

Hamline University

DigitalCommons@Hamline

School of Education and Leadership Student
Capstone Projects

School of Education and Leadership

Summer 2022

Developing an Outdoor Learning Area and Guidebook for the Elementary Grades

Jordyn Kern

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



Part of the [Education Commons](#)

Recommended Citation

Kern, Jordyn, "Developing an Outdoor Learning Area and Guidebook for the Elementary Grades" (2022).
School of Education and Leadership Student Capstone Projects. 836.
https://digitalcommons.hamline.edu/hse_cp/836

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

Developing an Outdoor Learning Area and Guidebook for the Elementary Grades

by

Jordyn Kern

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

Hamline University

Saint Paul, Minnesota

August 2022

Capstone Project Facilitator(s): Jana Lo Bello Miller
Content Reviewer: Dean Kern

Copyright by
JORDYN KERN, 2022
All Rights Reserved

TABLE OF CONTENTS

ABSTRACT.....	6
CHAPTER 1: Introduction.....	7
Personal Significance.....	8
Professional Significance.....	9
Benefits within Education.....	11
Development.....	11
Rationale.....	13
Conclusion.....	14
CHAPTER 2: Literature Review.....	16
Outdoor Education in Elementary School Students.....	17
What is it?.....	18
The Importance of Outdoor Education.....	19
Elementary School Academic Achievement.....	20
Academic Engagement.....	20
Impact of Classroom Behavior on Academic Achievement.....	22
Does Structured Outdoor Time have a Higher Impact on Academics than Unstructured Outdoor Time.....	22
The Impact of Outdoor Education on Child Development.....	24
Social-emotional Development.....	25
Mental and Cognitive Development.....	26
Physical Development.....	27
Mental Health.....	28

How does Nature Impact Mental Health.....	29
The Impact of Technology on Mental Health.....	29
Physical Health.....	31
Guidebooks and Physical Activity.....	32
Guidebooks and Healthy Eating.....	33
Guidebooks and their Purpose.....	34
Summary.....	36
Conclusion.....	37
CHAPTER 3: Project Description.....	38
Methodology.....	39
Organization of the Guidebook.....	39
Audience.....	40
Timeline.....	41
Creation of this Guidebook.....	41
Implementation of this Guidebook.....	42
Assessment.....	43
Conclusion.....	44
CHAPTER 4: Conclusion.....	45
Introduction.....	45
Major Learnings.....	45
Personal.....	45
Professional.....	46
Implications.....	46

Education.....	47
Science.....	47
Limitations.....	48
Elementary School.....	48
Middle School.....	49
High School.....	50
Future.....	50
Final Thoughts.....	51
REFERENCES.....	52

ABSTRACT

Kern, J. (2022). *How can an outdoor education guidebook and an outdoor learning environment benefit elementary school students?*

Research has shown that outdoor education has major benefits for school-age children. These benefits include increased academic success, better social-emotional development, better physical development, and better mental and physical health. The guidebook designed for this project focuses on how to increase those five things in children across the country. The guidebook is geared towards elementary school teachers but can be adapted to any age level, time frame, and experience level of the teacher. The activities are diverse and engaging for students. Teachers who have little science background will be able to follow this guidebook to implement outdoor education within their own classrooms on a daily basis. The goal of this project is to help elementary school students increase their time spent outdoors while still meeting their standards and goals, and eventually turning these students into healthy knowledgeable humans who care about the environment. (143 words)

CHAPTER ONE

INTRODUCTION

Education is built on the premise of educating young humans so they can be successful human beings in the future. Generally, this is done inside a school building, within a classroom. However, oftentimes nature and the outdoors are overlooked as a learning space. There are many benefits to outdoor education; an increase in academic achievement and health, an appreciation for the outdoors, and it builds ties with the community (Miller et al., 2021). Since the COVID - 19 pandemic, teachers are encouraged to take their classes outside as much as possible. Being from the midwest, this task is easier to do in the fall and spring but winter presents a challenge for those in areas that get significantly colder. There are many winter activities to do outside with a class of children, but many of them may not be academic which is where the struggle begins. Outdoor education benefits learning in many different ways including academic and nonacademic subjects.

