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The Relationship Between Frequent Field Trips to a Local Community Nature Center and Elementary Aged Youth's Positive Sense of Place

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THE RELATIONSHIP BETWEEN FREQUENT FIELD TRIPS TO A LOCAL COMMUNITY NATURE CENTER AND ELEMENTARY AGED YOUTH'S POSITIVE SENSE OF PLACE

by

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CHAPTER ONE

INTRODUCTION

Overview

"Knowledge without love will not stick. But if love comes first, knowledge is sure to follow." – John Burroughs

This capstone thesis will address the following research question: *Is there a relationship between a student's repeated visits to a particular community nature center and a positive sense of place?* This is an important question to me because as a child I spent a great deal of time outdoors and acquired a love and emotional connection to nature. This bond to the environment inspired me to learn more about the outdoors and become involved in stewardship activities. As I spent more hours involved in local environmental issues I realized the power and importance of environmental education. I also discovered that time spent in nature is essential in all stages of life, but is most important in early and middle childhood to form emotional connections to nature (Sobel, 1996, p 15). Emotional attachment to a place provides the foundation for abstract and interdisciplinary ecological concepts to grow. To continue protecting and conserving natural resources, there needs to be a population with attention and passion for the environment.

Today, more than half of all people live in urban areas and by 2030, 6 out of every 10 people will live in a city (World Health Organization, 2014). As a result of the

movement to urban areas, there are fewer spaces to experience nature and wildlife, as well as a fear of children playing outside. Environmental education can assist people of all ages in forming and building emotional and intellectual bonds to the natural world creating less fear (Louv, 2005, p 42). Once connections are built, then environmental knowledge can accumulate leading to environmental literacy and stewardship. Environmental education provides opportunities for individuals to develop the emotional and cognitive connections needed to understand the ecological world around them.

This chapter will describe in detail the meaning and reasons for this study. Besides providing context, the chapter will provide a brief overview of the researcher's experience and passion. Sense of place and environmental education will be briefly explained and linked before introducing chapter two.

Background

I was very fortunate as a child to live in a home with five acres of land in a quiet town. The property was mostly wooded with a small marsh on the back portion of the property. This location was also special because of the wildlife sanctuary a mile away. This resulted in numerous animal sightings, that were spectacular. I would see bobcats, turkeys, red foxes, coyotes, black bears, and raccoons. Besides observing animals, I would also dig holes and explore the soil and organisms living there. My parents were not happy to find holes in the yard, but I enjoyed creating my own adventures. The marsh and forest were places I explored often, which allowed me to learn common names of plant and animal species inhabiting those spaces. I owe a large portion of my love of nature to my parents and grandfather who taught me how to fish at the young age of four. As I became older, fishing became less about how to fish and more about learning the variety of

habitats and how to conserve lake systems. These memories and experiences from my youth are the solid foundations from which I base my environmental values and commitment to conservation. To this day, I attribute my love and passion for nature to my parents who formed my knowledge and allowed me to play with minimal boundaries.

The time spent fishing and playing in my backyard as a child created a solid sense of place. If there is anywhere I want to be, it is at a lake exploring the shoreline or observing fish. This connection to water is a lifelong passion that motivates me to educate others about the wonders of the natural world. No matter where I am I can always connect myself back to nature due to my emotional bond. My childhood home and fishing ignited my journey as an environmental educator.

I completed an undergraduate degree in environmental studies and have worked numerous positions within the environmental field which allowed me to learn and acquire a variety of skills. In my past work experiences, the positions that inspired me most was a fisheries internship with the Minnesota Department of Natural Resources, and an invasive species specialist position with the Conservation Corps of Minnesota. After these experiences, I gained teaching experience through educating homeowners about home energy efficiency and building science. While working within the home energy sector, I met and taught a diversity of adults and youth about energy conservation. Having a wide array of work experience in the environmental field allowed me to understand how all concepts link together and how to present information diverse audiences. I have now shifted to working at an inner-ring suburb nature center in the upper Midwest.

Working at a nature center creates valuable experiences in understanding a wide array of age groups and how they best experience nature. Knowing how each age group

encounters nature is an opportunity for best education practices and to build relationships to nature. Although environmental education is interdisciplinary allowing multiple opportunities for the environment to be taught throughout numerous subjects, the school-nature relationship is less common that it once was due to budget cuts and increased academic standards. Attending a nature center once a year is not enough time for youth to develop an awareness and a lasting interest in the natural world. This limited exposure to environmental education and natural spaces can limit children's environmental stewardship and literacy in future years (Beyer et al., 2015, p 3). Visiting nature centers for environmental education should happen multiple times a year, allowing students to understand the logistics of the location, then develop the education and environmental ethic. The goal is to provide youth with the knowledge and the skills necessary to understand science and make decisions that eventually improve the natural world.

Role of Sense of Place in Environmental Education

With urban populations growing, city residents will ultimately experience more barriers to nature due to increased travel to green spaces and reduced interactions with wildlife. This gradual disconnect from local habitats is resulting in a population that is not environmentally interested or aware. This can be described as a nature-deficit disorder as there is a lack of nature in the lives of today's youth and adults (Louv, 2005, p 15). Societal pressures such as increased technology use in the home, and physical and emotional barriers, decrease the amount of time spent in nature. There is also a fear of abduction and harm from wild animals and plants. These factors create individuals that find the natural world irrelevant to their daily life with little purpose and fear of the natural

environment. Therefore, environmental education programs need to include time for sense of place development.

Sense of place refers to the bond between people and places, as well as the level of connectedness individuals feel to a specific place (Russ, 2015, p 51). Simply stating, sense of place incorporates two components, place attachment and place meaning. Place attachment is the emotional bond between a person and place and the degree to which a certain place attracts a person (Russ, 2015, p 51). This emotional construct of a place can be influenced by personal experiences and formed through familiarity of place, positive experiences, and exploration through education (Kudryavtsev, Stedman, & Krasny, 2012, p 232). Place meaning is how an individual would describe a specific place, and any symbolic meanings (Russ, 2015, p 51). This is the intellectual construct of connections to nature. As a child, I formed a sense of place through playing and exploring in my backyard. For elementary aged youth, nature centers are great places to form sense of place through nature discovery and spending time outside using senses to explore. It is difficult to remember information about nature and seek experiences outside school hours when youth have no connection or understanding of the place.

Schools who regularly visit nature centers for environmental education, provide students with opportunities for meaningful and memorable experiences. While at the nature center students are able to familiarize themselves with the unique characteristics of the place. Students discover positive and negative associations and how it fits their personality as more time is spent in nature through environmental education visits. Knowledge and positive associations of the location, and environmental education can help students develop environmental stewardship and literacy. Environmental

programming at nature centers provides opportunities for students to develop place meaning and place attachment.

Environmental education has goals and objectives for educators such as to foster awareness and concern about natural areas, to provide each person with opportunities to acquire the knowledge and values needed to protect and improve the environment, and to instill behaviors that improves the environment (North American Association for Environmental Education, 2015, p 15). Environmental education objectives try to create awareness, knowledge, attitudes, skills, and participation that motivates individuals to acquire a basic understanding of the environment and its problems. Education objectives also focus on providing opportunities for people to become involved in solving environmental problems as well as improving and protecting the natural world.

Conclusion

To build sense of place among elementary aged youth and meet environmental education objectives, schools can visit a community nature center multiple times a year. It is predicted the more time spent in a natural space will result in familiarization and knowledge leading to cognitive and emotional bonds to the natural place. To determine if a school's frequent visits to a community nature center creates a positive sense of place among students, I will survey students at a neighborhood public school that attends a community nature center three times a year. A Likert-scale sense of place survey will be used to determine the place attachment and place meaning scores of students. This methodology will determine if repeated visits to the community nature center for environmental education is producing a positive sense of place among students. Chapter two will focus on literature necessary to understand the research question: "*Is there a*

relationship between a student's repeated visits to a particular community nature center and a positive sense of place?" This Capstone thesis will explore the value and necessity frequent field trips have in establishing and building sense of place in elementary aged youth.

Chapter two explores current literature topics such as sense of place, environmental education, and elementary aged youth. More specifically the history, influences, and associated behaviors of sense of place will be further analyzed. Environmental education will be looked at through a historical, state, and nature center focused lens. Finally, elementary aged youth development, best practices will be stated and compared to sense of place development. The chapter will end with an analysis of how specific teaching techniques at nature centers create both cognitive and emotional development in nature. The chapter two literature review reveals the relevance of this study as well as the information needed to complete methods and research.

CHAPTER TWO

REVIEW OF LITERATURE

Overview

The following literature review supports the investigation of the following research question: *Is there a relationship between a student's repeated visits to a particular community nature center and a positive sense of place?* The goal of the literature review is to connect how sense of place is developed, and how environmental education provided from a nature center can create positive sense of place. Research shows sense of place contributes to pro-environmental behaviors and as the rural-urban shift continues, it will become important to understand how sense of place is formed through public spaces. As part of this literature review, environmental education goals and outcomes will be evaluated as to tie the connection between education and place attachment and place meaning. It is important to understand age specific practices and developmental tendencies of elementary aged youth. Understanding the age in which sense of place is best developed can help educators best present education materials. Lastly, barriers to experiencing nature will be explored as to understand how technology and modern teaching practices influence the formation of sense of place in elementary aged youth. Thus, the purpose of this study is to determine the relationship which environmental education has in elementary aged youths' sense of place.

History of Sense of Place

There are numerous environmental scholars who discussed the relationship between the natural world and people to define the concept of sense of place. This environment-person relationship took on many shapes and forms depending on the place and personal experiences. Aldo Leopold is an influential writer that pioneered the idea that landscapes carry many values. Leopold wrote that people have an ethical, esthetic, economic, and ecological responsibilities to the land, which aligns with the current view of sense of place (Kudryavtsev, Krasny, & Stedman, 2012, p 2). "It is inconceivable to me that an ethical relation to the land can exist without love, respect, and admiration for the land and a high regard for its value" (Leopold, 1989, p 223). Alike with Leopold, Rachel Carson was another writer who described the relationship between the land and emotions. "Once the emotions have been aroused - a sense of the beautiful, the excitement of the new and the unknown, a feeling of sympathy, pity, admiration or love - then we wish for knowledge about the object of our emotional response. Once found, it has lasting meaning" (Carson, 1965, p 284). Since Leopold and Carson, sense of place has transformed and been well-studied. The ideas and concepts of sense of place have only developed and evolved over the past couple decades among several disciplines (Kudryavtsev, Stedman, & Krasny, 2012, p 230). Sense of place was not developed or applied to environmental education until the 1960s. Since then, there has been much exploration in sense of place and childhood development (Sobel, 2008, p 148; Wilson, 1997, p 191). Today, there are 25 academic disciplines within the concept of place and sense of place (Relph, 2017). For the purpose of this study, sense of place will be in reference to the ecology and environmental education disciplines.

Sense of Place

Sense of place refers to the personal intimacy one has with the natural processes, community, and history of a specific natural place (Sanger, 1997, p 294). In this thesis, sense of place will be defined as the combination of place attachment and place meaning. More specifically, the level of connectedness a person feels to a specific natural place, and any associated meanings (Russ, 2015, p 51). Another way to define sense of place is the way people experience a place and the meanings and experiences gained from time spent at that place (Adams, 2013, p 45). "Sense of place can arise from uniquely individual as well as shared social processes" (Farnum, Hall, & Kruger, 2005, p 9). Generally, from a natural resources and recreation view, most research has been on how individuals view places and less on the meanings shared within user groups. Individuals acquire a sense of place through "direct conversations with the elements of their place, sharing stories about the land and with their fellow inhabitants, and through education, but not the education that predominates in today's education system" (Sanger, 1997, p 294). The term place is more than just the name of location or the physical environment. "Place" is the history, ecosystem, and human community that that lives there as well as the stories that connect everything together (Kriesberg, 1999, p xiii). Place incorporates the meanings and values of specific geographic components of the landscape. Understanding the components of place attachment and place meaning as part of sense of place is essential to understanding the challenges that environmental educators face when trying to accomplish educational goals and outcomes.

