found to positively influence the student-to-teacher, student-to-student, and student-to-nature interactions.

NBL has the potential to also decrease student alienation from school (Sobel, 2005). A lot of students feel that what they learn in school has no place in the real world. Sobel found that an education strategy, called place-based education, and very similar to NBL, can decrease alienation by supplying a real world environment in which to apply what is being learned. In the case of NBL this real world environment is nature. This
decrease in alienation could prove crucial in combating problems like math anxiety in which students fail to see the applicability of their classroom knowledge.

What teachers might interpret as benefits of nature-based education might be drastically different from what students who experience it feel. In a study by Warkentin (2011), a teacher in New York City took her students to Central Park to write nature journals. What makes this study unique is that the effects of the activity are gathered from the students' point of view, not the teacher's. Before the assignment students were not keen on being immersed in nature to observe, but in the end “a majority of the students expressed sincere appreciation for the opportunity to just be in their place with quiet company, and reflected upon certain rejuvenating and meditative dimensions of the learning activity” (p.237). After the assignment was over, students reported a difference in their vision of Central Park. A location that they did not consider as nature before, now through first-hand experience, had changed in their perspective. In other words, NBL affected students' perception of nature; instead of nature being a ‘far off’ concept, it became a part of their daily environment. A study performed by Okada et al (2013), found similar results: by having students attend an outdoor experience in nature, their attitude towards nature improved. Their research showed that the more isolated the natural environment, the more effect it had on the students' attitudes.

Not only can NBL stimulate the minds of the students, it can also act as a method of recovering from attention fatigue. The Attention Recovery Theory (ART) was proposed by Kaplan (1995), and describes how nature can work as a recovery centre for the brain. An indoor classroom usually requires students to use their direct attention, which is the type of focus a person brings when the material in not engrossing. However, in nature, the brain does not always need to use direct attention to learn. Kaplan discusses
the limits of direct attention: after a certain amount of time the brain becomes tired and runs out of direct attention. Without any direct attention left, the person is likely to be distracted by subjects that are naturally engrossing. In order to regain some of this attention, the brain needs to recover by doing another activity that is less attention demanding. Kaplan explains that sleep is one such form of recovery. Other recovery methods must be fascinating, extent (rich and coherent enough to constitute a whole other world) and compatible with the purpose. He argues that nature is all three, and therefore provides an ideal recovery centre. Even when the activities performed in nature necessitate direct attention, this is balanced as nature automatically provides a form of attention recovery, and it is readily available to all the students.

A study highly influenced by Kaplan's (1995) paper was performed by Faber and Kuo (2009), who observed the symptoms of children who were diagnosed with ADHD in a natural setting. The results supported Kaplan's ART theory as it demonstrated that the ADHD symptoms were milder after play in natural settings, as compared to built settings; this was true regardless of gender or family income. The same study also found that hyperactive children benefitted most in open green spaces. Faber and Kuo's results are a strong support for the implementation of NBL. With the number of ADHD diagnoses constantly increasing, having a teaching strategy that relieves ADHD symptoms is a benefit that should not be dismissed.

In his book Beyond Ecophobia, David Sobel (1996) emphasizes the importance for teachers to teach the "here and now" before bringing in the "long ago and far away" (p.3). When learning about a faraway place, like the Brazilian rainforest for North American children, it would be difficult for them to form a connection with it; the learning involved would be too abstract. Sobel instead advocates for a connection and an
understanding of nature that is close by. For example, having Canadian children learn the habits and life cycles of local wildlife, like the chipmunks and milkweed plants down the road, before learning about ecosystems far away, is the recommended approach. The advantage of proximity allows students to have a first-hand experience with these organisms, scaffolding to the more abstract learning later on. With the close-at-hand knowledge acquired first, children will be more apt to empathize with the creatures of the distant rainforest later on in their schooling. Indeed, Weston (2005) finds that an ideal method would first be to teach a love for nature, before introducing environmental disasters. He argues that mentioning natural disasters early on in a child's schooling can often lead to a pessimistic attitude towards environmental issues.

Louv (2008) explores the potential long term effects of turning away from direct experiences in nature. Looking at the lives of contemporary scientists, many of them began to explore nature as children (Louv, 2008) (Sobel, 1996). Often this exploration would take the form of collecting bugs, chasing snakes and feeling awe in the presence of nature (Louv, 2008). With the modern trend of de-emphasizing direct experiences in nature, Louv is concerned about the possibility that we are threatening the very existence of our future scientific community by limiting children’s direct contact with nature.

**Nature-Based Learning Implementation**

Often times the issue with implementing NBL is the lack of natural environments near schools. Too often, schools cart their students off in a bus for a field trip far away to experience nature. This does not need to happen. As Rachel and Stephen Kaplan (1989) describe, nature is almost always nearby; teachers are just not looking hard enough. Nearby nature can include urban parks, street trees, backyards, fields, unused lots,
courtyards and landscaped areas. It appears that the size or extent of the natural area has been shown to have little, if any effect, on its enjoyment (Kaplan and Kaplan, 1989).

Despite the evidence that NBL is makes a positive contribution towards students’ learning, the move away from NBL is being seen in the funding priorities of school boards and districts. Technology is a growing interest in many schools, and some school board officials see nature and technology as opposing forces (Louv, 2008). In their way of thinking, a choice must be made between funding technology or funding concepts like NBL (Louv, 2008). However, as Louv describes, this is a false dichotomy; a school could easily allocate funds both for technology and NBL and reap the benefits of both (Louv, 2008).