This capstone addresses the research question *How can an outdoor education guidebook and an outdoor learning environment benefit elementary school students?* The main focus of this project is how creating a guidebook will assist teachers with developing lessons for the outdoor environment. This guidebook can be used during any season of the year. The outdoor learning area that accompanies the guidebook will be an area where there is a school garden, as well as a designated spot for classes to learn outside with some benches and tables. It will be among the existing playground at a school in a rural part of central Wisconsin. This area will provide before and after-school activities and the space to learn outside as well as classes during the school day. The area

planned for this project has significant grassy space along with a few trees. This would allow multiple classes to be outside exploring and learning at the same time. This chapter will discuss the development and rationale of the topic, the significance it has to stakeholders, and the benefits within education.

This chapter will discuss the personal and professional significance of this project. It will examine how the project came to be and how it relates to the education profession. This project also includes information on the benefits within education on elementary aged students. Lastly, this chapter will discuss the development and rationale of the project.

Personal Significance

When I was young, I was always outside playing with my dad or my cousins or neighborhood friends. This sparked my love of the outdoors which I carry to this day. I have found this to be hugely beneficial for my mental health. It has been proven that being outside decreases stress - not only in children but in adults as well (Ginsburg, 2007 as cited in Yildirim & Akamca, 2017). Whenever I spend time outdoors, I always feel happier, lighter, and less stressed. Seeing the impact nature has on myself increased my desire to make others feel the same way; especially school-aged children. I have always loved the outdoors, even more so as I grew up. As I got older, I began to learn how to identify trees and plants which sparked the idea of this project.

I grew up in the midwest which looks very different than other parts of the country. The midwest is supposed to have four seasons, however, it often seems as though there are two major seasons and two minor seasons. Winter is a major season, often lasting up to six months depending on the year. It is cold and snowy, and the days

are very short; the sun rises around 8am during the dead of winter and sets around 4pm. Summer is another major season. It is usually above eighty degrees and it lasts around three to four months. Spring and Fall are minor seasons. Some years they each last two to three months, while other years they last a month or less. These seasons make it extremely difficult to get outside since school is in session for all of the winter months, thus reducing the amount of time students are able to spend outside. Other parts of the country are the polar opposite. It may be hot and humid for six to nine months of the year and a little cooler during the other months. I struggle to get outside during the winter months because it is cold and windy and not much fun. As I got older, I realized that dressing appropriately does wonders for making winter more enjoyable. Including information in the project about proper dress during different seasons will allow teachers to do their best to make their students comfortable.

Watching my younger family members as they grow up has been extremely intriguing. I was born in an era where technology was just starting to become more common, whereas, my younger siblings were born when technology was already running rampant across the world. The differences in development, health, and academics have been large.

Professional Significance

This project is significant to students, teachers, and parents. Providing students, teachers, and community member with more opportunities to experience outdoor education will increase mental and physical health, environmental awareness, and relationships between people. Students will be the ones most impacted by this project. Kuo and Suttie state, “Findings from a new study show that learning outdoors is not just a

fun, novel experience for kids, but also helps them focus once they return to the classroom” (Kuo & Suttie, 2018). Not only does this benefit the students, but it also benefits the teachers. Less time is spent redirecting students, dealing with behavior issues, and fighting to keep their engagement. That makes the teacher's job much easier than it otherwise would be. In particular, elementary students will benefit from intentional learning activities within a guidebook because it can increase student interest in a subject, create intrinsic motivation to learn, they may retain information longer, and mental and physical health benefits (Kuo & Suttie, 2018). Having an outdoor space to learn in is hugely beneficial to students and will help them in the long run.