Place Attachment

"Place attachment" is the degree to which a place evokes emotion and attracts a person (Russ, 2015, p 51). Fundamentally, place attachment entails an emotional – usually

positive – bond between a person and setting (Brehm, Eisenhauer & Stedman, 2013, p 522). A place attachment statement is: “the lake is my favorite place to be” (Farnum, Hall, & Kruger, 2005, p 3). Place attachment is a complex and multifaceted concept that stems from larger human attachments and from structured experiences in nature (Vaske & Korbrin, 2011, p 17). Research shows that place attachment has two components, place dependence and place identity. Place dependence refers to the “connection based specifically on activities that take place in an outdoor, recreational setting” (Farnum, Hall, & Kruger, 2005, p 4). It is the ability for a place to fulfill an individual’s need based on the geographical features of a space. For example, a person in a suburban area may be attached to a community center because it provides a space for their favorite activities. Place identity is explained as the extent to which a person self-identifies to a place and the place becomes part of their personal identity (Kudryavtsev, Stedman, & Krasny, 2012, p 234). Place identity can be the extent to which a place defines a person or the identity of a community. An example of place identity is a resident of a city stating they are attached to their neighborhood because it reflects the type of person they believe they are. Overall, place attachment normally portrays a positive relationship between self and place, but can portray negative associations when people are in conflict with themselves or a place does not serve the desires of the individual (Kudryavtsev, Stedman, & Krasny, 2012, p 231). In this study, place attachment will refer to the emotional bonds people have with environmental places (Farnum, Hall, Kruger, 2005, p 3).

Place Meaning

In contrast to place attachment, place meanings are distinguished from emotions as meanings are comprised of descriptive elements of the setting: what it is, rather than how

attached one is to a place (Brehm, Eisenhauer & Stedman, 2013, p 522). Place meanings represent a person's perceived interconnection between themselves and nature rooted in a contextual element of the specific place. “Place meaning” is the symbolic meaning attached to places (Kudryavtsev, Stedman, & Krasny, 2012, 232). A place meaning statement is: “my nature preserve is a favorite place for people to photograph wildlife”. In short, place meaning is the ideas and qualities ascribed to a place. In the same place, people can attach different social-constructs such as the environment, social interaction, culture, politics, economics, and esthetic perspectives (Kudryavtsev, Stedman, & Krasny, 2012, p 232).

Elements in the physical environment represent key building blocks for sense of place development (Brehm, Eisenhauer & Stedman, 2013, p 525). Certain landscape features such as water quality and shoreline development are associated with place meanings which underpin place attachment. Socially constructed understandings of the landscape characteristics can influence place meanings (Brehm, Eisenhauer & Stedman, 2013, p 525). For place attachments to develop, some place meanings must already be established through associations with the physical settings. A cohesive formation of sense of place will include a multifaceted place attachment.

Formation of Place Attachments

As place attachment is centered around emotion, the formation process is incrementally longer, and a larger energy commitment compared to place meaning (Scannell & Gifford, 2009, p 1). Place attachment development will be analyzed on the individual level and specifically how personal connections to a place form. The formation of place attachment is best understood from a multidimensional standpoint: 1) Who is

attached and to what extent is the attachment based on individually held meanings? 2) How emotion, cognition, and behavior are manifested in the attachment? 3) What is the attachment to, and what are the characteristics of the place? (Scannell & Gifford, 2009, p 2).

Place attachment is strongest in settings that evoke personal memories and contribute to a sense of self. Similarly, place characteristics are integral in the construction of place meaning (Manzo, 2005, p 69). It is not simply the places themselves that are significant, but also the experiences within the place. As described in Scannell and Gifford (2009) there are three main ways in which individuals and groups can form connections to a place:

1. Place attachment as affect: bonding through an emotional connection to a particular place. Relationships with a place can represent an array of emotions from love, contentment, fear, hatred, and ambivalence. It is also the authentic and emotional bond with an environment that satisfies a fundamental human need.
2. Place attachment as cognition: the memories, beliefs, meaning, and knowledge that individuals associate with their central settings that make them personally important. Place attachment as cognition involves the construction of, and bonding to, place meaning, as well as the cognitions that facilitate closeness to a place. Through memory, people create place meaning and connect it to the self. Place identity or social identity is when individuals draw similarities between self and place, and incorporate cognitions about the physical

environment (memories, thoughts, values, preferences, categorizations) into their self-definitions.

3. Place attachment as behavior: attachment is expressed through actions. This is a positive, affective bond between an individual and a specific place, the main characteristic is the desire to remain close to a place. Another form is when individuals must relocate to a new place, and some choose to preserve the bond by selecting locations that are as similar as possible to the old place. Attachment to public places that are in maintained in close-proximity can result in territorial behaviors. (p 2-4)

One of the most important components of place attachment is the place itself. Individuals connect best to places that exhibit both social and physical characteristics (Scannell and Gifford, 2009, p 5). Also, places that facilitate social relationships and any group identity are also more easily attachable. Physical features, such as density, proximity, and the presence of amenities, resources, and other social arenas influence the amount of interactions one will have with a place. Overall, place attachment bonds exist because places serve several functions.

Influences of Sense of Place

Variables that influence sense of place are well studied and can be organized into two main groups: direct experiences and learning about a place from other people or interpretive materials. Direct experiences of a place show that place attachment is strengthened by increased visits, activities done, commitment to outdoor recreation, activities that only occur in a particular location, and active stewardship activities (Kudryavtsev, Krasny, & Stedman, 2012, p 3). Place attachment can be strengthened

through social interactions at a specific setting and in a community setting. Direct and indirect experiences make it difficult to record and monitor influences on place meaning (Farnum, Hall, Kruger, 2005, p 19). “Interpretative displays, mass media, literature, films, photography, legends, cultural customs, social discussions, storytelling, and many other social interactions can influence place meaning and place attachment” (Kudryavtsev, Krasny, & Stedman, 2012, p 4).

There is much disagreement within the different academic disciplines of sense of place whether people can become attached to places they have never visited. Some believe that individuals cannot create an attachment to places never been to before, while other researchers argue that people can place emotional attachments to never before seen places (Farnum, Hall, & Kruger, 2005, p 14; Kudryavtsev, Stedman, & Krasny, 2012, p 230). The idea that eagerness and the intensity to experience a place can be enough for emotional connectedness to form to a never before seen place. There is also a spiritual element as part of place attachment that can also create an attachment to places. In this argument, sense of place and place attachment should be distinguished and separated. There is still more research that needs to be done regarding this topic, but for this research, nature meanings and the strength of attachments come from real, firsthand experiences of a place rather than indirect experiences (Farnum, Hall, & Kruger, 2005, p 17). Also, sense of place belongs to specific places and cannot be generalized to a type of place or an ecosystem. It is important to be aware that “person-place bonds have become more fragile as globalization, increased mobility, and encroaching environmental problems threaten the existence of, and our connections to, places important to us” (Scannell and Gifford, 2009, p 1).

Sense of Place and Pro-Environmental Behaviors

It is the type of relationships people have with particular places that affect how individuals make choices about environmental actions (Halpenny, 2005, p 1). Individuals' attitudes towards a particular setting through place attachment affect specific pro-environmental behaviors" (Halpenny, 2005, p 1). A pro-environmental behavior can be defined as an action of an individual or group that advocates for the sustainable or the diminished use of natural resources. The best way to predict this behavior is through the intent, which is caused by an individual's attitude toward performing the behavior and beliefs about the behavior (Fishbein & Ajzen, 1975). A comprehensive analysis of environmental attitude-behavior research found "people with more positive attitudes toward the environment are more likely to report participating in pro-environmental behaviors" (Halpenny, 2005, p 2). Environmental behavior can range on a spectrum from anthropocentric to eco-centric to bio-centric attitudes towards the environment. Those with eco and bio-centric attitudes have stronger attachments to the environment compared to those with anthropocentric attitudes.

Those with place attachment values (emotionally, psychologically, or functionally attached) have been found to act and protect their bonded environment (Halpenny, 2005, p 2). Actions to protect places can take on many different forms: voting for pro-environmental laws, protesting government policies, or divestment of non-renewable resources. Studies show that increasing awareness of environmental issues alone will not create environmentally responsible behaviors (Vaske, & Korbrin, 2011, p 17). It is instead the repeated visits from the satisfaction with the place that build meanings and values with the place that will lead to environmentally responsible behaviors. Individuals will return to

a place that satisfies them and will develop attachment and meaning. These actions lead to pro-environmental behaviors.

Research has shown one alternative, those who are functionally attached to a place through work or school, can be attached to a place and not be satisfied with it (Halpenny, 2005, p 3). Repeated visits through work or school can create meanings through skill development rather than through satisfaction in the place, resulting in the individual failing to take pro-environmental action. Thus, one can be attached to a place but not satisfied with it creating (a) dissatisfaction with the area's natural environment resulting in the individual taking action to improve it (b) dissatisfaction with an area's natural environment will result in the individual failing to take pro-environmental action (Halpenny, 2005, p 2).

History of Environmental Education

Comparable to the origins of sense of place, environmental education does not have an exact beginning. The words 'environmental education' did not appear until the mid-1960s. Credit must be made to past philosophers, writers, and educators that influenced how the environment is viewed and taught today (Palmer, 1998, p 100). The most notable in their contributions to the popularization of the environment is John Muir, Henry Thoreau, Aldo Leopold, and Rachel Carson (NAAEE, 2015, p 10). Through their writing, they brought forth environmental problems that created concern and care for the natural world, as well as contributing ecological knowledge. The pedagogy of environmental education was contributed by individuals who thought about learning and teaching the environment in outdoor settings (NAAEE, 2015, p 11; Palmer 1998, p 3). The writings and practices of Jean Jacques Rousseau, Sir Patrick Geddess, John Dewey, and

Louis Agassiz greatly shaped how we teach and connect people to the environment (McCrea, 2006, p 2; NAAEE, 2015, p 10; Palmer, 1998, p 4). More specifically, the founding principles such as bringing people outside to learn about and from nature were studied and practiced by Rousseau and Agassiz. Similarly, Geddess wrote about educating to the whole person and learning by actively participating and doing what one is studying (Palmer, 1998, p 4; NAAEE, 2015, p 10). Dewey followed Geddess's ideas of experiential education and included that individuals should be given time to explore, process and reflect upon, and apply new knowledge (NAAEE, 2015, p 10). The combination of pedagogy and popularized writings that brought attention to the environment set the foundation and properties from which environmental education was founded.