On this issue, Louv (2008) quotes Lauren Scheehan, the founder and faulty chair of the Swallowtail School in Oregon, as saying "We believe computer skills should be postponed until high school. They can still use computers at home or play video games at their friends' houses; that world isn't closed to them" (Louv, 2008, p.205). She further explains that her vision of school is a break from the electrical impulses the children feel in their daily lives. Some of the parents coming in to her school are reluctant to have their child enter school devoid of computer classes until high school; however they share Scheehan's vision that "there are aspects of being a human that aren't inside a computer" (Louv, 2008, p. 205).

Living in the age of information, we can, and often do, learn without experiencing nature firsthand. Children can be taught about the forest ecosystem in a classroom solely relying on information gleaned from digital environments; this is not an adequate substitute for real world experience. Weston (2005) point out that words alone cannot teach a love for the Earth. Neither our major educational institutions, nor our popular
culture, have been putting an emphasis on firsthand, sensory experiences that rely on sight and sound as well as touch, smell and taste. NBL aims to counter this trend by activating more senses than just sight and sound, as is often done in the classroom, by engaging learners with the natural world.

Another concern among elementary educators is the introduction of environmental disasters at such a young age. Sobel (1996) warns of ecophobia; teachers instruct their young students about the wealth of environmental problems the world is facing, students are faced with problems beyond their grasp both in terms of size and understanding. This may lead to a rejection of the subject as a whole, or an ecophobia. Sobel (1996, 2005) advocates for an ecophilia approach where students are first allowed to foster their inherent tendency to bond with their natural environment before being asked to heal it; this bond can be solidified through NBL.

Overall the literature is quite unanimous on the positive effects that NBL has on students. These effects can be internal (such as a different perspective on nature and better stress management) or external (such as better engagement and behaviour). In Ontario, NBL is promoted through different ministry documents but never enforced. This means that the teachers who engage in NBL choose to go outside in nature on their own accord. However, there is a gap concerning the teachers' perceptions of the effects of NBL on the students. The literature focuses on the actual effect of NBL but does not discuss how teachers feel or see these effects. This perception is key as improved student behaviour in nature, might not always be interpreted as better by the teacher for different reasons. Therefore, this study intends to fill this gap by only looking at the perceived effects of NBL from the point of view of the teacher.
Chapter 3: METHODOLOGY

Procedure

This is a qualitative research study that investigates the perceived effects of NBL on junior level students from the point of view of junior level teachers. The interview questions focus on each participant's opinion and description of their teaching in regards to how NBL affects their students and themselves. I decided to interview three participants for this study as it would allow me to start to build an understanding of the similarities and differences that could be observed from teacher to teacher. This number of subjects allowed for detailed data to be collected.

Data Collection

Data was collected through informal interviews. Each teacher was given a consent form with information about the study, as well as information on the researcher. The interview questions were not sent to the participants beforehand in order to obtain spontaneous answers. As a researcher, it is my belief that by seeing the questions beforehand, some participants might construct their answers based on what they think the answers should be, rather than on basing them on what their observations actually are. Each interview was recorded in audio format in order to capture all of the information provided by the participants. Notes were taken only when necessary in order to put the participants at ease, and to be able to engage in a more conversational manner. Most of my attention was focused on listening attentively to each participant as they responded to the questions.
The interviews were in a standardized format; the same questions were asked of all of the participants. (The entire set of interview questions can be found in Appendix B). During the interview, I used some of the useful tips mention by Turner (2010). These strategies included having a pilot test for the interview, and preparing effective. It also encouraged the use of follow-up questions to avoid leading questions. An example of this type of question in my interview is “In your opinion, is your teaching style different in nature, compared to in an indoor classroom?” followed by "(If so) How?” As can be seen from the sample question, the form tended to draw opinions from the teachers, done purposefully as this study focuses on the teachers' views about their students’ experiences.

**Data Collection and Analysis**

The data was recorded digitally on a laptop and an mp3 player. Both recordings were kept with the researcher on password-protected devices, and will be destroyed once the research is finished. The recordings were transcribed for analysis along with any notes taken during the interview. Once the data was transcribed it was reviewed multiple times looking for major themes in the interviews. This allowed the researcher to dissect each interview, code and then categorize the key points into different themes or categories. Each interview was then transferred into a digital chart that organized and separated key points by theme. A thematic analysis was conducted and insights drawn from these themes.
Ethical Review Procedures

The research followed the ethical review procedures that have been set up by the Masters of Teaching Program at OISE. These involved giving the participants a letter of consent which was reviewed with each participant before the interview; this letter detailed the purposes and methods of the study. (A copy of the letter of consent can be found in Appendix A). Each participant was emailed a digital copy of the letter of consent for consultation and future reference. A physical copy of the letter was left with them, along with the researcher's personal contact information, in the eventuality that the participant needed to contact the researcher. These methods were made transparent to the participant. Each participant was asked for permission to record the interview, and was reminded that they had the right to leave the study at any time, and if this happened that their information would not be used. A reminder that the information they shared was confidential was also given. As the researcher, only my supervisor and I would have access to it, as detailed in the consent form. Their name was to remain private and never used in the paper unless they approved the use of their real name in the letter of consent. A pseudonym was assigned randomly if the participant did not choose to reveal their name in the study.

Participants

For this study, three participants were chosen. The criteria that I used to select each participant was two-fold. First, the participant must be, or has been, a junior level core teacher. And secondly, the teacher must have engaged their class in NBL for a minimum of one year. The second criterion was necessary so that participants could potentially draw ideas from previous years and a wider variety of students.
The method I used to recruit my participants was by using connections from a faculty member with a lot of experience in the environmental education field. She was able to provide connections to invite teachers to participate in the study, and three participants were selected based on their replies.