Another group of people that whom this project is significant to is teachers. It is hard to teach a lesson when students are being disruptive and distracted. By having an outdoor learning area, teachers can set their students up for success by allowing them to learn outside and reset their brains to continue learning inside. Taking learning outside also gives the teachers a break and a chance to reset in order to be the best they can be. Simply put, taking students outside gives everyone a mental break thus improving their mental health, while also allowing the teacher to move around to different groups and work with them on certain skills.

This project may be significant to parents as well. When their children get the chance to learn outside in nature, their grades may increase and they may express a more positive attitude overall. This makes a parent's job easier, and more fulfilling. With outdoor education there may also be opportunities for parent volunteers to work with the classes. This benefits the parents because they are forming relationships with their child

and other students, while also learning about the environment and putting themselves in a better headspace which helps their mental health.

Benefits Within Education

Outdoor education has so many benefits not only in education but as a whole. The educational benefits are tremendous and easy to observe. Students who experience outdoor learning have been shown to have greater engagement in lessons and greater academic success (Rios & Brewer, 2018). Academic success in students impacts multiple aspects of education. Not only do the students have increased opportunities, but the school will also likely have higher test scores, leading to a multitude of positive outcomes for the school.

The main focus of this project is how creating an outdoor learning environment and guidebook will benefit elementary school students. This outdoor learning area project will include a drawing and photos of the space available, projected expenses, a guidebook for students, and a guidebook for teachers. The projected implementation of the outdoor learning project is the summer of 2022 and will result in an outdoor area and guide to facilitate learning in elementary students. The literature review will provide support for the plan through the examination of published research on the benefits of outdoor learning, both structured and unstructured.

Development

This project was developed through extensive experience in the outdoors. Hiking, water activities, outdoor book clubs, and more contributed to the creation of this project. Noticing the effect the outdoors had on those involved in these activities is what sparked the idea for this project. The digital age we are in makes it difficult to convince children

that the outdoors is more exciting than their video games. It has been proven that children are spending significantly less time outside than in previous years (Miller, 2021) and a large part of that is access to technology. Having recess duty as a teacher has shown this to be true. Many students whine and complain about going outside but once they are outside, they are having lots of fun and forget that they did not want to go out. This same concept applies to learning. Students are reluctant to sit at a desk and learn all day but once they are taken outside to learn they become much more excited and participation seems to rise greatly.

In addition to having the outdoor space to learn, students should be learning about the world around them and how to take care of it. Including a garden and compost system within the learning area allows students to take initiative and grow the food they eat at lunch. Studies have suggested that when children understand where their food comes from, they are more likely to eat fruits and vegetables (Key Benefits of Outdoor Education, n.d.). One school I taught at created a composting bin in the cafeteria for the fifth graders. So much food was being dumped and wasted each day that was perfectly fine to eat and the solution was to compost what they could. The compost was then used in the school forest to encourage healthy growth. The long-term plan was to eventually plant a garden and use the compost within the garden. That plan was what sparked this project idea.

In the world today, there is a lot of emphasis on math and reading and physical education is often getting pushed to make more time for math and reading. Tremblay explains that allowing children daily interactions outside on playgrounds and play spaces increases their vigorous activity levels and is essential in creating healthy children

(Tremblay et al., 2015). Many children have increased screen time which makes it harder to get them outside. School is a time when they should spend less time on technology and more time outside. The goal of this project is to encourage outdoor learning at school as well as within the community.

Rationale

Being outside tends to have a seemingly wonderful effect on people. It is as though nature can cure many mental ailments that plague people. With this in mind, outdoor education would logically allow children to retain more information and become more advanced in their lessons. Not only does their academic performance increase, but their mental and physical health increase as well (Weir, 2020). Simply put, being outside is good for the body and the soul.

Schools should have an area designated as an outdoor learning area where classes can go to learn in a new environment. These outdoor spaces can be as simple as tables on the grass or as complex as a school garden with a composting section and area for sitting. Just being outside while learning is enough to boost academic performance and mental health.