Types of Environmental Education

In 1891, an American educator named Wilbur Jackman published a book titled *Nature Study for Common Schools*, which defined the nature study movement allowing the field of environmental education to emerge (McCrea, 2006, p 2; NAAEE, 2015, p 11). Jackman's work changed how elementary aged students were taught natural science as it focused on the exploration of the systematic thinking (NAEE, 2015, p 11). Jackman's contributions also brought about outdoor education. Students were challenged to piece together the relationships of plants, animals, and the physical systems that support them. In 1908, Liberty Bailey, Anna Botsford Comstock, Edwin Way Teale, and Roger Tory Peterson established the American Nature Study Society (McCrea, 2006, p 3). This group of authors and educators believed that to study nature, learners must be engaged through skill building and study in effective learning environments. This more skill based outdoor experience created the outdoor education movement of the 1940s and 1950s. This outdoor

movement resulted in camping and recreational skills which the learned recreational skills would bring about an appreciation and knowledge of the natural world (NAAEE, 2015, p 11; McCrea 2006, p 3). This type of outdoor education was focused toward elementary youth as it was thought that when they were adults, the recreational activities would continue in into their leisure time and contribute to family values. This movement slightly declined in the 1980s but is still taught by many organizations and governmental agencies today (NAAEE, 2015, p 12). Comparably, nature study continued to be practiced in the United States and in Europe, until the 1930s and was in part driven by urban development (NAAEE, 2015, p 12; McCrea, 2006, p 3).

The 1930s with the combination of the Great Depression and Great Plains Dust Bowl, the federal government sought out creative ways to assist American families and conserve the land and wildlife (USFWS, 2012, p 1; McCrea 2006, p 3). Sport and conservation programs resulted providing education about wildlife and habitat restoration to hunters (USFWS, 2012, p 2). Federal and state government agencies created conservation education programs to help develop future conservationists and preserve wildlife habitat. Conservation education aims to go beyond increasing awareness, it seeks to evoke the importance of wise land and resource use (NAAEE, 2015, p 12). Conservation education is still practiced today by many state and federal government agencies. Conservation education differs greatly from both nature study and outdoor education, because it was created and is supported by the U.S. government.

Beginning of Environmental Education

A professor at the University of Michigan in 1968 named William Stapp began questioning and discussing the limitations around conservation education and outdoor

education (NAAEE, 2015, p 12). This lead Stapp and his students to believe there was a need for a new field that was inclusive of the whole environment, and problem-solving. In *the Concept of Environmental Education*, Stapp (1969) states:

> This new approach, designed to reach citizens of all ages, is called "environmental education." We define it in this way: Environmental education is aimed at producing a citizenry that is knowledgeable concerning the biophysical environment and its associated problems, aware of how to help solve these problems, and motivated to work toward their solution.
>
> The major objective of environmental education is to help individuals acquire a clear understanding that man is an inseparable part of a system, consisting of man, culture, and the biophysical environment, and that man has the ability to alter the interrelationships of this system. (p. 34)

This is the first published definition of environmental education in the United States and during the same year, Clay Schoenfeld began *The Journal of Environmental Education* (McCrea, 2006, p 4). It was in 1970 that the "United States became the first country to establish an environmental education policy through the Environmental Education Act and creation of the Office of Environmental Education to award grants to develop curricula and provide professional development for teachers" (NAAEE, 2015, p 14). The 1970s was a critical point in environmental education, as there was a lack of formal documentation. During this time, there was also increased attention to the human-environment relationship. This relationship focused on how people relate to the biophysical environment. The first Earth Day occurred in 1970 and provided the opportunity for individuals to express their voice and concern about environmental health

(Zhang, 2017). This motivation and concern for environmental problems created a platform from which the first international intergovernmental environmental education conference was held in 1977 in Tbilisi. In a closing address by O.E Tcherkezia at the Tbilisi conference:

> To my mind, the main achievement of the Conference has been the elucidation of ideas regarding environmental education, and the formulation of a number of methodological bases for such education which are of interest both nationally and internationally. We can see that environmental education is not some sort of mechanical adjunct to general education. We can see that environmental education and its content will change with changing circumstances and according to the progress made in solving environmental problems in different countries and in different regions. It is difficult to imagine any single and permanent "recipe" for ecological education. Nevertheless, there are certain general assumptions, and general principles, and a general philosophy underlying the definition of education in this field which is valid for all people on earth. It seems to me that it is precisely in this direction that the Conference has taken a significant, step forward and made a substantial contribution to the introduction and development of environmental education. (Intergovernmental Conference on Environmental Education, 1977, p 79)

Environmental education practiced through the 1980s and 1990s was dedicated to defining environmental education and developing methods of research (NAAEE, 2015, p 13). During this time, the definition of environmental education was adopted throughout the world and focused on the needs of local communities. With the increased

understanding and need, national and regional organizations were created and dedicated to further develop, promote, and review environmental education and its curricula (NAAEE, 2015, p 13; McCrea, 2006, p 5).

In the 1990s environmental education in response to the 1992 Earth Summit in Rio de Janerio, developed a sustainability approach (NAAEE, 2015, p 17; McCrea, 2006, p 8). This pushed new curricula, training programs, and guidelines. Today, sustainability education continues to play an important role in conserving resources. Similarly, environmental issues and problems continue to play an important component of environmental education. Due to technology and consumerism, the environment is now part of every individual in the world and now means there needs to increase knowledge and understanding of the environment (Welles, 2011).

Along with environmental issues, there is a growing exploration in cultural connections to the environment. The 21st century also presents many challenges for environmental education, such as urbanization, technology, environmental issues, and curriculum standards. Therefore, "environmental education strives to reconnect people of all ages with nature for educational, psychological, and physical benefits" (NAAEE, 2015, p 34). Richard Louv's iconic book *Last Child in the Woods* states that direct exposure to the environment is critical for the emotional and physical development of children (Louv, 2005, p 35; NAAEE, 2015, p 34). As environmental education continues to adapt to a changing world and changing lifestyles, it is important to analyze how the state defines environmental education and nurtures sense of place.

State Based Environmental Education

"Minnesota has a long history of outdoor and nature-based education programs, but environmental education emerged along with widespread concerns about environmental quality raised in the late 1960s" (Leadermann, 2010). With assistance from the federal government, formal environmental education programs were constructed. For example, the first outdoor environmental education school was established in Blackduck in 1952 (Leadermann, 2010). The 1970s and early 1980s were the most difficult, as "regional councils, environmental learning centers, Minnesota naturalists, and others worked to promote environmental awareness with limited and fluctuated institutional support" (Leadermann, 2010). The Minnesota Naturalists' Association was formed in 1972 but did not incorporate until ten years later.

The early education efforts paid off as by the 1980s environmental education was taught in private, non-profit, and governmental sectors (Leadermann, 2010). This exposure to a wide range of audiences allowed a building knowledge and understanding of the natural processes, as well as increased institutional support. During the mid to late 1980s, hundreds of organizations and agencies became active and engaged with environmental education. This boom in engagement was incredible but due to little coordination created confusion and mixed education goals. In 1984 the Minnesota State Board of Education "revised its Elementary Education Rule and included an environmental education requirement" (Leadermann, 2010). This brought environmental education into classrooms around the state. Then in the early 1990s, there was a large push to bring and coordinate environmental education at a statewide level (Leadermann, 2010).

In 1990 the Minnesota legislature put into act Minnesota Statute 115A.073 titled *The Environmental Education Act of 1990* (Minnesota Statues, 2016; Kennedy &

Stromme, 2008; Leadermann, 2010). This was the first environmental education statute in Minnesota and was created to promote environmental education as well as establish the role of environmental education. This statute eliminated the Minnesota Environmental Education Board (MEEB) and its associated regional councils and created the Environmental Education Advisory Board (EEAB). The EEAB is comprised of twenty members total, of which eleven are citizen representatives, and a representative from the following agencies: Pollution Control Agency, Department of Education, Department of Agriculture, Department of Natural Resources, Board of Water and Soil Resources, Environmental Quality Board, Board of Teaching, and University of Minnesota Extension Service (Kennedy & Stromme, 2008, p 26; Leadermann, 2010).

The Environmental Education Act also "defined and set education and literacy goals for kindergarten through twelfth-grade students and all Minnesota citizens, including mandating that environmental education be taught in Minnesota schools, and encourage the development of regional environmental education centers throughout Minnesota" (Leadermann, 2010). Since 1990, the statute has been revised and updated five times. From the Environmental Education Act (Minnesota Statute 115A.073 and section 115A.074), Minnesota's environmental education goals and plan are:

A. Pupils and citizens should be able to apply informed decision-making processes to maintain a sustainable lifestyle. In order to do so, citizens should:

- understand ecological systems;
- understand the cause and effect relationship between human attitudes and behavior and the environment;

- to be able to evaluate alternative responses to environmental issues before deciding on alternative courses of action; and
- understand the effects of multiple uses of the environment.

B. Pupils and citizens shall have access to information and experiences needed to make informed decisions about actions to take on environmental issues.

(Minnesota Statutes, 2016; Kennedy & Stromme, 2008, p 40)

The metrics of the 1990 education act increased the network of individuals dedicated to environmental education and its cause. The Minnesota Earth Day Network is an example of how environmental education grew, as it was a massive collaboration between state agencies, organizations, and citizens (Kennedy & Stromme, 2008, p 42; Leadermann, 2010). With specific education goals, the Environmental Education Act also incorporates a framework that can be constructed, established periodic assessments such as the Minnesota Report Card of Environmental Literacy, and outcomes to measure the results of environmental education statewide (Kennedy & Stromme, 2008).

As natural systems are more understood and environmental issues increase, education should be guided in a way that best prepares Minnesotans to address a changing world (Kennedy & Stromme, 2008, p 30). Four education outcomes were created by a collaboration and partnership between state agencies, environmental educators, and community members. These are environmental education outcomes the community should work towards in the next ten years (Kennedy & Stromme, 2008, 4). Achieving these four outcomes will enable educators and citizens to tackle environmental issues in future years. The four environmental education outcomes as described by the Minnesota GreenPrint:

- Outcome 1: Minnesotans have the knowledge, skills, and attitudes to make individual and collective lifestyle choices that support a sustainable environment.
- Outcome 2: Environmental education in Minnesota is of the highest quality and is ensured through the development of standards and common definitions.
- Outcome 3: Minnesota Academic Standards include Minnesota Environmental Literacy Scope and Sequence benchmarks across all disciplines and grade-levels.
- Outcome 4: Minnesota has a dedicated sustainable funding mechanism for environmental education for all ages and audiences. (Kennedy & Stromme, 2008, p 4)

The Environmental Education Advisory Board (EEAB) with input from the environmental education community publishes the GreenPrint for Minnesota (Minnesota State Plans for Environmental Education, 2015; Kennedy & Stromme, 2008, p 40). The purpose of the document is to help educators accomplish state goals as described in Minnesota Statute section 115A.073, give a foundation of what environmental education in Minnesota is, present information and strategies for the education community, define education outcomes, describe the roles of the Environmental Education Advisory Board (EEAB) and the Minnesota Pollution Control Agency (MPCA), and list strategies for achieving Minnesota's environmental education goals in the next ten years (Kennedy & Stromme, 2008, p 11).

Goals presented by GreenPrint for Minnesota include, gather higher education institutions to coordinate teacher education for environmental education, focus on out-of-

classroom environmental education programs for kindergarten through twelfth grade students, offer more support and training for environmental educators, and designated funding for environmental education at the local level (Kennedy & Stromme, 2008, p 30; Minnesota State Plans for Environmental Education, 2015). The environmental education community in Minnesota is still growing as well as the range of topics taught.

