

Summer 2018

Creating A Culture For Outdoor Environmental Education In An Elementary Setting

Daniel Huldeen
Hamline University

Follow this and additional works at: https://digitalcommons.hamline.edu/hse_cp



Part of the [Education Commons](#)

Recommended Citation

Huldeen, Daniel, "Creating A Culture For Outdoor Environmental Education In An Elementary Setting" (2018). *School of Education Student Capstone Projects*. 218.

https://digitalcommons.hamline.edu/hse_cp/218

This Capstone Project is brought to you for free and open access by the School of Education at DigitalCommons@Hamline. It has been accepted for inclusion in School of Education Student Capstone Projects by an authorized administrator of DigitalCommons@Hamline. For more information, please contact digitalcommons@hamline.edu, lterveer01@hamline.edu.

CREATING A CULTURE FOR OUTDOOR ENVIRONMENTAL EDUCATION IN
AN ELEMENTARY SETTING

Daniel Huldeen

Hamline University

A capstone submitted in partial fulfillment of the requirements for the degree of Master
of Arts in Education: Natural Science and Environmental Education

Hamline University

St. Paul, Minnesota

August 2018

Primary Advisor: Laura Halldin
Content Reviewer: Mary Anderson
Peer Reviewer: David Peralez

TABLE OF CONTENTS

CHAPTER ONE

Introduction	3
A Lack of Outdoor Environmental Education in Public School	3
My Experiences With Environmental Education	4
The Benefits of Environmental Education	6
Barriers to Outdoor Environmental Education	7
Conclusion	9

CHAPTER TWO

Literature Review	10
History of Modern Environmental Education	11
Benefits of Outdoor Environmental Education	12
Barriers to Outdoor Environmental Education	14
State Guidelines for Environmental Education	17
Outdoor Classrooms and How to Utilize Them	19
Summary	20

CHAPTER THREE

Project Description	22
Project Rationale	23
Setting and Demographics	25
Participants	27
Timeline	27

Summary	28
CHAPTER FOUR	
Conclusions	29
General Conclusions	30
Project Intentions	32
Project Limitations	33
Recommendations	34
Benefits to Students and Community	34
In Conclusion	35
References	36

CHAPTER ONE

Introduction

A Lack of Outdoor Environmental Education in Public Schools

It seems that many schools do not include or emphasize the need for outdoor environmental education. Some environmental education is taught to students as a byproduct of city recycling programs, building initiatives, teacher personal interest, or side conversation in science. There seems to be no room in the curriculum for meaningful, impactful environmental education and specifically outdoor environmental education. There are environmental education standards woven into the Minnesota state science standards, but, in my opinion, they are vague and easily covered within the day to day education offerings in any public school classroom. These standards could be met in a meaningful and impactful way utilizing outdoor environmental education. Many schools have a designated nature area on, or near, school property yet these areas are not being used to their potential. This is the case at the school that I teach fourth grade.

We have a beautiful 12-acre nature center attached to the school property that is unused by most of the teachers and staff. The district considers the land an outdoor classroom. My fear is that the land will be lost or repurposed by the district unless there is evidence that the school truly utilizes the nature center as an outdoor classroom. When I reflect on the number of staff that use the outdoor classroom more than one time a year I can only identify five classroom teachers of the thirty in our building. I know through conversations that many feel there is not time to go outside to learn. Many worry about

the high stakes tests administered later in the school year. Some wish to avoid the headache created by managing students in an outdoor setting. Many are uncomfortable using the outdoor classroom because they lack knowledge of the environment, trees, flowers, and animals. Knowing that the land is on loan from the district and the low number of teachers participating in outdoor environmental education I worry for the students that they are missing out on many life shaping experiences.

I have been at my current school for six years and in those six years have grown accustomed to the overall mentality of the staff with regard to the nature center. The nature center is something that all of the staff value and see as an asset for our school. Knowing this I have to ask myself, why the lack of use? What is getting in the way of quality outdoor education in a school that has a large well maintained nature center? Clearly there are barriers that stand in the way of teachers better utilizing the outdoor space. Is there a lack of environmental knowledge in the staff, lack of administrative support, personal biases, constricted daily schedules, or is there something else that is stopping staff from using the outdoor classroom in a way that reflects their apparent value of the land? As a leader in the building and professional educator that values the benefits of outdoor environmental education I do ask, *how do we make meaningful outdoor environmental education something that all teachers can provide to their students?*

My Experiences With Environmental Education

In 1995 I graduated high school in a west metro suburb of Minneapolis. The extent of my environmental education consisted of taking a sixth grade trip to an environmental learning center in northern Minnesota for five days, crushing cans to be

recycled, and spotting the occasional deer or pheasant on my parents property. After graduating high school I attended college out west in Missoula, Montana. In college, in an environmentally conscious town, I became more connected to the natural world and aware of my place in it. Since my education in Missoula I have always impressed upon my students the importance of environmental stewardship and their role in the natural world. Until recently though, I was never really doing more than my fair share and educating a few along my way. In 2013, I became motivated to do more. We had hired a new fourth grade teammate who was a role model for providing opportunities for environmental education and getting students outdoors to learn about natural systems and interact with the environment. I followed his lead and soon I saw my classroom learning, experiencing, and sharing all of the benefits of environmental education and outdoor experiences. Feeling that we both seemed to have similar goals for our students when it came to the importance of environmental education, Patrick brought up the idea of seeking our masters degrees together. He found the Natural Sciences and Environmental Education program at Hamline University and we agreed it was a great fit. Little did we know that as good as we thought we were, we had a lot to learn about the benefits and possibilities that an environmental education provides. The learning that I have experienced the past few years as part of this master's program has been worth all of the effort. My teaching and my students have benefited greatly from my learning. These experiences are what have led me to push to discover what can be done to encourage other educators to include more environmental teaching in their lessons, more outdoor

opportunities during the year. *How do we make meaningful outdoor environmental education something that all teachers can provide to their students?*