Limitations

There are several limitations to this research including time restraints and small sample size. This study was conceived in the fall of 2013, with a short period allowed for data collection; this affected which teachers could participate. The second limitation is a small sample size. Due to time constraints, the study was limited in terms of the number of participants that could be interviewed. These limitations could prove problematic as three participants represents a small sample of all the teachers who engage in NBL. With more participants the study could have included a wider variety of perceptions. This in turn could have possibly led to different results.
Chapter 4: FINDINGS

The results that were obtained from the data are summarized below. They are separated in five themes that link to the sub-questions of my research.

Participants

The three participants that were selected for the study all teach in the Toronto District School Board. Below is a short description of each of their teaching and NBL backgrounds.

The participant that will be referred as Lisa is a teacher who started her career in 1977 and has been a teacher for 30 years. She typically teaches grades 5 or 6. Currently, she teaches in a neighborhood of Toronto whose inhabitants tend to have a high social economic status. Lisa has been practicing NBL with her class for about 10 years.

The second teacher, Karen, has been a teacher for about 20 years and has engaged her classes in NBL for her whole career. She usually teaches grades 5 or 6 and has taught in many places other than Toronto. When asked why she decided to practice NBL with her class, Karen recalled the connection with nature her father had fostered within her. Karen's intention for teaching NBL is to forge the same connection to nature for her students.

The third participant will be referred to as Marco. Unlike the other two participants, Marco teaches in a neighborhood of mostly low social economic status. Marco has been teaching for 15 years and usually teaches grades 4 through 6. When asked why he started using NBL Marco mentioned that it was a way for his students to be more involved in environmental science and for them to make positive environmental changes in their lives.
Theme 1: Teachers' Beliefs about Nature-based Learning

Investigating what teachers believe about NBL allows for some insight as to what effects in their students these particular teachers might be looking for when in nature. Each interview yielded a lot of information on this topic, so the need to subcategorize it arose. Each participant's view will be split in three ways: why NBL is important to them, how they engage in it presently, and how they feel that NBL should be.

Lisa

Lisa mentions why NBL is important for students. She describes NBL as a strategy that can help youth succeed. The reason she provides for the usefulness of NBL is that this type of learning is experiential and not abstract. Lisa describes how good NBL is for her students, how helpful it is. She also speaks about her students enjoying the open environment and "there's that whole capacity…a comfort in the natural world, for many, many students." She estimates that 90% of students have a capacity to appreciate the outdoors. Lisa mentions that at times, the only thing the students need to develop this appreciation, is the opportunity to be outside.

To summarize her feelings towards NBL Lisa referred to something she describes as a "mantra" that she often uses about teaching in nature: "It doesn't get any better than this." It is clear that the nature garden in which she engages her students when practicing NBL is something that is close to her heart. She describes how its importance has been reflected in her students so that they now understand its importance as well. Lisa admits that when teaching in the nature garden she is different. She is happy, more relaxed, and has an ease and peace of mind. She takes on the role as resource for her students and not the teacher of expectations. The tasks are also different than in the classroom, they are "more edgy" she admits. Lisa reflects that this approach works best in a classroom where
NBL is valued and sought after. She also shares that she believes teachers should work together in this implementation as "Nobody wants to be the lone charger on these things."

In many instances Lisa describes how she feels NBL should be. Some examples of these are using nature as a classroom, utilizing the world as a resource, using the natural world to access learning, and bringing the world to the students. In her description of NBL, nature is integrated with different subjects. Lisa does mention that the indoor classroom is the norm, and therefore going outside, although done regularly, is more of an exceptional learning environment.

Karen

When speaking with Karen about the differences between today's youth and the children in the past, technology was at the forefront. She is convinced that the daily exposure to digital screens must have an effect on the children, although, what those effects are might not be clear as of yet. In her own experience, Karen finds that children have lost a connection to the Earth, a connection that she herself valued as a child. Karen finds that children do not want to be pushed, and value comfort over nature. To give an example, she mentions being outside and the children with her wanting to go back inside where it was warm, rather than adapt to the situation and find a way to be warmer outside. Lastly, as a general comment of our society, Karen mentions that we teach our children the value of money and the value of technology. However, we often neglect to teach them the value of nature. Karen describes many reasons why exposing NBL to today's youth is important. She feels the need to share with her pupils the connection to nature that her father had exposed her to; merely speaking about the importance of nature is not enough. Karen also believes in modeling what she says in class. One of her goals as an educator is to form the future stewards of the Earth. NBL is the means Karen uses to
show her students what they will be the stewards of, and its importance. Lastly, she feels that NBL is important as it is crucial for our society as a whole to reorganize its priorities. This educational method could have the students understand the value of nature and the need to prioritize it above other aspects of life.

Karen spoke of the ways in which she engages her class while in the natural environment. When going outside, her class activities are very structured, but leaving the classroom for the outdoors spontaneously is not unusual. She uses this spontaneity when seeing that the students would benefit greatly from going outside. Often, Karen finds that the integration of various subjects quite easy to do with NBL. Furthermore, she states that teaching through inquiry and problem-solving is relatively easy in the natural environment. In her own words "It doesn't have to be expensive, it doesn't have to be complex, but it's real and it's there." One of her goals is to push the students out of their comfort level. Incorporated in this type of learning is the theme of caring - caring for the creatures, plants, and people that surround them. Karen believes that technology is important, but the school system over time has overemphasized technology at the expense of nature. She suggests that a balance between both must be reached. But, as she feels the scales are so imbalanced at the moment, implementing a balance will require some major change.