Nature Center Education Practices

Education practices at nature centers take different forms than those in formal education settings as the classroom is outdoors. The most commonly practiced form of education at nature centers is interpretation. As described by the National Park Service:

> Interpretive formats include guided tours, formal talks, self-guided activities, curriculum-based programs, demonstrations and other illustrated programs, wayside signs, printed brochures, virtual tours and other interactive web media, as well as informal interactions with park rangers. In all venues, interpreters strive to help audience members form their own intellectual and emotional connections with the meanings and significance of park resources through the effective use of interpretive techniques. (Scherbaum, 2006, p 10)

Interpretation is formally defined by The National Park Service Interpretive Development Program as a "catalyst in creating opportunities for audience members to make their own intellectual and emotional connections to the meanings of park resources." (Scherbaum, 2006, p 15). The best interpretation takes place when the interpreter creates a connection between the meanings of the resource and the interests of the audience. This is done when the educator/ interpreter has knowledge of the resource,

knowledge of the audience, and uses appropriates interpretative formats. Interpretation becomes an effective education tool at nature centers when the techniques create a connection between resource meaning and audience interests. The most memorable and effective education practices are those that seek to reveal the meanings and relevance for specific age groups through an appropriate range of programs, activities, and media.

This is the most effective format of education at nature centers as most of the activities completed are outside and require skillful delivery. Nature center programming requires appropriate knowledge of the location, audience, and local ecosystem. What makes interpretation a powerful education tool is the use of the place, types of outdoor activities used, easy modification, and continuous evolution to meet the needs and expectations of modern audiences.

Similarly, to education techniques used for students at nature centers, teachers at schools with access to outdoor classrooms, such as school forests or school gardens will use similar techniques and reach comparable outcomes. “A school forest is an outdoor classroom which allows students to learn and apply math, art, science, language arts, and social studies while gaining an appreciation and awareness of natural resources” (School Forests in Minnesota, 2017). Outdoor classrooms allow students to develop self-esteem, sense of community, new skills and knowledge base, life-long critical thinking, frequent enjoyable outdoor experiences, and engagement in learning. With increase or frequent trips and use of the outdoor classroom, students will become very familiar with the space and form their own intellectual and emotional connections to the environment.

Sense of place can be built and developed through frequent trips and use of natural spaces at schools and nature centers. Within these spaces special teaching techniques such

as interpretation can be used to best educate and accomplish educational goals and objectives. Outdoor spaces also require knowing the audience, as well as the key developmental stages of youth. Using the developmental stages of youth in the delivery of information is very beneficial as it guides the interpreter on how to best present information to a specific age range of individuals and connect them to the natural area.

Elementary Aged Youth Development

"Once children feel connected to the environment, physically and emotionally, they'll be compelled to seek hard facts" (Sobel, 1996, p ix). Before imparting knowledge of the natural world onto today's youth, it is essential to know at what ages it is best to educate certain principles and how to build nature relationships. As part of the research question and research methods, youth will be defined as kindergarten through fifth-grade individuals. As educators, it is key to know and understand the relationship between children and nature from the bottom up (Sobel, 2008, p 19). It is powerfully clear that the relationship between nature experiences in childhood influences adult ethics and behavior.

Kindergarten through fifth grade has two distinct developmental stages and it is important in any education setting that youth be taught appropriately. Through the literature review, it is hoped that environmental education, as well as formal education, shows best practices to teach each age group and how presenting environmental information to youth can indeed impact how these individuals perceive the natural world and may indeed grow to form sense of place through nature-based experiences through environmental education.

"Regardless of socioeconomic status, ethnicity, or ecosystem, children play in similar ways when they have safe free time in nature" (Sobel, 2008, p 19). The two key phases of youth development: ages four to seven is early childhood, and eight to eleven is middle childhood. At both stages, children desire immersion, and hours of interaction with the natural world (Sobel, 1996, p 15). Also, it is essential to not ask youth to deal with distinct ecosystems and environmental problems. Instead, youth should be engaging with a local place and learning about the flora, and fauna that live there (Sobel, 1996, p 16). Learning about local characteristics is best for children of all ages and will assist early childhood and middle childhood in learning about the environment. Early childhood and middle childhood as mentioned by David Sobel are described:

Early Childhood (ages four to seven): activities should center on enhancing the developmental tendency toward empathy with the natural world

- Empathy should be the primary focus for this age group
- Create opportunities to connect with animals, plants, and other living things in order to develop an ethic of care, empathy, and compassion
    - Cultivating relationships with animals, both real and imagined
- Fostering a sense of connectedness with living organisms as an emotional foundation for more abstract ecological and interdisciplinary concepts
- Example: a special place in this age can be constructed out of couch pillows in the living room and then moved under a porch. (Sobel, 1996, p 23; Sobel, 2008, p 11)

Middle Childhood (ages eight to eleven): activities should center on exploration until early adolescence, social actions should assume a more central role

- Discovery should be the primary focus for this age group
- Exploring nearby areas, finding and knowing one's place in the world, bonding with the earth
- This stage is characterized by expanding geographic boundaries and therefore learning about new ecosystems
- Example: special places at this age are forts made in closely forests or in trees. (Sobel, 1996, p 14; Sobel, 2008, p 11)

In comparison to the developmental stages mentioned by Sobel, a closer examination at recent state standards can show how students are being taught in the classroom. The Minnesota Department of Education's four main science standards are organized by grade level and as follows: 1) The Nature of Science and Engineering, 2) Physical Science, 3) Earth and Space Science and 4) Life Science (Minnesota Department of Education, 2016). There are two science comprehensive assessments at grades five and eight. A breakdown of Minnesota life science state standards describing ecology education at different grade levels:

- Grade K: Living things are diverse with many different observable characteristics, and natural systems have many components that interact to maintain the system.
- Grade 1: Plants and animals undergo a series of orderly changes during their life cycles.
- Grade 2: Living things are diverse with many different observable characteristics. Natural systems have to maintain the system. Plants and animals undergo a series of orderly changes during their life cycles.

- Grade 3: Living things are diverse with many different characteristics that enable them to grow, reproduce and survive. Offspring are generally similar to their parents but may have variations that can be advantageous or disadvantageous in a particular environment.
- Grade 4: Microorganisms can get inside one's body and they may keep it from working properly.
- Grade 5: Living things are diverse with many different characteristics that enable them to grow, reproduce and survive. Natural systems have many parts that interact to maintain the living system. Humans change environments in ways that can be either beneficial or harmful to themselves and other organisms. (Minnesota Department of Education, 2016)

Nature Center and School Relationship

When funding is available, classrooms can choose to go to nature centers, arboretums, zoos, aquariums, natural history museums, and many other locations to learn about science subjects. With recent budget cuts to elementary schools across Minnesota, it is now more difficult for schools to attend these environmental education hotspots (Ernst, 2012, p 75). There is still a question among environmental education in regards to the type of relationship schools have with the natural environment. There were times in the early twentieth century during the nature study movement, when schools were active in participating with local natural areas and environmental educators (Sobel, 2008, p 1). At this point schools and mother nature were at least friends, but today with increased technology and budget cuts across the nation, schools and mother nature are currently alienated from each other (Sobel, 2008, p 1; Louv, 2005, p 40; Ernst, 2012, p 74).

Education standards can be used as an opportunity to rejoin schools and environmental education.

"Most environmentalists attribute their commitment to a combination of hours spent outdoors in a keenly remembered wild or semi-wild place in childhood or adolescence, and an adult who taught them respect for nature" (Sobel, 2008, p 9). Not every child within the same school district will have the same opportunity to play in natural spaces in their backyard or neighborhood or have the ability to explore nature without parental fear. If youth today are to build a sense of place and understand natural systems, then there must be a joining of the classroom and nearby nature centers for learning.

It is well studied that lectures are the primary method of how children are taught, yet interactive learning experiences triple students' gains in knowledge (Lambert, 2012, p 24). This active, discovery-based learning increases the depth of students' learnings and also allows the formation of knowledge ownership (Trattner, 2015). It is difficult to maintain the same depth and spread of knowledge as students move through a variety of classrooms during their life in the educational system. "When analyzing the effectiveness of discovery-based active science learning, it is evident that students comprehend more scientific knowledge, acquire a love of science as a discipline, and make better connection and applications to real-life learning" (Trattner, 2015). Bringing students outside to learn not only increases their real-life learning but can also allow students to experience the physical benefits of nature, such as stress relief, and healthy activities. Overall, for the goals and outcomes of environmental education to be met and for positive sense of place

to develop, school classrooms need to allow youth to experience natural environments through field trips at nature centers and local nature spaces.

Conclusion

There are numerous environmental scholars who have discussed the environment-person relationship and found it can take on many shapes and forms. With undefined beginnings sense of place was contributed to by many writers and philosophers. Sense of place was formally defined in environmental education the 1960s. Sense of place is an essential component to achieving pro-environmental behaviors as an adult and can be developed in various settings throughout a person's life but is most easily developed as a child. Researching sense of place may identify how outer influences, such as environmental education contributes to building strong place meaning and attachment. Finally, it must be understood what factors influence the personal formation of sense of place.

Environmental education with key developmental stages is a crucial aspect of building sense of place. If sense of place is not being constructed at home or outside the classroom, then placed-based education in combination with current science standards can provide youth place attachment and place meaning. The relationship between schools and locations with environmental education, needs to be strengthened to meet state and federal environmental education goals, outcomes, and standards.

Sense of place can be constructed through environmental education experiences and repetitive experiences in local nature areas. Schools that partner with nature centers and other local natural areas allow students to learn in their developmental stage and retain

information better. Outdoor education supports a healthy lifestyle and also increases test scores and confidence (Coyle, 2012). There are many benefits besides sense of place to an environmental education- school relationship.

Chapter three will discuss in detail the research methods needed to answer the research question: "*Is there a relationship between a student's repeated visits to a particular community nature center and a positive sense of place?*" The setting, participants, data retrieval and analysis, will be described to determine the relationship between repeated visits and sense of place.

CHAPTER THREE

RESEARCH METHODS

Overview

The focus of the study is to answer the research question: *Is there a relationship between a student's repeated visits to a particular community nature center and a positive sense of place?* The literature reviewed in chapter two described sense of place and environmental educations ability to foster sense of place. This foundation of literature and collected data will provide the knowledge and results needed to test the hypothesis: *When attending a community nature center repeatedly, students will have a positive sense of place.*

Chapter three describes and rationalizes the methods selected to complete the study. The demographics of the participants, survey, and the statistical methods to evaluate the data are also detailed. The chapter will conclude with a description of the human subjects committee and how participants privacy and protection will be accomplished in this study.

Research Paradigm and Methods

Before collecting data, an appropriate paradigm was selected to properly answer the research question and hypothesis. A quantitative data method provides the best insight into the relationship between a school's repeated visits and positive sense of place. Quantitative research "is the collection and analysis of numerical data to describe, explain, predict, or control phenomena of interest" (Mills, 2014, p 83). Researchers using

quantitative methods have limited personal interaction with the participants studied because non-interactive instruments are used.

Methods used to collect data must be measured in a numerical manner, in such data can be collected through questionnaires, surveys, or by manipulating pre-existing statistical data through computational techniques (Babbie, 2010; Muijs, 2010). Characteristics of a reliable quantitative study is a sample size that adequately represents the population, the study can easily be repeated, data is collected using non-intrusive instruments, researchers use a clearly defined research question prior to collecting data, and there is little interaction with participants (Mills, 2014, p 83; Creswell, 2014, p 158; Research Guides, 2017).

Research Methods

A quantitative research methods approach was chosen for this study to provide the most comprehensive relationship between a school's repetitive visits to a community nature center and sense of place. Quantitative methods are stable, uniform, and coherent (Mills, 2014, p84; Creswell, 2014, p 160). This type of data is also easily collected, measured, understood, and generalized. Quantitative methods are used in studies to determine the relationships between variables in the data sample (Research Guides, 2017). Further, this type of research model can also establish associations between studied variables.