The Benefits of Environmental Education

Many have stated a strong case for environmental education as a part of the school curriculum (Sobel, 2013). States have gone as far as to add a few environmental education standards to their state science standards. Environmental education offerings for elementary students are often limited to brief mention or passing comment during a lesson. In review of the Minnesota academic standards for science, K-5, there is mention of natural systems, interaction, energy, and plants however all of the standards seem to focus on our gain from the environment and nothing about our place in the system and environmental responsibility. According to Project Learning Tree, some of the benefits of outdoor education include critical and creative thinking skills, tolerance and understanding, healthy lifestyle, empowerment, strengthened community, stewardship, and enthusiasm and motivation (Project Learning Tree, 1977). Another benefit of providing opportunities for environmental education, especially outdoors, is the effect on students with ADHD and ADD. Project learning tree states that outdoor educational experiences decrease student behavior and increase student achievement (Project Learning Tree, 1977). Studies have shown that exposure to hands on outdoor environmental education has shown to have a positive effect on closing the achievement gap (Closing the Achievement Gap Using the Environment as an Integrating Context for Learning, 1998).

Barriers to Outdoor Environmental Education

Environmental education, and especially outdoor environmental education, seems to be a subject that many teachers would like to teach yet many do not, at least that is the case in the school I teach at. It seems that there are many barriers for teachers to overcome including access to quality environmental education offerings. Barriers take many forms, including schedules, lack of administrative support, access to an adequate space, personal biases, and staff confidence (Gardner, n.d.).

For some teachers the idea of fitting in lessons that teach environmental education is a logistical nightmare, there simply is no time for environmental education. I feel that with rigorous state testing standards, some feel that deviation from math, science, and reading is a gross misstep. There simply is not time available for environmental education, yet alone the time to leave the building. The extent of any environmental education is limited to lessons in the curriculum that have mention of temporary focus on the environment. A band aid our district and Parent Teacher Organization has applied is the seasonal visits from a community naturalist. Their visits are helpful but as a staff we can do more.

For some teachers their own personal biases are the determining factor in whether environmental education is taught or not. Not everyone believes that there is a need or benefit to teaching about the environment. Sadly, no matter how easy you make the activity or opportunity, it is wasted on a person that sees no need for students to be exposed to the benefits of learning outdoors.

In some cases, environmental education is vetoed by administration. Whether it be state testing, resources, schedule, or personal biases administration can set the tone for capitalizing on opportunity or derail any noble environmental education effort. A building's attitude about environmental educational offerings comes from the top down. The importance to the staff is reflected by the message given by leadership. I am lucky to be in a building where leadership is supportive of my efforts in outdoor education because of the benefits it provides students.

Access to an outdoor area can provide a hurdle for providing hands-on outdoor environmental education opportunities. Many schools that lack outdoor space will take advantage of visiting naturalists, parent or wildlife volunteers to introduce and expose students to the natural world. Bringing the outdoors in is also an acceptable way to teach students about the natural world and their place in it.

The most common barrier I have found, in conversation with staff, is a lack of knowledge and fear of the material. I have coworkers that avoid the nature center for fear of the questions that students may ask and the knowledge they do not have. There is a lack of confidence amongst staff when it comes to environmental education. I have had teachers come back from an intended trip into our outdoor classroom because they were overwhelmed trying to identify leaves, trees, flowers, birds, etc. One bad experience in the nature center strikes the potential for future visits from the year's calendar. So, *how do we make meaningful outdoor environmental education something that all teachers can provide to their students?*

Conclusion

The focus of my research will be on changing the attitudes and biases of staff toward environmental education. In the next chapter I will summarize the research of four main topics: state guidelines for environmental education (K-5), the benefits of an outdoor environmental education, outdoor classrooms and how to utilize them, and barriers to outdoor environmental education. The research will focus on what we should be teaching and the benefits to students and community. Research will also focus on methods for teachers to include environmental educational offerings to students. The research will guide my project to provide age appropriate lessons, throughout our school nature center, that provide hands-on outdoor environmental education in an inviting format all teachers will feel comfortable leading.

CHAPTER TWO

Literature Review

In a school with an exceptional outdoor classroom that sees little to no use, *how do we make meaningful outdoor environmental education something that all teachers can provide to their students?*

Outdoor environmental education being taught in schools and what can be to assist those that are not will be the theme of this capstone project. Examining guidelines, resources, benefits and barriers will help to create a plan to change habits of the staff and encourage increased use of outdoor classrooms. This chapter will focus on four components; State Guidelines for Environmental Education, Outdoor Classrooms Nature Centers and On Site Resources, Benefits of Environmental Education, and Barriers to Outdoor Environmental Education.

The literature review will be used to shape a project plan to be developed and implemented at the elementary school I currently teach. The goal of the project will be to increase the frequency of use and comfort level of staff using the outdoor classroom. There are many benefits of outdoor education that have been highlighted over the years. This literature review will examine benefits to students, educators and the community. An education that includes environmental education and outdoor education benefits more than just the student.

History of Modern Environmental Education

Although there has always been some level of education focused on the natural world it was not until 1970 and the passing of the National Environmental Education Act by the United States Congress that the modern era of environmental education began. Since the passing of the National Environmental Education Act there have been several more milestones in the history of education. A brief timeline of significant milestones in environmental education history for the past 50 years, according to McCrea (2006).