In general terms Karen admits that NBL does require some extra work and courage at first, but that the benefits far outweigh the costs. She often finds that other teachers find NBL to be intimidating or scary; other comments from her colleagues have led her to believe that they see this type learning as another add-on to the overwhelming list of initiatives proposed by the Ministry of Education. Karen disagrees with these assumptions. Although she does admit that it can be a lot of work to plan at times, like an
overnight field trip, the results that have come from it are invaluable: "All those hours of work, immediately it was worth everything, just to see this one boy have that, you know, connection. It was phenomenal." Some benefits that Karen believes are applicable to all are how hands-on, kinesthetic and tactile learning becomes when taken outdoors. These benefits are so enormous to her that she believes that NBL should be government-mandated. She does agree that the list of environmental government initiatives is quite overwhelming, but urges teachers to not lose sight of the basics, which is to simply get the students outside.

*Marco*

Marco finds that NBL is important to children specifically in his community. First, he discusses that being outside gives the children certain freedoms that they did not have inside the classroom. They can run, talk loudly, move around, and it does not disturb the teacher. Especially in the activities that Marco engages in outside, there is a lot of room for individuality. Marco suggests that the experiences outside are also very real and allow "opportunities for more independent and creative tasks." Furthermore, especially in that community, he finds that many students in an indoor classroom are scared of being wrong; however, Marco mentions that outside that fear goes away. He compares a classroom activity of measuring angles with a protractor and the outside activity of gathering leaves. In the classroom "Everyone has a sheet, everyone has a couple of angles I asked them to measure [...] they all measured the same way or they would be incorrect." Whereas in a natural environment "if I said well we're going to examine leaves, then you could pick up whatever you wanted, and it wouldn't matter as long as it was a leaf." Marco also notes that for a lot of recent immigrants, NBL was also a cultural experience. Marco feels that NBL is important as it gives him a different way
of relating to the students. Lastly, he mentions the importance of having his students enjoy coming to school, which he attributes to NBL.

In terms of how Marco is feeling about NBL he reports often acting and behaving differently than in the classroom, which leads to the kids behaving differently. He finds that when in nature, the expectations he has for his students are usually open ended. He gives them some direction from time to time but the teaching directions are different as well. As mentioned previously, inside the classroom the directions are rote, but that is not the case while in the natural environment. The strategies Marco uses in nature are the same as those he uses in his classroom. He finds that the natural setting is very different to where the students learn most of the school year, so as a teacher, Marco also behaves differently. He sees a new side to his students when outside. Marco parallels this feeling to coaching; often a student will act differently on the court and in the class.

Marco mentions a few key points about his vision of how nature-based education should be. First, he sees NBL as a means of bringing a passion of environmental awareness to his students. Most of the activities he performs outdoors are a way to have his students think of their environmental impact. He also sees the different activities done through NBL as an anchor for further classroom discussion. He believes that after engaging in NBL all the students will have an equal grounding on which to start an environmental discussion. Lastly, Marco sees NBL as a means to show children that enjoying nature is not complicated: "enjoying nature can be as simple as that. It's being outside for a couple of laughs, and why not, right? You can be at home playing video games and getting that mindless nonsense filling into your brain, or, you could be outside,[...]that's as simple as it can get as well. Just, being outside, enjoying."
Theme 2: Teachers’ Perceptions about the Effects of Nature-based Learning on the School’s Community

None of the themes showed a greater discrepancy than the perceived effects of nature-based education on the community of the school. This might be attributed to the differences in the community values or its socio-economic status.

Lisa, has a positive interaction with her community concerning NBL. According to Lisa, her community seems to hold a high value on the outdoors and outdoor play. She discusses at length about the school’s nature garden, which is the location where she often takes her students out, to have them learn in nature. The parents in the community are involved in such projects as the nature garden. For example, twice a year the garden needs to be maintained, and many parents come to participate in the clean-up. This was not always the case; even when starting the idea of the nature garden, Lisa explains how it was met with some opposition. The community, as a whole, was thinking of a more structured garden, while the founders of the nature garden, including Lisa, were more focused on having a garden of plants that are native to the area. The community eventually came around and now Lisa notes that the nature garden is entrenched in the community.

Unlike Lisa, Karen has the feeling that the community has a negative outlook on NBL, but she sees some signs that things were changing for the better. The first thing she shares is that very few other teachers in her school engaged in nature-based education. In fact, she often stood out within her teaching community as the one who is actively involved in taking the students outside. Karen did notice some signs of children learning in nature. Some very simple examples are children reading outside or doing art activities in nature, which is, as Karen mentioned, "the most basic entry level." Karen's school also
engages with the community in nature though community walks. These walks can be based on learning about the history of the community, in this case the Junction; or about its natural history, as with a walk introducing the buried river that flows below Karen's school. Karen reflects on the community as a whole and speaks about the lack of children playing outside after school and on weekends. She also noted the general fear that society as a whole has of being outside, and of our need for comfort over the need for a connection with nature.