The data was gathered from a 26-item paper survey that students completed once. The Likert-scale survey measured student's place attachment, place meaning, number of years at the school, and basic demographic information (Appendix B). The results of the

survey were analyzed using an online software program called StatCrunch to test the hypothesis.

Demographics

The research for this capstone was conducted at an inner-ring suburban public elementary school in the upper-Midwest. The school serves 481 students in grades pre-kindergarten through fifth grade. The average student to teacher ratio is 13 to 1 (Data Center, 2017). The racial breakdown of the school is as follows: 52% Hispanic, 21% African American, 10% White, 9% Two or More Races, 6% Asian, and 2% American Indian/ Alaskan Native. During the year the study was conducted, 40.8% of the student population are English Learners, and 87.3% of students are eligible for the free or reduced lunch program (Data Center, 2017).

Nature Center

The community nature center is a 150-acre nature preserve with over two miles of trails and a floating boardwalk. It is the mission of the nature center to provide the public with high-quality experiences in recreation and environmental education programs, act as a teacher/naturalist training facility, and provide a diverse freshwater marsh for programs. This community nature center was dedicated in 1971 and was the first municipal nature center built in the surrounding metropolitan area. Since the dedication, the area public schools have visited three times a year as part of their regular science curriculum. Interpretation is a standard component of the center's school and summer camp programming. In 2004, this community nature center provided programming for 17,660 people which equates to 24,560 hours of program time. In addition, approximately 72,000 unguided visitors attend the park for the trails and nature experiences.

The community nature center has numerous field trip options for the neighborhood schools who visit three times a year (Table 1).

Grade	Field Trip Classes Offered
First & Second	Animal Camouflage, Animal Homes, Animal Tracks, Apple Cidering, Bees and Honey, Birds Around Us, Cold-Blooded Critters, Critter Walk, Dead or Alive, Dinosaurs, Insect Study, Maple Syruping, Marsh Explorers, Muskrat Safari, Nature's Needs, Senses Around, Snowshoeing, Trees Leaves and Seeds.
Third & Fourth	Animal Adaptations, Animal Homes, Animal Tracks, Apple Cidering, Bees and Honey, Birds Around Us, Cold-Blooded Critters, Dead or Alive, Food Web, Insect Study, Keeping Warm, Maple Syruping, Marsh Explorers - Advanced, Migration and Hibernation, Native American Life, Nature Close-up, Predator/ Prey, Snowshoeing, Soil Rocks and Minerals, Taxidermy for Beginners, Trees Leaves and Seeds, Weather and Water Cycle, Worm Cookies.
Fifth & Sixth	Animal Adaptations, Animal Homes, Animal Tracks, Apple Cidering, Bees and Honey, Birds Around Us-Advanced, Cold-Blooded Critters, Compass Skills, Cross-Country Skiing, Flight, Hot Air Balloons, Insect Study-Advanced, Keeping Warm, Light and Energy, Maple Syruping, Marsh Explorers-Advanced, Migration and Hibernation, Native American Life, Natural Resources Management, Nature Close-up, Predator/ Prey, Snowshoeing, Soil Rocks and Minerals, Survival Shelters, Taxidermy for Beginners, Water Quality, Weather and Water Cycle, Wild Edible Plants, Worm Cookies.

Table 1 Nature Center Field Trip Classes

Research Design

Starting at kindergarten, each grade from the school attends the nearby community nature center for environmental education three times a year. Each student who completes the elementary school's education program will visit the nature center and interact with the naturalist's a total of eighteen times by the time the student transitions to middle school.

Each field trip class offered at the community nature center has pre-and post-field trip activities designed by the naturalists (Table 1). Each pre-and post-activity includes a vocabulary list, class discussions, research activities, and individual assessment. Research shows that students learn and get more out of field trip experiences when they are introduced and are reinforced with the subject matter through pre-and post-field trip activities (Smith-Sebasto & Cavern, 2006). Before attending programming at the nature center, each teacher is reminded to complete pre-field trip lessons.

Each lesson at the nature center is approximately 90 minutes long and includes indoor and outdoor components. The inside introduction is 30 minutes long and connects students to the subject matter, and the significance of the information. After the introduction, the class is split into groups based on class size and taken outside for activities related to the subject. Nature center naturalists lead the outdoor activities and invite teachers and chaperones to be active in the learning process. All naturalists are trained with years of experience in hands-on experiential learning.

To assess the sense of place of fifth graders and the influence of the number of visits, students completed a 26-item survey. There are three fifth grade classrooms at neighborhood school equaling an approximate sample size of 50 to 70 individuals.

Survey Content

The evaluation tool used to measure students sense of place is a Likert-scale survey created and tested by Kudryavtsev, Krasny, & Stedman, 2012, p 4. This survey was selected as it incorporates the two main components of sense of place, place attachment and place meaning. The sense of place survey has also been tested for validity. The survey's place meaning statements were adapted to fit community features. The author of

the survey recommended and provided permission for this adaption. Another alteration to the survey was additional questions clarifying how many years the student has attended the school, lived in the city, and basic demographic descriptions. The added descriptive characteristics assists in deciphering any trends in the data outside the hypothesis.

The data collected was from Likert-scale survey statements. Likert-scales are attitude scales that provide descriptive data, and shows how an individual feels, believes, and perceives (Mills, 2014). The Likert-scale will follow a five-point scale: Strongly Agree = 5 points, Agree = 4 points, Undecided = 3 points, Disagree = 2 points, Strongly Disagree = 1 point (Mills, 2014, p 102). Overall, the Likert-scale will measure students' sense of place and their general interest to the environment.

Human Subjects Committee

Research was conducted in the fifth-grade classrooms at the neighborhood public elementary school. Each student in the fifth-grade class received a parental consent form before completing the sense of place survey.

Before the data was collected, this study went through a human subject review through Hamline University. Approval from the Institutional Review Board (IRB) was received after appropriate forms and meetings were completed. Within the submitted IRB, the research question was stated along with information about the participants, and description of the research setting. After approval from Hamline University, consent was also gained from the school district's assistant superintendent. This allowed research to be conducted in the school.

Data Collection

Each student was given an informed consent form (see Appendix A) for their parent to complete before data collection. After consent forms were returned, paper copies of the sense of place survey (see Appendix B) were distributed to students to participate. The survey was not given to any student, who did not provide a signed parent consent form. Utilizing paper to collect survey answers was the easiest way to collect data as it allowed all students to complete the survey at the same time.

Data Analysis

Each place attachment and place meaning Likert-scale were averaged for separate scores and used to create a sense of place score. Another computation was the number of years attended at the school, multiplied by three to equal total number of times the individual went to the nature center. This and additional data provided on each survey was entered in an online statistical software program called StatCrunch. The software is designed for multiple quantitative variables and calculating Pearson's correlation coefficient.

The hypothesis is best tested through the analysis of place meaning, place attachment, and sense of place scores compared to the individual's visits to the nature center (Table 2). The reason three different scores were tested in relationship to the number of visits was to determine which score was influenced the most. This provides a more detailed answer to the capstone research question and hypothesis. This statistical model can pinpoint if the number of visits had the most effect on place meaning, place attachment, or sense of place.

Statistical Analysis Model:

	Place Meaning Average Score	Place Attachment Average Score	Sense of Place Average Score
Number of visits to nature center	Pearson's correlation coefficient	Pearson's correlation coefficient	Pearson's correlation coefficient

Table 2 Statistical Analysis Model

The Pearson's correlation coefficient test was used to analyze the collected data. This statistical test investigates the relationship between two quantitative, continuous variables (University of West England, 2017). Pearson's correlation coefficient (r) measures the strength and the relationship between two variables (Mukaka, 2012, 70). To determine any association, connection, or form of relationship of variables, the data needs to be linearly related and normally distributed. The data is already known to be linearly related and normally distributed through the comprehensive analysis of its relationships in chapter two. Pearson's correlation will show if the data has a positive correlation, negative correlation, or no correlation (Mukaka, 2012, p 70). The statistical test also determines the strength of the relationship between the studied variables.

Conclusion

This chapter provided information about the type of data collected, where the data was collected, demographics of the school, description of the community nature center, how the research was conducted, what's included in the survey and how it was created, human subjects committee, and how the data was analyzed. Overall, chapter three provides the setting and outline for how the research was conducted. It describes in detail

the types of data the research produced, the statistical test needed to comprehend the data, and how it was evaluated.

Chapter four will further evaluate and detail the data and describe the results of the Pearson's correlation coefficient statistical test. Participant's age, years attending the school, gender distribution, percentage of individuals living in city, and sample size will be described before the statistical analysis. This will provide an understanding of the participants sampled. Sense of place, place attachment, and place meaning results will be stated as well as their associated Pearson's correlation coefficient values. The quantitative analysis will determine how influential repeated visits is in developing sense of place.

CHAPTER FOUR

RESULTS

Overview

To gain an understanding of the relationship between repeated education experiences at a nature center and positive sense of place, collected data will be analyzed. The variables were quantitative and tested with Pearson's correlation coefficient to determine the strength of the relationship. The main objective of the chapter is to test the research hypothesis: *When attending a community nature center repeatedly, students will have a positive sense of place.* Chapter four contains the information and interpretation needed to understand the results of the collected data.

The chapter will begin with a description of the participants, such as how many conducted the survey, gender and racial distribution, as well as when the participants started attended the school. This will be followed by a brief review of place attachment and place meaning and their significance to the Sense of Place Survey. It will also be stated how the quantitative data was calculated based on the Likert-scale. All data described in this chapter was gathered from the distribution of the Sense of Place Survey (Appendix B). A quantitative methods approach was chosen for this study and will be used to examine data from the neighborhood elementary school.

Setting and Participants Involved

The study was conducted in an inner-ring suburban public elementary school in the upper-Midwest. Data was collected from three fifth-grade classrooms in the 2017- 2018 school year. The sample size of 64 individuals participated in the Sense of Place Likert-

Scale Survey (Appendix B). Age ranged from ten to eleven years of age with the vast majority of the participants starting their education at the school in kindergarten (Figure 1). The lowest number of respondents were students who started attending the school in third, fourth, and fifth grade. It should also be noted that not all individuals reside within the city where the nature center and school are located. Of the collected surveys, five participants responded with not living within the city. The gender distribution within the sample was 57.17% male and 47.83% female. The racial breakdown was 40.63% Hispanic/Latino, 25% White/Caucasian, 21.88% Black/African American, 7.81% American Indian, and 4.69% Asian. The characteristics of the respondents are anonymous and are presented for the purpose of understanding the survey responses.