- In 1971, the National Association for Environmental Education is founded.
- In 1975, the United Nations Educational, Scientific, and Cultural Organization ratify the Belgrade Charter to outline the basic structure of environmental education.
- In 1977, the United Nations Educational, Scientific, and Cultural Organization and the United Nations Environmental Programme lay out goals, objectives, and guiding principles of environmental education that many environmental educators still use today.
- In 1983, the Western Association of Fish and Wildlife Agencies develop Project WILD. Project WILD promotes conservation and environmental education programs with a focus on wildlife for students grades K-12.
- In 1990, the U.S. Congress passes the National Environmental Act of 1990. This act authorizes an Office of Environmental Education in the Environmental Protection Agency. The act creates educational training programs, grants, fellowships, and creates Project WET.

- In 1998, the State Education and Environment Roundtable shares its report *Closing the Achievement Gap: Using the Environment as an Integrating Construct for Learning*.
- In 2000, the University of Wisconsin-Stevens Point offers the first *Fundamentals of Environmental Education* online course.

Looking at a few milestones of modern Environmental Education it is clear that our government and counterparts around the world see an importance in providing quality environmental education to the youth in schools.

Benefits of Outdoor Environmental Education

According to Sobel (2013), in reference to a study by the National Environmental Education and Training Foundation conducted in 2000, students participating in an environmental-based education showed that:

- Reading scores improved, sometimes spectacularly.
- Math scores improved.
- Students performed better in science and social studies.
- Students developed the ability to make connections and transfer their knowledge from familiar to unfamiliar contexts.
- Students learned to “do science” rather than just learn science
- Classroom discipline problems declined
- Every student had the opportunity to learn at a higher level (pp. 40-41)

Outdoor experiential opportunities benefit students in many ways. One such way is student focus and engagement in learning. According to Scott, Boyd and Colquhoun (p.

9), upon reflection of an outdoor educational activity, “It was also evident that in many cases the children themselves were aware of a difference in their own engagement with group work in comparison with their classroom experiences” (p. 9).

Providing genuine outdoor experiences for students also increases empathy and connectedness to their environment. Slattery (2001) found that teaching students about the landscape and the history of the area allowed students to become “more sensitive and thoughtful visitors” (p. 32).

A mutual benefit for both students and educators is the connection between outdoor settings and ADHD behavior reduction. Substantial research conducted among non-ADHD populations has shown that symptoms of ADHD, impulsivity and inattention, are reduced after exposure to natural views and settings (Kuo & Taylor, 2004). Natural settings and outdoor educational activities as a method to provide a natural treatment for attention and hyperactivity in children is a great benefit to the child learner as well as a productive strategy for classroom management for educators. In a study by Kuo and Taylor, two sets of participants were studied, one set, not diagnosed with ADHD and another having been diagnosed with severe ADHD. Participants and their families, in both groups, noted positive reduction in symptoms like inattention and impulsivity when participating in activities in a “green” setting compared to indoors. Participants in the severe ADHD group showed the greatest reduction of symptoms due to the “green” setting. Findings “indicated that the same activities reduced symptoms significantly more when they were conducted in green settings than when they were conducted in indoor settings” (Kuo & Taylor, 2004, p. 1584).

Barriers to Outdoor Environmental Education

While many would agree that environmental education should be included in elementary curriculum, there are barriers educators face when including environmental education in their lessons. Dr. Cynthia Gardner's results from her study of elementary staff, confronted about their aversion to teaching outdoor education outdoors, found common recurring barriers emerged from participants; curriculum standards/time, supervision/behavior, and lack of knowledge/loss of expert status (Why Teach Outside, n.d.).

Classroom management/student behavior: A lot of time and energy goes into effective classroom management practices. Those strategies do not always transfer to other situations around the school. What works in the classroom may not work as well in the gymnasium, cafeteria, at an assembly, or in an outdoor classroom. A 2014 study by Scott, Boyd, and Colquhoun found that:

In discussions with teaching staff about the reasons that they are reluctant to take their pupils outside, it was apparent that they were not confident that the outdoor classroom would allow them to employ their favoured classroom management strategies. Essentially the teachers were anxious that the children would behave inappropriately and they would lose control. (p. 5)

Similar to Gardner, student behavior in an outdoor setting is identified as a barrier for some educators. In Gardner's study student behavior was a top concern for teachers of kindergarten, first and second grade (Why Teach Outside, n.d.).

Lack of knowledge/loss of expert status: For some educators, it is a daunting task to venture into the unknown or unfamiliar with twenty-eight students in tow. For most students, their experience being led outdoors by their teacher is limited to recess and gym. Taking a large group of students outdoors for educational purposes can cause some anxiety and remove a teacher from their comfort zone. According to Scott, Boyd, and Colquhoun (2014):

It was evident from our discussion that the teachers involved in our project were comfortable within their classrooms because they felt secure in their expert status and in the traditional teacher/student relationship. Teachers were clearly uncomfortable with the idea of being in an unfamiliar situation (teaching ecology outdoors) would expose their own lack of knowledge. (p. 6)

In fact, it was the conclusion of Scott, Boyd and Colquhoun (2014) that there was no impact on student learning with regards to teacher knowledge of environmental education. Teacher lack of knowledge of the outdoors and environmental education did not affect effectiveness of the lessons.

A research study by Powers (2004), published in the *Journal of Environmental Education* interviewed several graduating service teachers about their attitudes in regards to teaching environmental education. Respondents cited an aversion to teaching the sciences and therefore an obvious link to discomfort teaching outdoor environmental education (p. 9). According to Gardner's results, of the staff surveyed, all of the third through fifth grade teachers reported lack of knowledge as a major barrier to taking students to the outdoor classroom to learn (Why Teach Outside, n.d.). In a way we are all

environmental educators or naturalists. If we make observations and interpretations of our natural world we are environmental educators, no special schooling required. With that in mind Nicol (2014) stated:

If outdoor educators are true to spirit of their radical origins and fully embrace experiential and experimental approaches to learning then because experiences are already nature-based then it is clear that there is indeed a place to start from...If a teacher continually attempts to point out phenomena and ask the learners to reflect on their experiences. In doing so they draw attention to things. It is here in drawing attention to and reflecting on things that outdoor educators find familiar pedagogical starting points. (pp. 457-458).