Marco's situation is unlike the other two participants. The community around his school is of lower socio-economic status. Marco uses NBL to introduce concepts of environmentalism to his students. He introduces concepts of stewardship by having students pick up garbage from the playground and nearby woods. Marco finds these activities are excellent scaffolding for discussions about the importance of nature and environmentalism. He finds this effective and often gets responses from the parent community about their children, forcing them to adopt some environmental practices at home such as packing a litterless lunch or walking to school. However, Marco does note the difficulties of working in a community of many recent immigrants and of people of low socio-economic status. First, students do not get to engage with nature often in their free time. Many of them live in buildings where the available outdoor playing area is a courtyard that has to be shared for the whole building. For some students, their parents or guardians do not even let them play there. Second, NBL does not have its full impact because recent immigrant parents have higher priorities in their lives to focus on, like learning English, finding a job, or even working several jobs to provide for their family. Marco believes his students come to realize that their community is indifferent to the environmental problems talked about in class. In a broader sense, he believes that the
community does not value nature or the environmental sciences as much as he would like. When asked how he thinks NBL has affected the ways students view their community, Macro answered: "I think, generally speaking, the children are disgusted." He uses an example of his students cleaning up the playground and finding garbage that community members did not want to dispose of in their own garbage, and chose instead to dispose of in the playground garbage. Therefore Marco believes his students are disgusted by how their community is treating the environment they live in.

**Theme 3: Teachers’ Perceptions of the Effects of Nature-based Learning on Student Behaviour**

All three interviewed teachers see positive effects in their students' behaviour when taking them to learn in nature. Some even see behavioural changes after coming back to the indoor classroom. Karen and Lisa have very similar observations concerning their students' behavior, while Marco notices fewer changes in behaviour.

Lisa finds that the exposure to nature "wakes" students up. They become more observant, attuned to the task, excited and engaged. She does note, that for several students, the immediate behaviour they adopt when being outside is running. However, she compares this behaviour with the observation of students often yawning in class. Yawning is not something Lisa observes in a natural setting because the students are "having fun being outside." She also observes that students are more likely to take risks. On a side note, she finds NBL to be highly valuable for some of her students who fidget and are restless. Lisa notices that in nature, her students act completely differently: "if a student is fidgety or they can't concentrate, they're completely different students when
they are out in the nature garden." When asked about the behaviour of her students upon returning to the indoor classroom, she notes that they come back excited.

In a similar way, Karen sees her students become calmer, more peaceful and even work more collaboratively than they do in an indoor classroom. She notices these changes especially in her students that normally would not tend to be collaborative. She sees her students be more themselves in a natural setting, they seem stronger, they "let free", they generally are more alert and with more energy as well. Karen mentions a student who was having troubles at home. In class he was very quiet and was "painfully shy." During an overnight outdoor trip, one of the activities took place in the woods, she recalls: "He came over the hill and just started screaming at the top of his lungs, this is one of my shyest students. [...] he was beaming ear to ear. I was crying, I was so happy to see this because he totally let free, he completely relaxed, he totally let free, and he tended to look anxious most of the time in the classroom, no matter what we put in place to support him. And to see him take such risk to let go of everything". Karen also notices that when coming back to a classroom setting after being in nature, many students are more confident.

There are two similarities between Karen's and Lisa's observations of the behaviour of their students in nature. The first is that their students seem to come alive while outside. More importantly, however, is the observation that the students who usually are shy or stay away from taking charge in an indoor setting, suddenly take risks. Lisa recalls a student who was having a very difficult morning due to a bad mark. In the afternoon the class went out to the nature garden and she remembers seeing that same student change completely and take charge in the outdoor activity. Karen does not notice such a dramatic change. However, in an activity in which her students interacted with the
community, her students who tended to be extroverts took charge, which did not surprise Karen. What she was happily surprised by, is her more introverted students taking a risk and venturing a wave or compliment to members of the community. Although not to the same extent as the more extroverted students, Karen did find this behaviour quite surprising.

The changes that Marco notices are fewer, but still fall in line with what his fellow teachers observed. Marco finds that his students enjoy nature and have fun. There seems to be an overall atmosphere of merriment. When asking his students to think back about the different outings that they went on as a class, which included some indoor field trips such as the Ontario Science Centre and a visit to a government building, many students choose a trip to Warren Woods as their favorite. When Marco inquired further, the students generally replied simply "We had the most fun." Remembering it further Marco finds that during that particular trip he had tricked the students into getting their pants dirty. Although Marco did not think it much further, the students had found it extremely comical. After thinking it through, he mentions how the more natural outdoor setting had allowed him to interact differently with the students, which in turn made the students behave differently as well. Since the teacher was having more fun, so were the students. Marco's approach to NBL is very environmentally based. Taking the students into nature is a way for him to have them understand where environmental problems lie. Hence, one of the changes Marco notices with his students after coming back from one of the nature-based outings is a change in their behaviour towards the environment. For example, he notices his students bringing less litter with their lunches and being more involved with environmental school projects.
Theme 4: Teachers’ Perceptions of the Effects of Nature-based Learning on Students’ Attitude

In contrast to student behaviour, student attitude focuses on the students’ outlook on their lives rather than on their actions. The results are similar throughout all the participants with a few differences especially concerning Marco’s observations.

Lisa finds that, in general terms, her students are a lot more engaged when learning outside. In her own words, "they clearly enjoy being out there, and it lightens their attitude." The activities that she does outside often lead to the children being more hands-on in a project and being happier and freer: "They feel freer, I mean they're not confined, like physically, by space." Engagement is something that Lisa notices increasing in nature compared to the indoor classroom. She notices her students are not tuning out and do not seem to find the activities boring as they would sometimes do in the indoor classroom. She mentions how students, when in a natural setting, are in the moment, they are engaged in the present situation. Lisa also notices that an overall effect NBL has on her students, is a heightened respect for their environment and seeing nature as something of value. She assumes that many of her students use these nature outings as a way of enjoying school. Lisa says it allows them to pin their enjoyment to something and have a positive outlook on the whole school year.