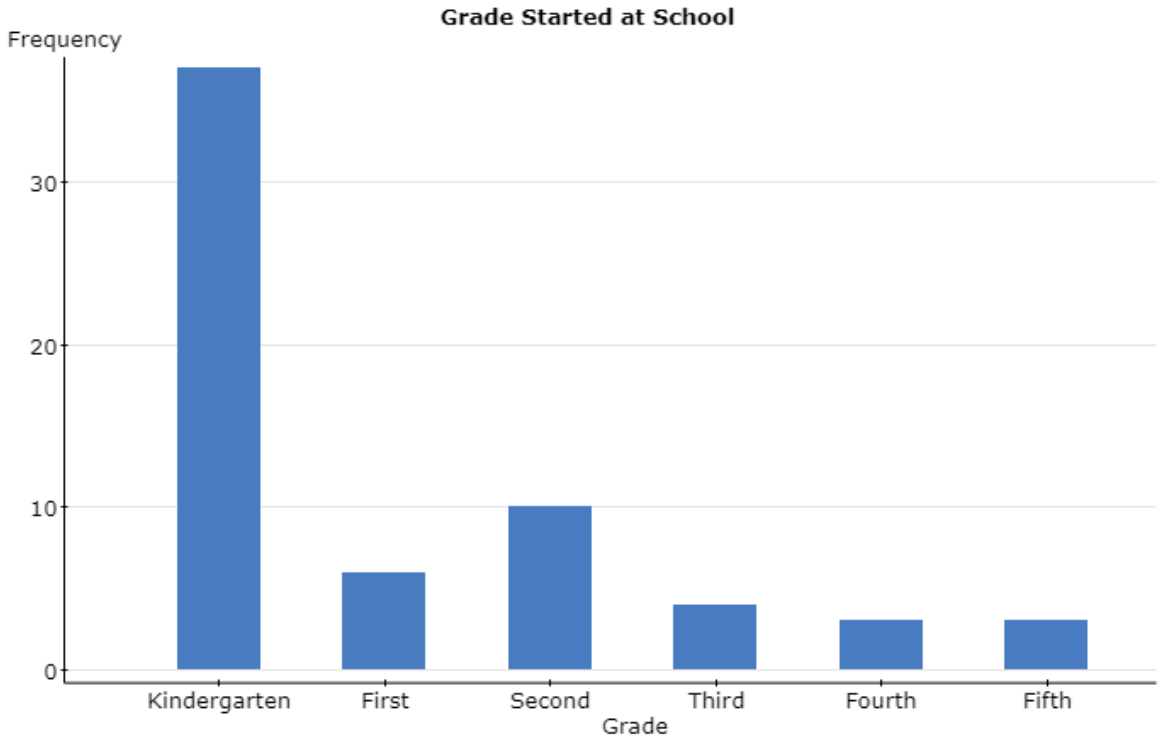

Figure 1: Grade Started at School

Likert-Scale Responses

The sense of place survey responses were broken into two segments: place attachment and place meaning. Sense of place is the cumulative responses of the survey and is the amount of connectedness a person generally feels towards a place. Place attachment responses indicate the level of emotion a person feels towards a place as well as their identity within a place. While place meaning statements measured an individual's perceived intellectual connection to a place and any symbolic meanings.

Each respondent had their own score based on the Likert response selected. In the Place Attachment section of the survey, there were two inverse statements. These statements were placed for certainty that participants were accurately reading and responding to the statements. As statements six and seven were inversed, calculation was done differently. If a one on the Likert scale was scored, it was altered to a five, and vise versa. If a two was scored, it was altered to a four, and vice versa. Scores of three remained the same. Other than items six and seven on the survey, all remaining statements were scored as they were marked. Each section was totaled based on the corresponding Likert score, then averaged. Each calculation represents the mean Likert-score for the individual. Correlation coefficients were calculated from the Likert-score averages.

Sense of Place

Sense of place evolves over time through personal experiences (Russ, 2015, p 510). Various meanings can be attributed based on the place's ecological, social, economic, cultural, aesthetic, or historical aspects. This creates a special lens through which an individual experiences, interacts, and defines a place (Adams, 2013, p 45). Sense of place varies among people and different meanings can be ascribed to a place depending on their lens. A place with a variety of landscape features creates opportunity for

individuals to explore (Brehm, Eisenhauer & Stedman, 2013, p 522). Thus, they may create a deeper connection to the place.

The Pearson's correlation coefficient test confirmed the relationship between sense of place and number of visits to the nature center was significant. The data had a strong positive linear relationship ($r = 0.71$, $p = <0.000$, $n = 64$). This is shown in Figure 2 as the data trends in an upward positive direction showing over time the variables relationship become stronger. The highest scores were from students with the most visits to the nature center (Figure 2). This trend in the data shows that students were able to form a strong attachment to the place.

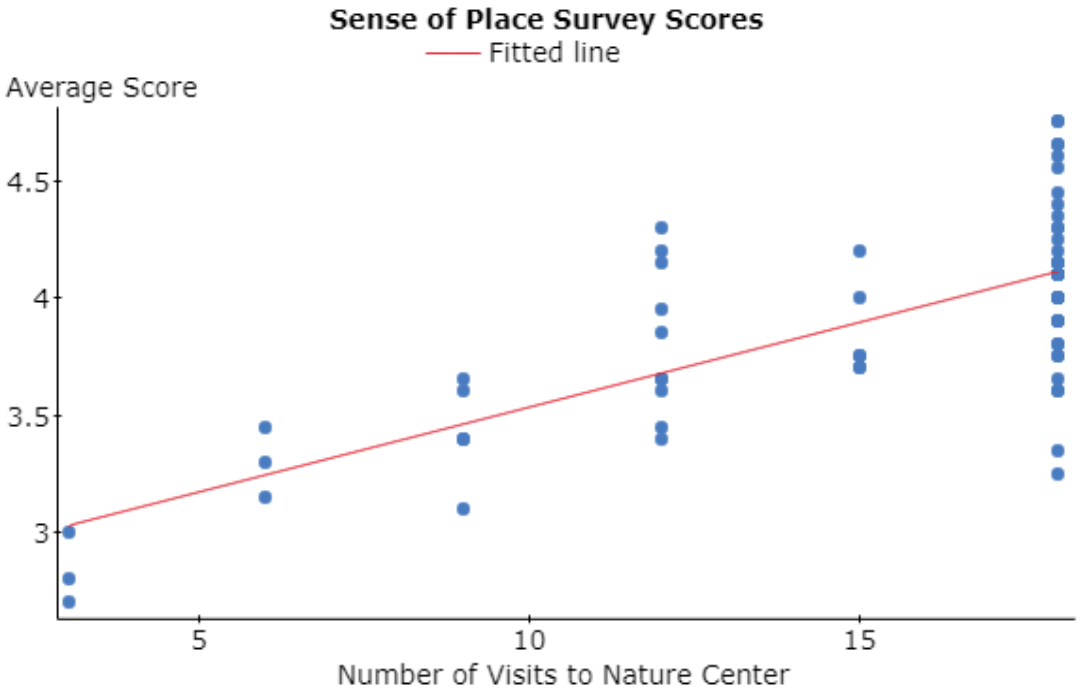

Figure 2: Sense of Place Survey Scores

The sense of place survey scores for the entire group ranged from 2.7 to 4.75, with a mean of 3.9 (Table 3). The mean was slightly above the midpoint on the 5-point scale. Within the range of scores, a few outliers exist. Survey scores from students with 18 visits

to the nature center ranged from 3.25 to 4.75, causing a wide distribution. Although data points 3.25 and 3.35 are slightly lower than the rest of the scores from students with 18 visits, the slight gap in the range is not significant. There are a few other outliers within the data, but none are within an amount that is questionable.

Summary Statistics:

Column	n	Mean	Variance	Std. dev.	Std. err.	Median	Range	Min	Max	Q1	Q3
Sense of Place Avg. Score	64	3.88	0.22	0.46	0.06	3.9	2.05	2.7	4.75	3.6	4.2

Table 3: Sense of Place Summary Statistics

Sense of place is a process that develops over time and the most important aspect is the place itself. Individuals are more easily able to connect to a place that presents opportunities for both physical and social characteristics. The nature center allows both of these aspects to be fulfilled through direct outdoor experiences and learning about the place through interpretive materials. This attachment is also strengthened through increased visits, activities done, commitment to outdoors, and stewardship activities (Adams, 2013, p 45). Ultimately, time spent in the place allows cognitive, emotional, and behavioral attachments to form to specific elements within the place and strengthen an individual's sense of place (Farnum, Hall, & Kruger, 2005, p 9).

Place Attachment

Place attachment is centered around emotion and the formation is incrementally longer than place meaning and requires a large energy commitment (Brehm, Eisenhauer &

Stedman, 2013, p 522). Connecting emotionally to a place through memories, beliefs, knowledge, social identity, or even specific actions is unique to each individual (Kudryavtsev, Stedman, & Krasny, 2012, p 234).

Pearson's correlation coefficient test between place attachment and the number of visits to the nature center was significant (Figure 3). More specifically, has a moderately positive linear relationship ($r = 0.60$, $p = <0.000$, $n = 64$). Although data has a wide vertical distribution it still trends in an upward positive direction.

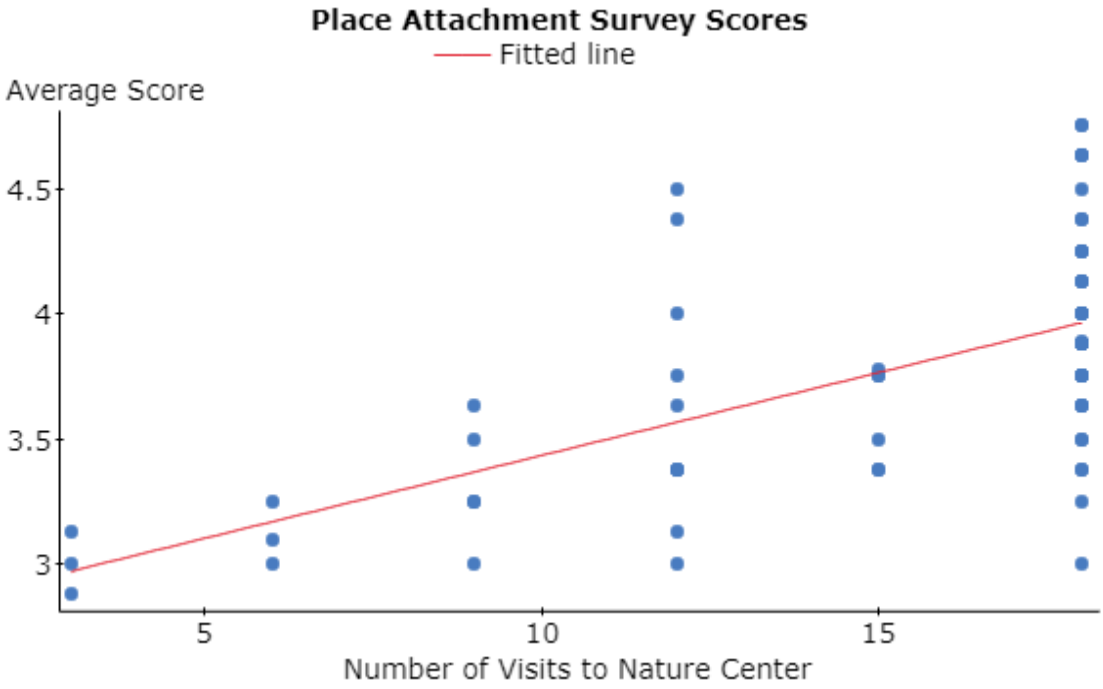

Figure 3: Place Attachment Survey Scores

Place attachment scores among participants ranged from 2.88 to 4.75 on a 5-point scale (Table 4). The mean score is 3.75 which is a little above midway on the Likert-scale. Students with 18 visits had the highest scores with one outlier with a very low score. Students with 12 visits to the nature center had the most inconsistent scores, having a range between 3 and 4.5. Although data points presented a wider vertical spread, there are

no outliers that cause concern or significance. This scattered pattern shows students are still developing attachment to the place.