Overcoming the barrier of knowledge or lack thereof is best handled by starting from where you are at.

Curriculum standards/time: It seems that, in schools, the emphasis is on math and reading in order to meet proficiency on the state standardized tests. As reflected by Gardner's study, the current curriculum standards prioritize importance and teaching environmental education outdoors is a low priority in comparison to math and reading. Teacher respondents from all grade levels reported curriculum standards and daily schedule as major barriers to getting students outdoors into the school's outdoor classroom (Why Teach Outside, n.d.). Districts are having to cut back on subjects like environmental education in favor of subjects that are more heavily tested. A participant in Powers' study stated "The bulk of the effort in schools is on literacy and math. The whole morning is dedicated to those. And then, far down the line, is science, or social

studies, or the environment” (p. 8, 2017). It seems that the emphasis is on math and reading in order to meet standards on the state standardized tests. According to other subjects interviewed for Powers study (2017), “testing atmosphere” and the pressure to focus to prepare for these tests limits opportunity to get to subjects like environmental education or get students outdoors (p. 8).

State Guidelines for Environmental Education

Focusing on the state of Minnesota, environmental education has been a priority for many years. There are statutes that have been in place to ensure that students are taught environmental education, become more aware of their natural world, and are good stewards of the environment. It is of high importance that these statutes and expectations are in place.

Minnesota’s Waste Management Act (Chapter 115A) contains three statutes that address environmental education for both citizens and students (Minnesota Environmental Education Legislation, 1998).

As outlined in Statute 115A.073, Minnesota Environmental Education Legislation (1998).

(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:

- (1) understand ecological systems;
- (2) understand the cause and effect relationship between human attitudes and behavior and the environment;

(3) be able to evaluate alternative responses to environmental issues before deciding on alternative courses of action; and

(4) 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. (pp. 2-3)

The goals put in place by the Minnesota Waste Management Act have helped to influence the Minnesota Department of Education Academic Standards for K-12 public education.

Within the academic standard are benchmarks that address the importance of environmental education. Although there are no specific standards or benchmarks that require outdoor education, it is easy to see within the benchmarks that many lend themselves to being best taught in the outdoors. Focusing on the K-5 standards there are a few themes that occur throughout the document. Four common standards that appear at multiple grade levels within the Minnesota Academic Standards Science (2009);

1. Scientific inquiry is a set of interrelated processes used to pose questions about the natural world and investigate phenomena.
2. Living things are diverse with many observable characteristics.
3. Natural systems have many components that interact to maintain the system.
4. In order to maintain and improve their existence, humans interact and influence Earth systems. (pp. 3-14)

In today's modern classroom and with the assistance of digital materials it is possible to achieve these goals and successfully teach the standards outlined by the state in an indoor

setting (Emmons, 2016). Meeting these goals in an indoor setting would deny students the additional benefits of learning in an outdoor setting.

Outdoor Classrooms and How to Utilize Them

Teaching outdoor environmental education is best to take place in an outdoor natural area (Sobel, 2013). Outdoor classrooms are an excellent area to conduct learning outdoors. This section of the literature review will examine what outdoor classrooms are and how to utilize them to teach natural sciences as well as integrated subject matter.

According to Halferty (2013), “an outdoor classroom is a space that brings learning outside. It is a gathering place for teachers and students and provide an opportunity to integrate nature into your school grounds” (p. 2). Any designated outdoor space where lessons can be taught can be considered an outdoor classroom. Lessons in an outdoor setting do not have to be limited to science or environmental in nature. All subjects can be brought outdoors and taught in an outdoor setting. “An outdoor classroom can be anything from a small learning space that includes natural areas, to a large scale educational area with a broad range of activities and classroom ideas” (Halferty, 2013, p. 9). It is important that the space designated as an outdoor classroom be separate and distinct from other outdoor areas on school property students may occupy. Students should see the outdoor classroom as an extension of the indoor classroom and not an additional outdoor area for play. “A local park or natural space might be the perfect backdrop to your classroom” (Halferty, 2013, p. 9). Once an area has been designated for an outdoor classroom the area should take on some characteristics of an indoor classroom. “Most outdoor classrooms contain seating areas so that a classroom lesson can

be held in the space” (Halferty, 2013, p. 9). Logs and rocks are a popular option for creating seating in the outdoor classroom. Seating areas need to be large enough to accommodate any full class that may wish to use the outdoor classroom (Halferty, 2013, p. 9). In addition to creative seating, “Naturalizing outdoor learning environments means bringing back trees, plants, shrubs, perennial plants for children's enjoyment and healthy development” (The Natural Learning Initiative, 2012). A well designed classroom “could serve as a doorway to the natural world for children, faculty/staff, and community members in three forms: as a setting for lectures and group discussions, as an opportunity for hands-on engagement with natural elements, and as a setting for relaxation and restoration” (Classroom in Nature, 2017). Outdoor classrooms will, although they are in a natural setting, need to be maintained from year to year. “A successful outdoor classroom will continue to grow and must be maintained beyond the planning and development process” (Halferty, 2013, p. 9). It does not take much to create a natural outdoor learning environment where students can experience the benefits of learning outdoors.

Summary

Environmental education as directed by the state legislature and department of education needs to be taught to all K-12 students. How this is to be done is unclear and open to interpretation. As a school with a well organized and cared for nature center, with multiple outdoor classrooms, we have the ideal setting to teach environmental education in a meaningful and impactful way. Studies outline the benefits of learning in the outdoors. Barriers can be identified and overcome. With such a precious resource it is a shame to see it under utilized.