Karen primarily finds that NBL allows her students to be more grounded in their ideas. She specifies that her students develop a connection with nature, with their community, and with the real world in general. These connections are easily made in nature compared to an indoor classroom as students find tasks in nature to be less intimidating, she says. Comparing her observations of a natural context with that of an indoor classroom, Karen often finds that inside the classroom, her students are more often
disengaged. According to Karen, a cleaning up activity in nature gives her students a heightened sense of stewardship and ownership of the world around them. Other activities that are more inquiry-based allows her students to be better problem solvers. Karen believes that children of today tend to be weak at problem-solving since most of the activities meant to engage them are highly structured. Finally, as a general comment, Karen observes that NBL has not only given her students a grounding and a connection to nature, but also an enjoyment of school.

Much like his colleagues Marco finds that his students are often enthusiastic about NBL. He notices changes in his students' attitudes, being more responsible, organized, collaborative, and creative. Marco's students are more enthusiastic and excited about activities and learning. However, he does note that this attitude often dwindled as the school year progressed, especially when looking at their involvement in some environmental initiatives. Another observation Marco makes is that he notices that students seem to realize how much they can enjoy the outdoors. For some, the outdoor experience can be a cultural experience as well. Marco describes having to explain to some of his new students about how having large rodents called squirrels running around in a city is not a bad thing. He notes that student attitudes towards him as a teacher are different because, being in nature allows for a change in character "and they see me in a different light as well, they don't see me as teacher, [...] there's a different dynamic there."

**Theme 5: Teachers’ Perceptions about the Integration of Subjects and Grades with Nature-based Learning**

On the subject of integration of subjects into NBL, and its relevance to all ages, the results were unanimous. All the participants widely accepted that all students could
benefit from NBL. They also agreed that all subjects could take place outdoors in a nature setting.

Lisa finds NBL open to all the subjects. Although she prefers to engage in language and art activities in nature, she does think it would be beneficial for other subjects like drama, science, and math. When Lisa was asked about her opinion if all age groups could benefit from NBL she mentions how a wide variety of age groups are engaged in the nature garden; there is even a sensory garden for the kindergarten students. She firmly believes that all age groups and students can benefit from NBL.

Karen emphasizes that she often chose to do activities that could have been done in the indoor classroom, outside in nature. These include learning about invasive plants, measuring angles and studying the history of the community. In fact Karen mentions that every subject she can think of has the possibility of being done outdoors in nature. She does admit that her style of teaching in nature is more often inquiry-based. Karen does not separate subjects, instead she integrates them in her classroom; she does not feel that NBL was a hindrance to this practice. On the subject of NBL being applicable to all ages, Karen reflects on seeing the kindergarten class outside very frequently from her classroom window, and pondering why the practice of going to learn outdoors is often stopped in the older grades when she believes they could also benefit.

Lastly, Marco brought in the perspective of teaching the different subjects through environment, which is grounded in NBL. He says that bringing his students outside in nature has brought in the themes of being environmentally conscious and a steward of the environment. He also mentions how different subjects could be integrated into those themes. For example, science, can be studied by investigating the pollution levels of a nearby park. Other ways Marco integrates subjects with nature is by having his students
do their writing and social studies through being politically active about an environmental issue they see when they are outside. When asked if NBL could benefit everyone, Marco says that he cannot find any downside to the practice. He also mentions how students of varying abilities could easily succeed in the natural environment.
Chapter 5: DISCUSSION OF THE DATA

Teachers' Perceptions of Student Behaviour and Attitude in Nature

Engagement

In some way, all three participants see a heightened level of engagement from their students. Lisa, for example, observes that her students' minds were focused on what was going on at that moment. She infers that her students are engaged in the activity rather than thinking of other things. Marco finds that NBL leads his students to be more involved in the activity. Karen similarly suggests that the students are more engaged in nature as they are "more alive." Other observations mentioned that reflect a strong engagement from the students include that activities are fun, and require collaboration. This aligns with the existing literature as a study related nature, to humor, which linked to an increase in engagement (Hoad et al, 2013). This study concludes that teachers perceive more student engagement in nature compared to the indoor classroom.

Risk-taking

All three participants notice that their students are more likely to take risks in nature. Karen, for example, sees a big leap in terms of risk-taking from her more introverted students. She recalls seeing them venture out of their comfort zone while walking in their community as they engaged with passersby. Similarly, Marco mentions that some of his students in an indoor class are reluctant to participate in activities for fear of being wrong. In nature, however, he notices that this fear is not as present, which leads some of his reluctant students to take a risk at accomplishing a task. Risk-taking is also seen in other ways through the interviews. For example, a student who "lets free" during an outdoor activity in a forest in Karen's class is a sign of this risk taking behaviour that
the student does not show in class. This suggests that teachers see their students taking more risks in a natural environment, especially when looking at students who are not likely to take risks in the indoor classroom environment.

*Enjoyment of school*

Lisa, Karen and Marco explicitly share their view that NBL leads students to enjoy school due to their enjoyment of NBL. Lisa shares her belief that the majority of students have the capacity to appreciate nature; what they need is the opportunity to do so. By giving her students that opportunity through NBL, Lisa sees that her students enjoy not only the lessons taking place outside, but their whole school year better. In her opinion, it gives students a place during the school day where they can pin their enjoyment. Furthermore, Marco finds that NBL helps his students realize how easy it is to enjoy nature. This is especially poignant since Marco teaches in a community where he feels that nature and the environmental sciences are not valued. This notion of enjoyment is mirrored in the literature in Louv's book (2008) when he discusses the findings of a study showing increased attendance while in nature-based programs; this increased attendance leads to believe that students are enjoying the type of learning that is taking place. Overall, this study suggests that teachers feel that teaching in nature leads students to enjoy school, and nature more.