Summary Statistics:

Column	n	Mean	Variance	Std. dev.	Std. err.	Median	Range	Min	Max	Q1	Q3
Place Attachment Avg. Score	64	3.75	0.25	0.5	0.06	3.75	1.87	2.88	4.75	3.38	4.07

Table 4: Summary Statistics

Survey participants are younger than 12 years of age, which is a young age to have a fully formed and functional place attachment. As place attachment is a very long process, students with lower scores could still be forming bonds to the place or have bonds formed to a different place that they feel fits them better. Students who recently moved to the area could still have emotional bonds to the previous place. Lower place attachment scores could be due to a continual formation of place meaning. In order for place attachment to develop, some place meanings must already be established through connections to the physical setting. As students continue to connect through memories and knowledge of the place through interpretative lessons, place attachment may become stronger.

Place Meaning

Physical characteristics of the landscape are essential to building place meaning (Brehm, Eisenhauer & Stedman, 2013, p 525). A place that has multiple distinctive elements allows an individual to make multiple connections and can appeal to a variety of individuals. It is these multifaceted associations and connections to specific elements

within a place that create a strong place meaning (Kudryavtsev, Stedman, & Krasny, 2012, p 232).

Pearson's correlation coefficient between place meaning and the number of visits was significant (Figure 4). More specifically, it was a very strong positive linear relationship ($r = 0.72$, $p = <0.000$, $n = 64$). This strong relationship indicates students were able to easily identify specific landscape elements at the nature center and connect to them personally. This is also shown in the distribution of data as it is consolidated with few outliers. The trend moves in an upward positive linear direction.

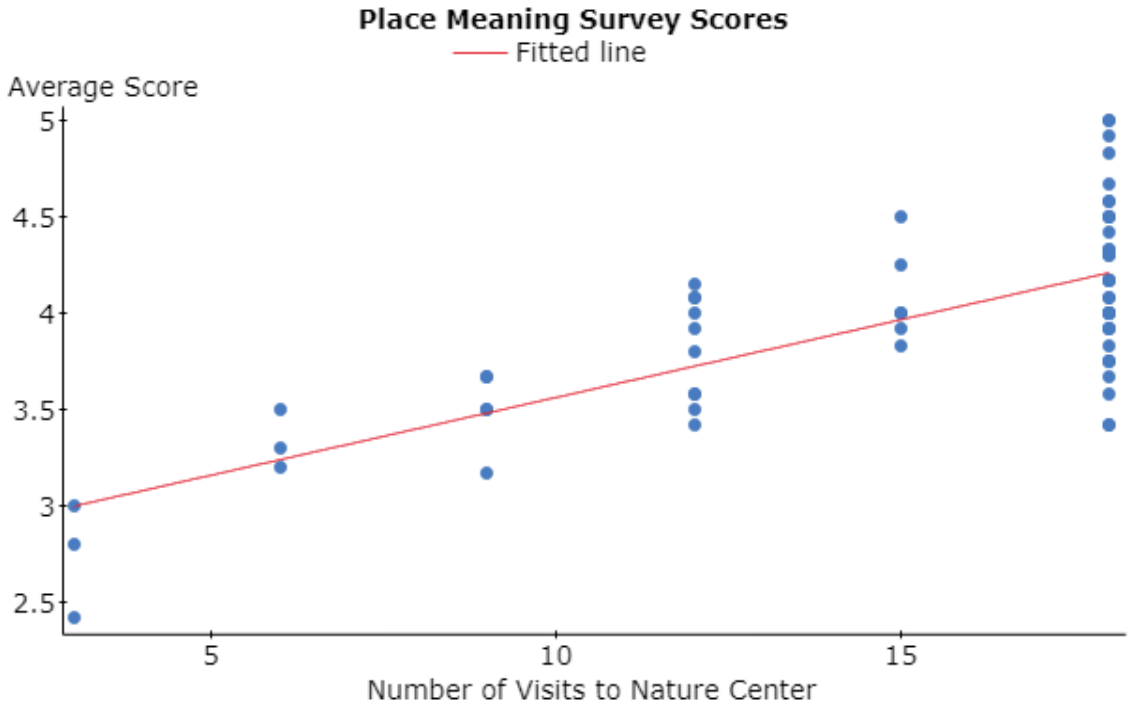

Figure 4: Place Meaning Survey Scores

Place meaning survey scores ranged from 2.42 to 5 on a 5-point scale (Table 5). The mean score was 4, which is over midway on the Likert-scale. The highest scores were from students with the most visits to the nature center. The distribution of data from students with 15 visits, ranged from 3.83 to 4.5 with a slight outlier on the high end of the

scale. The outliers in this data set are not considered significant. The consistency of high scores indicate the nature center was a place in which students were able to create individualized experiences.

Summary Statistics:

Column	n	Mean	Variance	Std. dev.	Std. err.	Median	Range	Min	Max	Q1	Q3
Place Meaning Avg. Score	64	4	0.26	0.51	0.06	4	2.58	2.42	5	3.6	4.3

Table 5: Place Meaning Summary Statistics

The nature center is a place that offers a variety of opportunities to connect to landscape features. These connections become further developed through past memories and interpretive education which allows students to develop personal associations. The stronger attachment to place meaning will create a solid foundation for place attachment to form and a well-rounded sense of place.

Research Hypothesis

The data was tested with Pearson's correlation coefficient to confirm or deny the research hypothesis: *"When attending a community nature center repeatedly, students will have a positive sense of place."* Sense of place, place attachment, and place meaning p-values were zero, and r-values above 0.50 (Table 6). The p-value scores signify the hypothesis is repeatable and is confirmed through the rejection of the null hypothesis of "*When attending a community nature center repeatedly, students will not form a sense of place*". The r-values above 0.50 confirms the data trends in an upward positive direction. The r-values also supports the hypothesis through the confirmation that the relationship between student's sense of place and repeated visits to the nature center is significant.

There was a strong relationship between students and place meaning indicating students were able to personally connect to place elements and build associations. Overall, the research hypothesis was confirmed and proven to be repeatable.

Pearson's Correlation Survey Values:

	Place Meaning Average Score	Place Attachment Average Score	Sense of Place Average Score
Number of visits to nature center	r = 0.71 p = <0.000	r = 0.60 p = <0.000	r = 0.72 p = <0.000

Table 6 Pearson's Correlation Survey Values

The hypothesis signifies students have a strong connection to the nature center and were able to form a sense of place (Figure 2 and Table 6). Data collected supports the idea that students from the inner-ring suburban public elementary school have opportunities to cultivate relationships and empathy towards natural elements at the community nature center. Students achieved a sense of place while attending the nature centers interpretive programs three times a year (Figure 2 and Table 6). Through repetitive visits students were able to gain place attachment and place meaning, which formed at different rates (Figure 3 and Figure 4). Overall, students gained a positive sense of place and were able to form it through place attachment and place meaning development as well as repeated visits.

Conclusion

Participants on average, scored above the midway point on the Likert-scale resulting in significant r-values. The data showed a relationship between repeated nature

center visits and high sense of place (place attachment and place meaning) scores. The lowest survey scores were from individuals having very few visits. The analysis of collected data resulted in insightful information regarding student's sense of place to a community nature center. The statistical data confirmed that students do establish a sense of place and the relationship is strong ($r = 0.72$).

Chapter five will focus on the research question and the key findings that resulted from its analysis. The implications of the question will also be discussed as to focus how this study may assist nature centers and schools in the future. Opportunities for future research will also be mentioned followed by final personal and professional reflections. Chapter five provides an overview of the capstone thesis and how this research could progress in the future.

CHAPTER FIVE

CONCLUSION

Overview

The final chapter focuses on the findings of the research question, and major learnings that emerged during the research process. The value of this study to the field of environmental education is discussed as well as any limitations occurred. The chapter will conclude with recommendations for future research and final personal and professional reflections.

Research Question

The question this study sought to answer was *"Is there a relationship between a student's repeated visits to a particular nature center and a positive sense of place?"*

The research conducted led to two discoveries: 1) The strongest component of sense of place was place meaning, followed by place attachment 2) Sense of place does not happen from one experience, it is a repeated process.

Place Meaning as the Strongest Component

Participants were from an inner-ring suburban public elementary school in the upper-Midwest. Research showed these individuals had a very strong and positive relationship with place meaning ($r = 0.71$). In comparison, place attachment's relationship was weaker ($r = 0.60$). Both place meaning and place attachment variables trend in a positive direction, indicating place meaning was the first aspect of sense of place to form

among participants (Figure 3 and Figure 4). This finding also indicates that place attachment cannot exist without place meaning.

This finding means that individuals were able to ascribe certain qualities to the place and develop an intellectual construct of connections to nature (Figure 3). Types of landscape features as well as experiences are integral in the construction of place meaning (Brehm, Eisenhauer & Stedman, 2013, p 522). As the cognitive connection between place and person continues, an emotional construct emerges through familiarity of place, and positive interactions (Shumaker and Taylor, 1983, p 15). The data shows participants emotional bond forming from intellectual attachments (Figure 3 and Figure 4). Over time the data predicts place attachment will become stronger resulting in a well-developed place attachment (Figure 4).

Sense of Place as a Repeated Process

Students with higher repeated visits had a stronger sense of place compared to those with fewer (Figure 2). Upon further analysis, students with the highest place meaning and place attachment scores, were also those with the most visits (Figure 3 and Figure 4). There is a strong link between increased repeated visits and sense of place, place attachment, and place meanings scores (Table 6). This finding indicates that for individuals to obtain a strong sense of place, the place needs to be visited regularly. Spending increased time in the space is beneficial for students as it allows personal values to be associated to the place as well as knowledge to be gained.

Significance of Research Question

The research seems to suggest that repeated experiences in nature creates a strong sense of place ($r = 0.72$, $p = <0.000$, $n = 64$). These repeated experiences in nature foster a sense of connectedness as a foundation for learning concepts ($r = 0.71$). Personal meanings and intellectual knowledge of the place is gained quickest with emotional bonds forming at a slower rate (Table 6). This is significant to environmental educators in the way information is presented as well as time allocated to activities and free play. Another consideration to the formation of sense of place is the educator's balance between fun and learning.

As an environmental educator there is much pressure to complete required learning components, often times at the expense of free play. With data suggesting that place attachment cannot exist without place meaning there must be a balance (Table 6). Place attachment or emotion is the strongest component of sense of place and is needed for intellectual meanings to form. This signifies that it is very important to allow students the opportunity to become connected to the place. It is these initial positive associations that lay the groundwork for the growth of place meaning and place attachment (Figure 2). This means time for exploration in the space is essential as it provides a foundation for knowledge.

Review of Literature

Personal intimacy with nature and its natural history is a process that develops through designated time spent within a place (Sanger, 1997, p 294). This intimacy can grow until the place evokes personal memories (Scannell and Gifford, 2009, p 2). It is through this bond or connection that individuals are able to understand detailed components of the landscape and have a personal attachment. Individuals connect best to

places that exhibit both social and physical characteristics (Scannell and Gifford, 2009, p 5). Ultimately, the type of relationship people have with a place affects how they make choices about environmental actions (Halpenny, 2005, p 1).

Individuals with a sense of place present pro-environmental behaviors as they have positive attitudes towards the environment and want to protect the environment they are emotionally bonded to (Halpenny, 2005, p 2). Individuals will return to a place that satisfies them and continue building sense of place and gaining pro-environmental behaviors. Having a sense of place also meets the goal of environmental education of creating an awareness and concern about the environment, providing every person with opportunities to acquire knowledge, and to create new patterns of behavior that benefit the environment (NAEE, 2015, p 15).