This next chapter explores solutions to the research question, *How do we make meaningful outdoor environmental education something that all teachers can provide to their students?* The intended audience, school property, school schedule, demographics, and activities will be discussed. Methods for delivering information, elimination of barriers, and activities will be outlined in an attempt to encourage more staff to lead students in outdoor environmental education activities.

CHAPTER THREE

Project Description

How do we make meaningful outdoor environmental education something that all teachers can provide to their students? I am committed to helping other staff teach outdoor environmental education on a regular basis utilizing the resources we have on site. My hope is to create a project that makes teachers comfortable teaching in the outdoor classrooms and exposing students to the natural systems around them. Presented in Chapter One, this question fueled the drive for my capstone project. Chapter One provided an overview of my personal and professional experiences with environmental education and the reasoning behind my research and project. Chapter Two explored the associated literature and research on the subject of outdoor learning in elementary schools. Topics in the literature review included history of environmental education, benefits of environmental education, barriers to outdoor environmental education, state guidelines for environmental education, and outdoor classrooms and nature centers. Examining the information gathered in Chapter One and Chapter Two my project began to take shape.

Project Description

This project is designed to encourage third grade staff to include outdoor environmental education in their lessons and eventually become independent. Using research gathered and outlined in Chapter Two, I have gathered, adapted and modified ten lessons/activities to be used in the third grade. The lessons were selected to meet the need to eliminate barriers to teaching outside. Lessons and activities were selected to

meet the needs of young learners by meeting academic standards and the need for environmental exposure. There are 5 lessons in the Fall, 2 lessons in the Winter, and 3 lessons in the Spring for teachers to execute. There are ten lessons in all. Activities for other grade levels will be added at a later date. This creates many opportunities per school year for teachers to engage in the natural setting of the outdoor classrooms and nature center providing experiential outdoor learning for students. Activities and lessons are designed to be inviting and flexible for the teachers. Hopefully by providing easy to follow activities, teachers will be comfortable outdoors and barriers will be eliminated. The goal of each activity is to welcome and encourage teachers to use the nature center and solicit a return visit. By doing this, those experiences in the outdoors will resonate positively with the students. This project is set up with a total of ten activities for 3rd grade students. At a later date lessons for additional grades will be gathered, created, and aligned. Future lessons and activities will be rotated in and out annually to keep the learning up-to-date, fresh and exciting for students while meeting the demand for standards aligned activities.

Project Rationale

Today's youth are growing up in the middle of a rapid technological revolution that has them addicted to and dependent on the technology that is meant to expand their world. Districts like mine are racing to be the leaders in using technology and teach the 21st century learner. In my observation, hours of screen time is the norm and time outdoors is not. According to Louv (2008), society's obsession with order and technology has forced kids indoors, gaming systems and iPads have become their imaginations (p.

28). According to the Center For Disease Control and Prevention (CDC), children ages 8 to 10 years old spend 6 hours a day in front of a television or computer screen watching entertainment media, and nearly four of those are spent watching television (CDC, 2018). This dramatic statistic is all the more reason for schools to cultivate a relationship between children and their natural environment. For many of my students these statistics are their reality, or worse, and especially for my low income underserved population.

Current state standards and high stakes testing has, according to Sobel in his book *Place Based Education, Connecting Classrooms and Communities* (2013), threatened to increase seat time, focus on the consumption of decontextualized facts, and concentrate on test scores resulting in a separation of students from the community, from the real world and their inner selves (p. 24). These current school reform initiatives and the separation of students from community, the real world, and self is what inspired my project to help more teachers utilize the benefits of experiential learning in the outdoors. Using some of Sobel's place-based educational model, I created opportunities for others to utilize their natural setting to enhance their teaching. Sobel (2013) outlined some of the many benefits of place based education including; academic achievement, social capital, and environmental quality. Sobel and his model for place based education provided guidance for the development of my project. Helping more teachers understand the benefits of a place based education and creating easy and flexible experiences outdoors will increase the number of teachers teaching outdoors, leading to more students benefiting from a place based education.

Using the work of Wiggins and McTighe, *Understanding by Design* (2005), and the framework of backward design, I have collected and created lessons and activities that align with third grade state math, reading and science standards yet provide opportunity for outdoor experiences. Wiggins and McTighe (2005) advocated for a reverse of common practice when creating a lesson or activity. Instead of creating activities, then goals for student learning and lastly measures for success, they propose beginning with the desired result, then the acceptable evidence, and lastly plan the learning experience. Lessons and activities for this project followed this framework. Keeping the teachings of Louv and Sobel in mind, learning experiences were created to meet the goals and assessment criteria for students in their natural and constructed environments using Wiggins and McTighe's framework. Successful student experiences lead to comfortable and positive teacher experiences.

Setting and Demographics

Our elementary school sits on a parcel of land that is 18.74 acres according to Hennepin County records (Hennepin County, 2017). Approximately 12 of those 18.74 acres are a dedicated natural setting that over the years has become a nature center due to grassroots efforts. Our school nature center was designed with three Minnesota biomes in mind; prairie grassland, deciduous forest and coniferous forest. Our nature center also contains a pond with outdoor classroom and learning dockage, a man-made marsh with learning dockage and overlook. There is a creek that winds from the marsh to the pond and then to a neighboring lake. There are trails throughout and three different outdoor classrooms for student use, one in each biome. Local caretakers have commissioned

signage for much of the various areas of the nature center. The school and local PTSA hire a local naturalist to come in four times per school year to share seasonal learning and help with general upkeep.