*Stewardship and Ownership*

The participants also find that their students are affected by nature since it helped to introduce them to the notions of stewardship and ownership. Marco describes how, through the activities he does with his students in nature, like picking up garbage from a natural environment, students grow an understanding of the environmental problems that the world is facing. Similarly, Karen observes the same effects as Marco as she engages
her class with a cleaning activity in nature. Karen also sees that her students are making a connection to nature through NBL. Lastly, in the same frame of mind, Lisa notices that her students leave NBL activities with a heightened sense of respect for the environment and see it as something of value. This suggests that, according to these teachers, NBL leads to an increased sense of ownership and stewardship of the environment. This insight is mirrored in the literature with Miller's (2007) study that shows how learning in nature helps forge a meaningful connection with the environment and have a greater appreciation of it.

**Teachers' Perception of their Attitude and Behaviour**

*Attitude*

These participants believe that their attitude changed when educating children in nature. Their change in attitude is due to the fact that they believe that NBL is important. Lisa reports feeling happier and more relaxed when teaching in nature. Her attitude towards the nature garden is, that it is something of importance. She finds that this attitude is passed down to her students so that they now find it important. In a similar manner, one of Karen's main goals in NBL was is to build a connection with nature for her students. Since she finds this important, like Lisa, her positive attitude is reflected in her teaching. Much like what is mentioned by Kimbell and associates (2009), Karen finds that schools place a huge emphasis on technology and not enough on appreciating nature. With this understanding, Karen promotes a positive attitude when engaging in NBL. Much like the other two participants, Marco places a great deal of value to nature and the environment. And, although never explicitly mentioned, it can be assumed that the
importance Marco attributes to nature has a positive effect on his attitude in nature, much like Lisa and Karen.

**Behaviour**

The teachers find nature to be an environment that leads them to relate to the students differently. As Marco mentions, his behaviour is quite different outdoors, even playful. He found himself to be more of a "jokster" and "prankster." He compared it to coaching a sport, which I know from personal experience leads to seeing students in a new, often more positive way. Lisa also finds her behaviour in nature as a teacher to be different. Instead of giving directions, she will take on the role of a resource for her students. This leads to a different kind of interaction between the students and their teacher than what was previously experienced in an indoor classroom. Marco's different behaviour is reflected in the study performed by Hoad et al (2013), which finds that nature allows for different kinds of interactions compared to the classroom setting. In nature, this interaction can more easily involve humor, which Marco illustrates perfectly.

**Teacher's Perceptions of Interaction between Community and Nature-based Learning**

*Support from the Community*

The data collected from the participants shows the importance of a supportive community when it comes to NBL. It also shows how, with time, a community can come to accept this practice, and eventually embrace it. The communities in which the participants teach range from a zone of low socio-economic status, to a community new to nature-based education, to a community who was familiar with it. This discrepancy
allows a certain insight into the variety of relations with the communities that NBL can have.

**Priorities**

In a community of low socio-economic status with a high number of recent immigrants, Marco feels that NBL and its benefits were not fully appreciated because other aspects of life were prioritized. One of the biggest benefits seen by the teacher in that community was the potential for NBL to have a positive impact on the way students treat their environment. The results of this included seeing the children bring reusable materials during lunchtime, walking or biking to school, or being involved in an ecological club. However, some parents do not necessarily embrace this change as it was not a priority for them. Therefore, some of these effects do not last very long once they continue schooling with a different teacher. From the teachers' perspective, NBL is more effective in a community where it can compete with other priorities. In a community where other priorities are disproportionately important, NBL's effects of stewardship and ownership will not be as lasting.

**Effects of Time**

A powerful insight drawn from the data is the potential effect NBL has on a community. Lisa is a founder of a nature garden that she now uses to engage in NBL. She mentions how, at first, part of the community did not welcome the garden as it was not like what they had imagined. Eventually, however, the community came around after seeing its benefits, and now it is an entrenched part of the community. Karen, whose community is similar to Lisa's, finds that people are still reluctant to engage in NBL. However, she does see some change beginning to occur. Keeping in mind that Lisa has taught in her community longer than Karen has, it is possible that with time, Karen's
community might follow the same footsteps as Lisa's and eventually embrace the idea of NBL. So in the eyes of teachers, NBL may not be appreciated at first by the community, but with time, the community may come to appreciate and even embrace it.

**Implications/Recommendations**

This study suggests that teachers perceive four main effects in their junior level students when using NBL. All of the teachers notice their students being more engaged in what they were doing when learning outside. They perceive that students, especially shy students, were more likely to take risks when they are in a natural environment. They notice that their students enjoyed school more when they are learning outside. And lastly, the teachers perceive that NBL cultivated, a sense of stewardship and ownership towards nature in their students.

According to these teachers, not only does NBL have positive effects on their students, but on themselves as well. They felt that in the context of nature they were a lot more relaxed and happy, and that this had a positive effect on their teaching. Their behaviour is perceived to improve as they engage and relate to the students in a different way than they usually do in the indoor classroom.

Based on the findings of this study, the first recommendation I would make is for teachers to try NBL with their junior level students as a way to increase engagement, risk-taking and a sense of stewardship towards the Earth. This study supports the notion that these junior level teachers believe that NBL does affect their students in a positive manner in these four areas. My second recommendation is for teachers to try NBL in order to have a positive effect on their own teaching attitude and behaviours. NBL might prove to be a valuable tool to help teachers relate to their junior students in a different
way. The teachers see their students differently, and the students see their teachers in a new light.