Sense of place can be constructed through storytelling, interpretation, social interactions and learning through community members (Russ, 2015, p 51). Interpretative education practiced by environmental educators is a great way to build sense of place among visitors. Interpretative education is considered a "catalyst in creating opportunities for audience members to make their own intellectual and emotional connections to the meanings of park resources" (Scherbaum, 2006, p 15). Sense of place can be constructed through environmental education experiences and repetitive experiences in local areas.

Limitations

Under the conditions and parameters set for this study there were few limitations. The limitations experienced in the study include one school sampled, geographic representation was from a specific city neighborhood, one grade level was surveyed, and

participants were surveyed once. Considering these limitations, none skewed or prevented adequate results. Overall, the methodology matched the requirements necessary to confidently answer both the research hypothesis and question.

Future Research

There are many opportunities regarding sense of place and future research. One possibility for future research would be continuing research at the community nature center. Further steps could be taken to sample all schools that repeatedly attend three times a year. Fifth-grade students in these schools could be sampled at first to achieve a base layer of data, then other grades to obtain more data to support the development of sense of place.

Another opportunity for future sense of place research is comparing rural to suburban communities. The focus would be to determine if rural participants have a stronger sense of place versus suburban participants. The underlying assumption in this research opportunity would be that rural participants, based on their location and possibly parents' occupations, have more opportunities for place exploration and knowledge of local ecology. Ultimately this opportunity would examine if living in a rural area leads to a more well-rounded and developed sense of place.

Personal Reflections

As an environmental educator, completing this research was a very meaningful process. Overall, it provided validation in the work I do each day. I have the opportunity to connect students with a very special place and allow emotional and cognitive bonds to form. I now know from this research that each field trip is important in forming a sense of

place which will stay with each individual. Each trip is an opportunity to connect students through positive experiences and exploration.

The experience of gathering my own data proved to be both a long and worthwhile process. While working with the school district, persistence was needed regularly to continue progress in the communications needed to first gain permission to study students at the school, and secondly to coordinate methodology of collecting data with school staff. Now that I know the time and skills needed to collect data in the future, I will be more likely to do so. The information obtained from this process is extremely beneficial, not only to me but also nature centers. I am passionate about conducting more sense of place studies.

Conclusion

It was the purpose of this study to answer the research question: *"Is there a relationship between a student's repeated visits to a particular nature center and a positive sense of place?"* Participants of the study gained a sense of place ($r = 0.72$). Data analysis found place meaning is the first component to form and repeated visits increase sense of place. Sense of place is a lifelong process that begins with initial connections to place elements and continues through emotional bonds.

It is through the enjoyment and comfort of landscape characteristics that individuals seek time back at a specific place. Through increased time spent either personally or at social gatherings, knowledge is obtained. Knowledge can range from ecological to historical, whatever best fits the individual's personality and needs. Eventually, through personal association, enjoyment, comfort, and knowledge, comes a

point when the individual perceives themselves with the place. Sense of place is such a process that the individual's personality fits the characteristics of the place. This deep connection ensures the place will be protected and pro-environmental behaviors will be involved.

Sense of place research is important in understanding human associations and connections to places. It is also a result of environmental education, specifically interpretation as it involves storytelling and ignites personal wonder and curiosity towards a place. Ultimately, the goal of environmental education is to create a population that is aware and is knowledgeable of environmental problems and issues. This can be accomplished through assisting in the development of sense of place. When an individual is attached to a place, action will be taken to protect it as it contains personal associations and enjoyment.

There are many options for future research and it's recommended that sense of place at nature centers continued to be studied. With a world consisting of wondrous ecosystems, there is a place of inspiration and comfort for each person. The environment, regardless of location, should not be feared. It should present as an opportunity to learn about oneself.

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APPENDIX A

Letter of Introduction and Parent Consent Forms

Dear Parent or Guardian,

I am a graduate student working on a Master's Degree in Natural Science and Environmental Education at Hamline University, St. Paul, Minnesota. As part of my graduate work, I will conduct research in your child's classroom. The purpose of this letter is to ask your permission for your child to take part in my research. This research is public scholarship and the abstract and final product will be cataloged in Hamline's **Bush Library Digital Commons**, a searchable electronic repository and that it may be published or used in other ways.

The topic of my master's capstone (thesis) is the relationship between frequent school field trips to a local community nature center and student's positive emotional and intellectual connection to nature (sense of place). Each student will complete a paper survey composed of 26 questions. Students will complete the survey once in the classroom under teacher supervision.

There is little to no risk for your child to participate. All results will be confidential and anonymous. I will not record information about individual students, such as their names, nor report identifying information or characteristics in the capstone. Participation is voluntary, and you may decide at any time and without negative consequences that information about your child will not be included in the capstone.

I have received approval for my study from the Hamline University IRB and from the assistant superintendent of Richfield Public Schools, Leadriane Roby. The capstone will be cataloged in Hamline's **Bush Library Digital Commons**, a searchable electronic repository. My results might also be included in an article for publication in a professional journal or in a report at a professional conference. In all cases, your child's identity and participation in this study will be confidential.

If you agree that your child may participate, keep this page. Fill out the duplicate agreement to participate on page two and have student return form to their classroom teacher no later than February 28, 2018.

If you have any questions, please contact me with the information provided below.

Sincerely

Ashley Hansen

Ashley Hansen

Phone: (651) 231- 8950

E-mail: ahansen11@hamline.edu

Informed Consent to Participate in Quantitative Survey

Keep this full page for your records.

I have received your letter about the study you plan to conduct in which you have my student complete a onetime survey. I understand there is little to no risk involved for my child, that his/her confidentiality will be protected, and that I may withdraw, or my child may withdraw from the project at any time without any consequence.

_____

Name of Student

_____

Name of Teacher

_____ _____

Parent/Guardian Signature Date

Participant Copy

Informed Consent to Participate in Quantitative Survey

Return this portion to Ashley Hansen

I have received your letter about the study you plan to conduct in which you have my student complete a onetime survey. I understand there is little to no risk involved for my child, that his/her confidentiality will be protected, and that I may withdraw, or my child may withdraw from the project at any time without any consequence.

_____

Name of Student

_____

Name of Teacher

_____ _____

Parent/Guardian Signature Date

Researcher Copy

Carta de presentación y formas de consentimiento paternales

Querido Padre o Guardián,

Soy un estudiante de posgrado trabajando en mi maestría sobre Ciencia Natural y Educación Ambiental en Hamline University, St. Paul, Minnesota. Para mi maestría, voy a hacer una investigación en el aula de su hijo/hija. El propósito de esta carta es para pedirte permiso que tu hijo/a participa en mi investigación. La investigación es pública, y el abstracto y producto final serán catalogados en el **Bush Library Digital Commons** de Hamline University, un repositorio electrónico de búsqueda, y es posible que puede ser publicado o usado en otras maneras.

La tema de mi tésis es la relación entre excursiones frecuentes de estudiantes a centros comunitarios de naturaleza (nature centers) l y la conexión intelectual de estos estudiantes con el concepto de naturaleza (sentido de lugar).Cada estudiante completará una encuesta en papel compuesto de veintiséis preguntas. Estudiantes completarán la encuesta en el aula bajo supervisión del maestro.

No hay riesgo asociado con la participación de sus niños. Todos los resultados serán confidencial y anónimos. No registraré información personal sobre estudiantes, como sus nombres, y no registraré información ni características identificativas en mi tésis. Participación es voluntaria y Ud. puede decidir en cualquier momento sin consecuencias que información sobre su estudiante no será incluido en la maestría.

El IRB de Hamline University y el superintendente de Richfield Public Schools, Leadriane Roby, han aprobado mi proyecto. La tésis será catalogada en el **Bush Library Digital Commons** de Hamline University, un repositorio en línea con capacidad de búsqueda. Mis resultados también podrían ser incluidos en un artículo de una revista académica/profesional o en un informe presentado en una conferencia profesional. En todos casos, la identidad y participación de sus niños se mantendrá confidencial.

Si ud. está de acuerdo que su hijo participa, guarda esta página. Complete el acuerdo duplicado participativo en la proxima página y devuélvamelo por correo, o email antes del 28 Febrero 2018.

Si hay dudas, por favor contáctame con la información abajo.

Sinceramente,
Ashley Hansen

Ashley Hansen

Dirección: 7600 Penn Ave S, Apt. E-316, Richfield MN, 55423
Teléfono: (651) 231- 8950
Corrido electronico: ahansen11@hamline.edu

Consentimiento informado para participar en una estudio cuantitativo

Guarda esta papel en entero para sus registros

He recibido su carta sobre el estudio que vas a conducir en cual mi estudiante completará una encuesta. Entiendo que hay poco riesgo a mi hijo, que su confidencialidad estará protegida, y que puedo retirar mi hijo del proyecto a cualquier momento.

_____

Nombre del estudiante

_____

Nombre del profesor

_____ _____

Firma de padre o guardián Fecha de hoy

Copia de participante

Consentimiento informado para participar en una estudio cuantitativo

Devuelva este formulario a Ashley Hansen

He recibido su carta sobre el estudio que vas a conducir en cual mi estudiante completará una encuesta. Entiendo que hay poco riesgo a mi hijo, que su confidencialidad estará protegida, y que puedo retirar mi hijo del proyecto a cualquier momento.

_____

Nombre del estudiante

_____

Nombre del profesor

_____ _____

Firma de padre o guardián Fecha de hoy

Copia de investigador

APPENDIX B

Sense of Place Survey

Please answer each question in terms of *the way you generally feel*. There is no right or wrong answer. Using the following scale and mark the blank space with an X.

Place Attachment Scale

#	Question	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
1	Wood Lake Nature Center is the best place for what I like to do.					
2	I feel like Wood Lake Nature Center is part of me.					
3	Everything about Wood Lake Nature Center reflects who I am.					
4	I am more satisfied in Wood Lake Nature Center than in other places.					
5	I identify myself strongly with Wood Lake Nature Center.					
6	Wood Lake Nature Center is not a good place for what I enjoy doing.					
7	There are better places to be than Wood Lake Nature Center.					
8	Wood Lake Nature Center reflects the type of person I am.					

Place Meaning Scale

#	Question	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
1	Wood Lake Nature Center is a place to connect with nature.					

2	Wood Lake Nature Center is a place to watch animals and birds.					
3	Wood Lake Nature Center is a place where people can find nature.					
4	Wood Lake Nature Center is a place where trees are an important part of the community.					
5	Wood Lake Nature Center is a place where people have access to lakes and wetlands.					
6	Wood Lake Nature Center is a place where people have access to parks.					
7	Wood Lake Nature Center is a place to have fun in nature.					
8	Wood Lake Nature Center is a place to learn about nature.					
9	Wood Lake Nature Center is a place to enjoy nature's beauty.					
10	Wood Lake Nature Center is a place to grow and find food.					
11	Wood Lake Nature Center is a place to bike and walk.					
12	Wood Lake Nature Center is a place to canoe and boat.					

Section Two

1. Do you live in Richfield? Yes or No
2. How times have you visited Wood Lake Nature Center? _____
4. What grade did you start attending Centennial Elementary?

   Kindergarten First Second Third Fourth Fifth

Section Three

1. What is your sex or gender?
    a. Male
    b. Female
2. What is your race/ ethnic group?
    a. American Indian or Alaskan Native
    b. Asian
    c. Black or African American
    d. Hispanic or Latino
    e. Native Hawaiian or Pacific Islander
    f. White or Caucasian