The school where this project will be implemented consists of about ninety-five percent white students, and about forty percent low-income/free and reduced lunch students. It is a fairly rural school with many students living on farms. The school itself has a major lack of nature surrounding it. The vast majority of the outdoor space is grassy with a few trees as well as the playground. Using some of this green space to create more nature-based space allows for many improvements to happen over time. By creating a garden in the space, the plants and flowers will attract bees and other pollinators which

students can then learn about. The garden will also serve as a food source for the school to incorporate healthy, fresh ingredients into student lunches.

The guidebook that goes along with this project provides many opportunities to students and teachers. The teacher will have step-by-step instructions on lessons relating to the garden and nature. That way, if the teacher is not familiar with certain science concepts they have a guide to walk them through it. They will also have a resource of other suggestions for activities to do outside in the outdoor learning area.

There are also activities that are included in the guidebook that the students can do outside. The guidebook teaches lessons to students that they will be able to use at home and in their future adult lives. It is a practical resource that will give them the greatest chance to incorporate healthy habits into their lives.

Conclusion

This chapter looked at the overall picture of outdoor education and my personal and professional significance to this project. I have always loved the outdoors and being able to share that love with my students and other teachers via a guidebook is the best way to give everyone a chance to love nature. This project was developed because of my love of the outdoors and my love of learning. It is valuable to me, as well as other teachers who might struggle with how to incorporate outdoor education into their lessons. This chapter ended with some of the benefits of outdoor education within academics.

Chapter two will discuss outdoor education in elementary school students, elementary school academic achievement, the impact of outdoor education on child development, mental health, physical health, and guidebooks. Chapter three will be looking specifically at the guidebook and who it was made for, the timeline for making it,

and the assessment used to gauge the effectiveness of the guidebook. Chapter four is a reflection of the guidebook and discusses implications, limitations, and future research relating to outdoor education.

CHAPTER TWO

LITERATURE REVIEW

The biggest issue facing outdoor education is the lack of knowledge and skill relating to implementing outdoor education effectively. The focus of the literature review is to examine the benefits of outdoor education among elementary school students and create a guidebook for teachers to encourage more outdoor education. The literature review supports and answers the question *How can an outdoor education guidebook and an outdoor learning environment benefit elementary school students?* The themes of the literature review focus specifically on students' academic performance, child development, mental health, physical health, and guidebooks.

The first section of the literature review looks at what outdoor education is and why it is important and then leads to academic performance in students who spend lots of time outside versus those who do not. Teachers can struggle with meeting every student's needs because each student learns in different ways. However, one commonality between many students is their attention span when doing something new. Students are much more likely to be engaged when the lessons are new and exciting (Yildirim & Akamca, 2017). Having class in an outdoor environment can boost the academic performance of all students.

The next section of the literature review examines child development; looking specifically at social, mental/emotional, and physical development. Children who are “stuck” inside all day long fail to form the basic skills needed to engage as an adult. Lack of social skills and physical impairments are just a couple of these necessities. This impacts a child's mental and physical development. Children are pretty resilient and

bounce back from setbacks well. They learn lessons through trial and error, especially when playing outside. Children who don't get those outdoor experiences don't learn those skills and lessons.

The next two sections in the literature review focus on mental and physical health. It examines how mental health is affected by nature and outdoor education, and the impact of technology on mental health, cardiovascular health, and muscular health. Outdoor education impacts all students in some way. The biggest impact is on the mental and physical health of students. They may not realize it at the moment, but over time, exposure to nature benefits them and their health. People who spend more time outside tend to have lower rates of depression and anxiety (Weir, 2020). Many studies have shown that giving students more time for physical activity prepares them for the future. It helps them focus better, helps their physical health, and can form long-term habits.

Lastly, the final section of the literature review explains what guidebooks are, the best format for teachers, and how to use them most effectively. Teachers love resources that are simple and easy to use. Having all the information in one place is the best way to convince teachers to use the resource. In order to give all teachers access to the resources, making them digitally accessible is the best way to set up a guidebook. The guidebook will give teachers resources to use to start their own outdoor education program at their school.