Limitations

The limitations to this study included a small number of participants, a homogenous sample of teachers in terms of interests and methods engagement in NBL, and the subjectivity inherent in qualitative studies of perception. Due to the constraint of time, only three participants were chosen. The participants themselves were similar in that they all voluntarily engaged in NBL, and their interests were in nature and environmental sciences; these findings might have been different had there been a participant who did not like being in nature. Secondly, all three participants showed similar trends in amount of time spent and activities performed outdoors while teaching. The insights drawn from their experiences might be different if the participants spent most of their time in nature, and rarely in the classroom.

Further study

Further study should be done on the effects of NBL on teachers and their students. Most of the existing literature on the subject is done with students, but more investigation is needed to better understand its effects on teachers as this study shows that teachers perceive that they differ in their approach when engaging their class through NBL. Therefore, I suggest that more research be conducted on finding out if the students' changes in attitude and behaviour affects the teacher, or if teachers' change in attitude and behaviour affects the children. This would be valuable information as it would allow the education community to understand how to benefit for the advantages and challenges of
NBL more fully. With this research I have discovered not only how positively teachers see their students when teaching in a natural environment; but also how passionately they share the importance of nature and the environmental sciences with their students through nature.
REFERENCES


http://www4.uwsp.edu/education/Lwilson/LEARNING/natintel.htm
Appendix A: Letter of Consent for Interview

Letter of Consent for Interview

Date: ___________________

Dear ___________________,

I am a graduate student at OISE, University of Toronto, and am currently enrolled as a Master of Teaching candidate. I am studying the teachers' perceptions of the effects of nature-based learning on elementary students. The end product of this research is the MTRP (Masters of Teaching Research Paper) which is a major assignment for our program. I think that your knowledge and experience will provide valuable insights into this topic.

I am writing a report on this study as a requirement of the Master of Teaching Program. My course instructor who is providing support for the process this year is Dr. Arlo Kempf. My research supervisor is Dr. Hilary Inwood. The purpose of this requirement is to allow us to become familiar with a variety of ways to do research. I would be grateful if you would allow me to interview you at a place and time convenient to you. I can conduct the interview at your office or workplace, in a public place, or anywhere else you might prefer.

My data collection consists of an interview lasting approximately an hour which will be recorded. I plan on transcribing the data from this interview, using it for my assignment, and summarizing it in my final paper. I will share with you a copy of my notes to ensure accuracy. I will send you a final copy of the research paper before publication. The final paper will be used for informal presentations to my classmates and/or potentially at a conference presentation or publication. I will only use your name (or anything else that might identify you) in my final paper, oral presentations, or publications, with your signed permission at the bottom of this form. The raw data from our interview will remain confidential. The only people who will have access to the raw data will be my research supervisor, my course instructor and myself.

You are free to change your mind about participating in this study at any time, and to withdraw even after you have consented to participate. You may decline to answer any specific questions. I will destroy the audio recording after the paper has been presented and/or published (which may take up to five years after our interview). There are few drawbacks for you in assisting with this project.

Please sign the attached form, if you agree to be interviewed. The second copy is for your records. Thank you very much for your help.

Yours sincerely,

Olivier Gautheron

Phone number, email: 514 432 4899  ogautheron@hotmail.com
Consent Form

I acknowledge that the topic and procedures 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 at any time.

I have read the letter provided to me by Olivier Gautheron and agree to participate in an interview for the purposes described.

Signature: ________________________________

Name (printed): ____________________________

Date: __________________________

☐ I would like my name to appear on the research paper
Appendix B: Interview Questions

Introduction questions
1. How long have you been a teacher?
2. What grade and subjects do you teach?

Background knowledge of nature-based education
3. What do you understand by the term nature-based education?
4. How long have you have been using nature-based education?
5. Why did you originally decide to engage your students in nature-based education?
6. What locations do you usually go to, in order to engage in nature-based learning with your class?
7. On average, how often do you take your class outside to learn in natural environments?

Teacher behaviour outdoors
8. Can you describe how you incorporate nature-based learning in your class(es)?
   a. Can you provide some examples of this?

9. In your opinion, is your teaching style different in nature, compared to in an indoor classroom?
   a) (If so) How?

Student behaviour outdoors
10. Do you feel that your students behave or act differently when they are learning in nature?
    a) Can you provide an example?
    b) (If so) In your opinion, why do you think their behaviour is different?
    c) Do you believe that students act or behave differently when learning in an indoor classroom after having experienced nature-based learning?
i) *(If so)* How?

11. In your opinion, what effect does nature-based learning have on the attention of students if any?

a) *(If there are effects)* Why do you think this/these effect(s) occur?

b) Can you recall a specific example of a student who lacked attention in an indoor classroom. What was the effect, if any, of teaching this student in nature?

**Effects on the community**

12. In your opinion, has nature-based learning affected your school's community in any way?

a) *(If so)* How?

b) *(If so)* In your opinion, how does (do) the change(s) in the community affect the students?

13. In your opinion, has your practice of nature-based learning have an effect on the way your students view their community?

a. *(If so)* How?

14. To your knowledge, has your practice of nature-based learning had an effect on the daily life of your students?

a. *(If so)* How?

**Outdoor education for all students**

15. Do you think nature-based learning is beneficial to all students?

a) In your opinion, why is this the case?

b) Would nature-based learning be applicable for most classes?

i) *(If not)* What type of classrooms would not benefit from nature-based learning and why?

ii) *(If so)* Why do you think that is?

13. Is there anything you would like to add on this topic that I did not ask during this interview?