Minnesota Department of Education (MDE) states that we are a school with a student population of 595 students. Those 595 students are serviced by 45 licensed staff and 60 non-licensed support staff. According to MDE, Our student population breaks down in the following way:

White (61%)

Asian (15%)

Black (11%)

Hispanic/Latino (7%)

Two or more races (5%)

American Indian (<1%)

MDE also reports that 35 of our 595 students are English Language Learners, 66 students utilize special education services, and 6 students are experiencing homelessness (MDE, 2017). The gender breakdown for our school is right down the middle with a relative 50-50 split. In comparison to our district our population demographics are similar however, when looking at special education and free and reduced populations, our building numbers are higher than most of the other seven elementary's. Our students met state standards in 2016 with 75% proficiency in math, 74% proficiency in reading, and 65% proficiency in science. These numbers are lower than the school district averages but higher than state averages (MDE, 2017). The district is experiencing rapid growth in

the western half of the district. An eighth elementary building was added last year and a levy was just passed to build a ninth elementary for 2019. We are a growing district yet that growth is uneven. Growth is happening in the undeveloped western half and growth in the eastern side of the district has plateaued. Any growth we experience at our school can be correlated to the redrawing of district boundaries as the west swells.

Participants

My capstone project was designed to be implemented at the school I teach at for use on the school grounds and adjacent nature center by our third grade team. This project certainly could be modified and adapted to other settings of similar characteristics. I teach at an elementary school in the west metropolitan area of Minneapolis, Minnesota. We are a K-5 school with an additional 17 students enrolled in our pre-K program. My project is intended for the students in third grade. In the near future, I intend to include additional activities for use by the other students in our school as well. My project is intended to address third grade standards set forth by the state of Minnesota with regards to math, reading, science and environmental education. Typical class sizes in our school range from 18 students in K-2, and 24 to 28 students in 3-5.

Timeline

This capstone project was completed in the summer of 2018. Implementation of the project will begin with a small localized staff development for the third grade teaching staff. This staff development will take place the last week of August, before the start of the new school year. Project activities are organized to be taught to students right

away in the beginning of the school year with five activities for the fall, two activities for the winter, and three activities for the spring.

Planned check-in's will take place throughout the year offering additional support, different activities and help with materials. With the goal of full implementation and use of the nature center extended beyond third and fourth grade, it is important to focus on making sure this first year goes smoothly for the third grade staff. Their success will determine future increased use by remaining staff.

Summary

This project was designed to increase teacher use of our accessible outdoor space thereby increasing student exposure to outdoor experiential learning. The long term goal of the project is to increase the number of teachers comfortable providing these opportunities in the future. Using extensive research on the topics of environmental education, outdoor spaces, barriers, and benefits lessons selected and created for third grade teachers to use Fall, Winter, and Spring. The lessons created are for the intended use of the staff of our west suburban school, however adaptation to other school settings is possible, and encouraged. Each lesson is designed to be flexible and adaptable to grade level content standards and interdisciplinary teachings. Lessons were developed Spring and Summer of 2018. Activity creation and implementation is examined in the following chapter.

Chapter Four

Conclusions

The creation of this capstone was in an attempt to help other elementary teachers see value and opportunity in using the outdoors in their teaching. Throughout the process, and in response to research, I have arrived at a ten lesson curriculum, that I believe, encourages staff to include opportunities for outdoor environmental education while still meeting the rigorous demands of math, reading and science standards.

It was important to recognise barriers, real and perceived, that teachers face when deciding to include environmental education offerings to their students. Identifying these barriers allowed me to create a curriculum that would eliminate barriers and provide teachers a chance to offer easy to implement, high quality activities that create student awareness of place in their natural and built environment. The following review of the process will help to provide a solution to the question, *how do we make meaningful outdoor environmental education something that all teachers can provide to their students?*

The following section outlines my conclusions made following the capstone project process. I will revisit my learning throughout this process by evaluating the literature review, intended implications, project limitations, project extensions, future project use, and benefits to the profession of teaching.

There is a lot of literature out there speaking to the importance of environmental education and I found it hard to sort through all of the important texts to find what I felt

would validate my project and answer the question, *how do we make meaningful outdoor environmental education something that all teachers can provide to their students?*

General Conclusions

This project is the evolutionary result of the capstone process. The end result is not, in many ways, the intent I had one year ago. Throughout the capstone process of writing, researching, rewriting, and developing I have arrived at, what I believe, will be a first step toward school wide use of our valuable outdoor spaces. A year ago, I had envisioned a project that really only benefited a few students, mine, and I had no real reasoning behind it other than it sounded exciting. Through the research process and deep learning of environmental education my project began to evolve from a nifty idea into a research based, thought out curriculum that can be a catalyst for transformative change at our elementary school. This capstone process has taught me that curriculum that is truly impactful comes not just from great ideas but through thorough research, thoughtful interpretation, and intentional reflection of goals and objectives.

The literature showed that there are many positive benefits to providing outdoor environmental education opportunities. As stated by Sobel (2013), in reference to a study by the National Environmental Education and Training Foundation conducted in 2000, students participating in an environmental-based education showed that:

- Reading scores improved, sometimes spectacularly.
- Math scores improved.
- Students performed better in science and social studies.

- Students developed the ability to make connections and transfer their knowledge from familiar to unfamiliar contexts.
- Students learned to “do science” rather than just learn science
- Classroom discipline problems declined
- Every student had the opportunity to learn at a higher level (pp. 40-41)

Providing genuine outdoor experiences for students also increases empathy and connectedness to their environment. Slattery (2001) found that teaching students about the landscape and the history of the area allowed students to become “more sensitive and thoughtful visitors” (p. 32). Another important document I found that helped me focus my criteria for collecting and creating lessons and activities was a paper written by Dr. Cynthia Gardner titled *Why Teach Outside*. Results from her study of elementary staff, confronted about their aversion to teaching outdoor education outdoors, found common recurring barriers emerged from participants; curriculum standards/time, supervision/behavior, and lack of knowledge/loss of expert status (Why Teach Outside, n.d.). I took the idea of the survey conducted by Dr. Gardner and applied that to an informal, anonymous survey for the teaching staff at my school building. The two surveys shared similar results and helped identify major barriers I would have to overcome in order to achieve my goal of getting more teachers to offer outdoor environmental education opportunities to their students. Both surveys identified lack of knowledge and high stakes curriculum as barriers that were impeding staff ability to get kids outside and learn about their natural environment. These were clearly going to have to be addressed in my curriculum if I wanted the project to see real use and benefit

students. As I began my project I kept these barriers in my thoughts, as to be sure my lessons and activities reflected this learning.