Outdoor Education in Elementary School Students

This literature review focuses on outdoor education and its role in a multitude of different areas. What is outdoor education? Why is it important? The literature supports the importance of outdoor education and the impact it has on students. Yildirim and

Akamca state, “linguistic abilities, cognitive skills including inference, planning, observation, recognition and making decisions and motor skills including coordination, endurance and balance become better as a result of interactions with nature,” (2014). For the purpose of this literature review, outdoor education is defined as any time spend outdoors while children are at school. This includes structured times and unstructured times.

What is it? Outdoor education has many different names. A common one is nature-based learning and nature-based education. “Nature-based learning focuses on nature as a tool for learning across the curriculum rather than as the subject about which students are learning,” (Miller et al., 2021). Many people assume outdoor education is learning about the outdoors - which it can be, but more often than not it is teaching the curriculum in an outdoor setting. Depending on where you are in the world and who you talk to, outdoor education has a variety of different definitions, but they all revolve around teaching curriculum in a nature-inspired environment. Delving into the different types of outdoor education is key to understanding the full effect it can have on elementary school students.

The outdoor education practice that is considered best practice is taking the curriculum from different subjects and teaching it in an outdoor environment. This can be as simple as conducting a reading class on a grassy lawn to learning how to identify trees for a biology class. The key in this type of practice is to simply teach the curriculum outside. In younger classes, using sticks, stones, leaves, flowers, and more to practice addition and subtracting can make a huge difference for students who might be struggling with those skills. An important thing to remember is that “in school settings, outdoor

education is not a separate discipline with its own prescribed objectives,” (Staley, 1983). This means it is not a separate subject with objectives to meet as mathematics or reading has. Outdoor education is a tool that, when used, has many benefits for all people involved.

The Importance of Outdoor Education. Outdoor education can be very different than traditional education and people do not like change. These people tend to wonder why they would do something differently if what they have been doing has worked. Outdoor education has higher success rates than traditional classroom teaching. It also has many benefits for people of all ages. Some of the major benefits include:

Promoting physical activity to help combat rising obesity rates, increasing immunity from exposure to a variety of micro-organisms, improving social skills, providing open-ended experiences that can allow children to engage in active learning, and providing ‘attention restoration’ which is the replenishing of mental energy. The mere presence of natural areas around schools has been associated with improved stress recovery and may be linked to enhanced academic performance. (Miller et al., 2021).

Clearly, outdoor education and learning are beneficial for students as well as the community. As students get older, they become healthier, smarter, and less stressed; all leading to better functioning adults. When children are given access to the outdoors, it opens a whole new world for them. A study showed that when children are introduced to the outdoors, their self-confidence increased, and they begin to take active responsibility for the environment (Becker et al., 2017). In today’s world, taking responsibility for the environment is one of the most important things teachers can instill in their students.

Using outdoor education as a gateway to creating environmentally responsible adults is something that will benefit every organism on Earth in the future.

Elementary School Academic Achievement

The main purpose of education is to give knowledge to young minds and encourage them to become the best version of themselves possible. Teaching the students about different subjects and topics - math, science, social studies, writing, and reading - gives them a well-rounded education. Every teacher has had this experience; what happens when a student is doing poorly in class, not engaged, or unenthused about the lessons? The common answer is to try and make the lessons more exciting for the student and give them the academic support they need to improve their grades. However, there could be another way to increase grades, engagement, and enthusiasm for learning. Outdoor education. “Outdoor education uses the outdoors in an environmentally appropriate manner to enrich the lives and learning of individuals” (Staley, 1983). Outdoor education gives students an opportunity to learn in a different environment; one they may not associate with education, thus allowing them to absorb more knowledge and be more engaged than they would have in a traditional classroom.

Academic engagement Schools are in a unique position because they can provide crucial knowledge, support, and experiences to almost all children. Schools that have access to outdoor spaces have a larger opportunity to implement nature-based learning that students may not get otherwise (Miller et al., 2021). Education is the building block needed to create self-sufficient, healthy adults, and taking advantage of any resources possible will allow for the greatest achievement possibility.

Every teacher has had a student who complains that the lesson is boring, they do not like math, or some variation of that. The good news for teachers is that “findings from a new study show that learning outdoors is not just a fun, novel experience for kids, but also helps them focus once they return to the classroom,” (Suttie, 2018). Taking students outside for a lesson can have a positive impact on their learning inside the classroom. Not only for the next lesson but all day long. In the study mentioned above, third-grade students conducted half their biology lessons outside and the other half inside the classroom. The day ran just like a regular school day, and the results showed that students who received the outdoor biology lessons were significantly more engaged in their next lessons (Suttie, 2018). This was true across different teachers, different times during the school day, and different times throughout the year.

If this information is consistent across different ages, why have schools not implemented more lessons like this? Some issues could be that the school is in an urban area with limited access to outdoor green spaces. Another could be how comfortable the teacher is taking the class outside by themselves. Teachers with classes of twenty-five and more, especially at young ages, might be nervous about kids running off or having behavior issues. In general, most elementary schools have enclosed playground areas that are perfect for outdoor education lessons. Suttie explains,

What’s powerful in this study is that the children didn’t spend time wandering down a forested path. The teachers simply changed the location of their lesson to a greener space - something that virtually any teacher at any school could do without taking away from instruction time (2018).

Many schools do not have to have access to a forest, lake, river, or even lots of trees, thus the students are lacking natural environments while at school. Just the change of scenery into a more nature-driven environment can create positive effects within the classroom.

Impact of classroom behavior on academic achievement A teacher's job becomes easier as a result of outdoor learning as well. In the study mentioned above, teachers had to redirect students less than half the number of times they did before, and students paid attention to the lesson better than before (Suttie, 2018). This creates fewer distractions for the students, more time to differentiate and explain the material, and more time for questions. All of which positively impact a student's academic performance. Not only is there more time to meet the needs of the students, but student grades improve, and they are more excited, interested, engaged, and happy to be learning about social studies, math, and science (*Key Benefits of Outdoor Learning*, n.d.). The attitude change towards certain subjects may also increase a student's academic performance in those subjects. Such a simple change could change how a student views a subject and could create a positive impact on that student's life. Academic performance can be influenced by both structured and unstructured outdoor times.

Does structured outdoor time have a higher impact on academics than unstructured outdoor time? Miller describes a study done that measured the educational outcomes of nature-based learning. The outcomes investigated were reading, spelling, mathematics, writing, literacy, science, a disposition to learn, and learning motivational behavior. Nine of the eleven studies reported an improvement in educational outcomes (2021). This study suggests a potentially positive impact on education when nature-based learning is implemented. In addition to outdoor learning, Rios and Brewer

explain that unstructured outdoor playtime has been shown to increase positive classroom behavior and engagement among elementary school students (2014). Clearly, any outdoor time, structured or unstructured, positively impacts a child's academic performance.

Simply put, unstructured outdoor play time has a positive increase in students' behavior when they are back in their traditional classrooms.

Structured outdoor learning time is for explicit instruction in certain subjects.

Taking the students outside for math and having them work on place value using sticks and rocks is one example of this. The lesson is the same as it would be in the classroom, it is just moved to a greener location and potentially uses natural materials as manipulatives. This time is excellent to use when a lesson needs to be taught but the students are getting bored, rowdy, or tired.

Unstructured outdoor time is what most people would consider recess. Recess is incredibly important to the development of children, but unstructured outdoor learning can be more than just recess. It could be an extra ten minutes at the end of class where the kids go outside and explore to see if they can find anything unique. It could be letting students play in the mud as a sensory activity. Unstructured time is any time outside that there are no explicit directions given or instructions happening.

Structured outdoor learning time and unstructured outdoor learning time both have their pros and cons depending on the situation each teacher has. There is not one that is better than the other for every single classroom. Each teacher has to consider their classroom and see what works best for their students. Some students do better with structured activities while others do not. Making small groups is one of the best ways to gain the most benefit from outdoor learning. A guidebook for teachers allows them to

implement outdoor education the best they can which improves academics. Not only does outdoor education impact academics, it also impacts a child's development.