Project Intentions

It is my intent that the following ten lesson curriculum reflect my learning throughout the capstone process. Over the past few years I have intentionally included environmental education opportunities in my teaching. I have seen the benefits short and long term. I have seen how easy it can be to meet rigorous academic standards using intent when selecting my activities. By surveying staff I now understand that they believe including environmental education is important yet have barriers that prevent them from including it in their offerings to their students. I want meaningful outdoor environmental education to be something all staff feel comfortable offering to their students. I went about choosing, modifying and creating ten activities that are easy to prepare, require basic knowledge, are highly engaging for students, and meet state standards in multiple subjects. I also chose to focus my project on one specific grade level, third grade. I myself teach fourth grade and as a team of four teachers, we utilize the nature center quite a bit. In discussions with my building principal, we felt that the third grade team was most likely to take full advantage of the project. My hope is that the third grade team, and other grade levels, use some or all of the opportunities provided to give students quality outdoor experiences.

I intend to organize an after school meeting with the third grade team where I can share my learning. I also plan to take the third grade team out for an example lesson, demonstrating the casualness of offering outdoor environmental education. My hope is

that with a short and casual professional development, an engaging hands on example, and the ten selected activities of this project I can start a trend. I feel that if I have the fourth and third grade on board other grade levels will become interested, and of course I would love to assist in helping others get there too.

On the distant horizon I hope that staff enjoy offering outdoor environmental education to their students and see the many benefits that I have been able to see. With staff on board I would hope to see the identity of our school change from a school that really does not have one to that of a school known for the amazing property and offerings by staff in environmental education.

Project Limitations

There is no lack of meaningful activities out there and although I have been intent on eliminating barriers, there are still limitations to my project. One limitation may be preparation of materials. I can foresee some staff having issue with securing adequate materials and preparation. I tried to do all I could to select lessons that are minimal in preparation and only require materials that are common to most classrooms. That is not to say that a setting may lack necessary materials to execute the activity as laid out, however most teachers are adept at modification adaptability. I would hope that if staff truly feel that outdoor educational experiences are important to offer they will put in minimal effort to prepare or secure materials to provide such.

Another limitation would be access to a natural setting. Although these activities are best done in a nature center or open natural area, they can be equally beneficial implemented in a schoolyard or on school property. Not all schools are as blessed as

mine to have a large nature center on site, but there is quality learning to take place regardless of setting. The benefits do not change as a result of the setting.

Recommendations

Something that I would like to track over the next three years would be the use of the nature center by staff. It would be great to send my survey out yearly and compare the data. I would hope that over time there would be a trend showing increased use by staff. I know that specific year to year data would be hard to compare due to staff movement from year to year, but even bringing in new staff that are excited to be engaged in the outdoors would meet the overall goal of more staff getting outdoors and offering environmental education to their students.

I would recommend to anyone looking to increase the number of staff teaching outdoors to survey the teaching staff. I created a simple, fast Google survey that I emailed out to staff. I made the questions direct, answer choices easy, and input anonymous. I know that when I get the many district surveys that require large blocks of time and short responses, I check out and lose interest. I made responses multiple choice and was respectful of staff time. I estimate my survey took less than five minutes to complete. Between my survey data and the data from Dr. Gardner's paper, I was able to really focus on the real reasons we are not offering environmental education as often as we could. This data may have been one of the most influential contributors to my project.

Benefits to Students and Community

As stated in beginning of this chapter, there are many academic benefits for students who participate in the experiential learning provided by outdoor environmental

education. I am most interested in seeing if the SEEK data, of the environment as an integrating context, applies to our setting. Our district takes closing the achievement gap very seriously yet this concept of the environment as an integrating context was new to me. I feel that more teachers incorporating the outdoors in their teaching, along with the other interventions in place, could have a positive impact on closing the gap. Beyond the academic benefits to students there are benefits that the community can enjoy.

Starting in the smallest of the communities, the classroom, teachers and classmates will benefit from the calming effect that the outdoors can have. The outdoors can create a sense of place for students and connectedness to the natural world. As for the building and local community; providing genuine outdoor experiences for students also increases empathy and connectedness to their environment. Slattery (2001) found that teaching students about the landscape and the history of the area allowed students to become “more sensitive and thoughtful visitors” (p. 32).

In Conclusion

I am excited to see, over the course of the school year, how this project impacts staff use of the outdoors in their teaching. I believe that teachers that give an honest try to incorporating the outdoors in some of their teachings will see firsthand the many benefits and continue to include the outdoors. I will teach, support and encourage my coworkers as much as needed in the hopes that we see increased use of our nature center by staff and look forward to the opportunity to work together toward that goal.

References

- Benefits of Connecting Children With Nature: Why Naturalize Outdoor Learning Environments. (2012, January). Retrieved November 13, 2017, from www.naturalearning.org
- Cleaver, S. (2007, November-December). Classrooms are going green: how green classrooms are reconnecting kids with nature. *Instructor* [1990], 117(3), 20+. Retrieved from <http://go.galegroup.com/ps/i.do?p=PROF&sw=w&u=hennepin&v=2.1&it=r&id=GALE%7CA171889703&asid=c61948a118eabbb9eb1879337c6b79dc>
- Closing the Achievement Gap Using the Environment as an Integrating Context for Learning* (pp. 1-13, Rep.). (1998). Poway, CA: Science Wizards.
- Developing and Implementing an Outdoor Classroom. (n.d.). Retrieved November 13, 2017, from www.kaplanco.com/ii/developing-outdoor-classroom
- Eick, C., Tatarchuk, S., & Anderson, A. (2013, March). Vision + Community = Outdoor Learning Stations: local partners can provide the expertise, labor, and even funding to transform your school's outdoor areas into outdoor learning stations. *Science and Children*, 50(7), 61+. Retrieved from <http://go.galegroup.com/ps/i.do?p=PROF&sw=w&u=hennepin&v=2.1&it=r&id=GALE%7CA323259710&asid=f27dc232e0f2257e535ab5d767f16670>

Emmons, N. (2016, April 19). Teaching Environmental Education in the Classroom

[Web log post]. Retrieved December 10, 2017, from

https://www.huffingtonpost.com/nichlas-emmons/teaching-environmental-ed_b_9732042.html

Gardner, C. C. (n.d.). *Why Some Teachers are not using the Schoolyard Environment*

[Scholarly project].

Halferty, M. (n.d.). Building Outdoor Classrooms: A guide for successful Fundraising.

Retrieved November 14, 2017, from <http://www.focusonforests.ca/>

How to Develop an Outdoor Classroom. (n.d.). Retrieved November 15, 2017, from

<http://classroominnature.weebly.com/>

Interdisciplinary teaching through outdoor education. (2007). *Australian Journal of*

Outdoor Education, 11(1), 53-55.

Louv, R. (2010). *Last child in the woods: saving our children from nature-deficit*

disorder. London: Atlantic.

MAKE LEARNING FUN! (n.d.). Retrieved October 10, 2017, from <https://www.plt.org/>

McCrea, E. J. (2006). The Roots of Environmental Education: How the Past Supports the

Future. Retrieved October 21, 2017, from <http://www.eetap.org/>

Minnesota Environmental Education Legislation. (n.d.). Retrieved October 21, 2017,

from http://seek.minnesotae.org/ee_in_minnesota

Minnesota Academic Standards, Math K-12. (2010). Retrieved October 21, 2017, from

<http://education.state.mn.us/MDE/dse/stds/ela/>

- Minnesota Academic Standards, Reading K-12. (2007). Retrieved October 21, 2017, from <http://education.state.mn.us/MDE/dse/stds/math/>
- Minnesota Academic Standards, Science K-12. (2009). Retrieved October 21, 2017, from <http://education.state.mn.us/MDE/dse/stds/sci/>
- Nicol, R. (2013). Entering the Fray: The role of outdoor education in providing nature-based experiences that matter. *Educational Philosophy and Theory*, 46(5), 449-461. doi:10.1111/j.1469-5812.2011.00840.x
- Olson, J. K., & Clough, M. P. (2009, April-May). Keeping it real: don't forget the importance of outdoor experiences in nature. *Science and Children*, 46(8), 53. Retrieved from <http://go.galegroup.com/ps/i.do?p=PROF&sw=w&u=hennepin&v=2.1&it=r&id=GALE%7CA198350911&asid=4268d2bab0d982b8f5fb4beda0ae8717>
- Powers, A. (spring 2004). Teacher Preparation for Environmental Education: Faculty Perspectives on the Infusion of Environmental Education Into Preservice Methods Courses. *The Journal of Environmental Education*, 35(03), 3-11. Retrieved November 15, 2017.
- Preston, L. (2011). Green pedagogy – guidance and doubt in teaching Outdoor and Environmental Education. *Asia-Pacific Journal of Teacher Education*, 39(4), 367-380. doi:10.1080/1359866x.2011.614686
- Project Learning Tree*. (1977). Washington: American Forest Institute.
- Project WILD: K-12 activity guide*. (1992). Pratt, Kan.: Dept. of Wildlife & Parks.

- Quay, J. (2016). Outdoor education and school curriculum distinctiveness: more than content, more than process. *Journal of Outdoor and Environmental Education*, 19(2), 42+. Retrieved from <http://go.galegroup.com/ps/i.do?p=PROF&sw=w&u=hennepin&v=2.1&it=r&id=GALE%7CA469848456&asid=4230a2db2138dfd68db6a067dc35b8dd>
- Scott, G., Boyd, M., & Colquhoun, D. (2014). Changing spaces, changing relationships: the positive impact of learning out of doors. *Australian Journal of Outdoor Education*, 17(1), 47+. Retrieved from <http://go.galegroup.com/ps/i.do?p=PROF&sw=w&u=hennepin&v=2.1&it=r&id=GALE%7CA355777684&asid=6245d83d53153e6ec39d3a549af25192>
- S. G., & T. H. (2017). Diversity in the Outdoors: National Outdoor Leadership School Students' Attitudes About Wilderness. *Journal of Environmental Education*, 40(2), 114-134. doi:10.1177/1053825916689267
- Slattery, D. (2001). What can environmental history offer outdoor education practitioners? *Australian Journal of Outdoor Education*, 5(2), 28+. Retrieved from http://go.galegroup.com.ezproxy.hamline.edu:2048/ps/i.do?p=PROF&sw=w&u=clic_hamline&v=2.1&it=r&id=GALE%7CA159791008&asid=5674ab6ff64f5ed1bb310f793fd5068d
- Sobel, D. (2013). *Place-based education: connecting classrooms and communities*. Great Barrington, MA: Orion.
- The Outdoor Classroom. (n.d.). Retrieved November 09, 2017, from <http://outdoorclassroomproject.org/>

Why Teach Outside- Environmental Education Resources. (n.d.). Retrieved October 17, 2017, from www.dnr.state.mn.us/education/ee/whyteachoutside.html

Wiggins, G. P., & McTighe, J. (2008). *Understanding by design*. Alexandria, VA: Association for Supervision and Curriculum Development.