The Impact of Outdoor Education on Child Development

The development of children is impacted by both nature and nurture. Nature versus nurture is a major psychological debate. The idea is that nature is genetic. People are born that way and cannot change it. Nurture is something that is taught through the world around you. For example, a child may be born with the genes for average height (nature) but be malnourished resulting in stunted growth (nurture). Another example would be having a fight or flight response when confronted with a dangerous animal (nature) but having been taught different skills that are most effective at getting you out alive (nurture). Being able to shape the way a child thinks and feels is an immense task asked of parents around the world. Many parents do not have an educational background or experience raising children. Because of this, many parents do not recognize the importance of being outside and learning through nature. Exposing children to outdoor activities, learning, and experiences positively impacts their social development, mental and emotional development, and physical development (Rios & Brewer, 2014).

Teachers are people who can majorly impact a child's development. Having trained on how to increase social-emotional development, mental development, and physical development is hugely important. Many times teachers see their students for longer periods of time than the parents do, thus giving teachers a larger impact on a child's development. During early childhood, children develop fundamental concepts and skills by actively engaging with the environment (Yildirim & Akamca, 2017). Encouraging outdoor play during the early years of childhood often set the child up for

success in their elementary school years. Children who lack that outdoor experience are often times not getting it in elementary school either. Teachers who practice outdoor education impact their students by improving problem solving skills, social skills, and fine and gross motor skills.

Social-emotional development Nature-based learning creates more opportunities for children to develop socially. They develop better social skills, empathy, and skills about how to interact with others. Research developed by Yildirim and Akamca shows that children had significantly better social-emotional skills after the outdoor education program was implemented (2017). Young children have a hard time articulating their emotions and feelings, and they are still learning strategies to help them overcome their emotions. A learned strategy many adults use when upset, frustrated, etc. is to do something outside, so why not use that same strategy for children? A study from the National Center for Biotechnology Information (NCBI) noted that “75-93% of children reported that an outdoor setting calms them down when they are angry,” (*Key Benefits of Outdoor Learning*, n.d.). The research shows that an outdoor environment has a huge impact on a child’s social-emotional growth and well-being.

Another major aspect of social development is the communication between students. Children need to learn how to communicate with their peers, their teachers, other adults, and the world around them. Fiskum and Jacobson suggest that there are increased opportunities for communication during nature-based learning compared to a traditional classroom setting (2012, as cited in Miller et al., 2021) thus allowing children to gain some of those critical communication skills at an earlier age. Increasing outdoor learning in all grade levels can allow for more communication between students, which

leads to better communication overall. Communication also improves mental and cognitive development.

Mental and cognitive development Access to outdoor learning areas allows children's mental development to flourish. Yildirim and Akamca (2017) state that "the children's cognitive skills significantly enhanced after the 10-week outdoor education,". Children who spend more time outdoors, whether in a structured or unstructured environment, obtain and retrieve knowledge faster over time (Yildirim & Akamca, 2017). A study was conducted by the American Institutes for Research and it found that students who participated in outdoor education had higher rates of conflict resolution skills and cooperation (*Key Benefits of Outdoor Learning*, n.d.). In turn, this creates adults that are better equipped to handle conflict and who can cooperate with others more easily.

There is a link between children who spend more time in nature and their ability to focus - which then impacts their cognitive development. Studies compiled from the Children and Nature Network (C&NN) showed that children who spent part of their day in a natural environment were able to focus better which enhanced their cognitive abilities over time (Wells, 2000, as cited in *Key Benefits of Outdoor Learning*, n.d.). Not only does a natural environment impact neurotypical students, it also impacts neurodivergent students; in this case, students with attention deficit hyperactivity disorder, or ADHD. Findings from the *Journal of Attention Disorders* discovered that children with ADHD had a more positive experience in an outdoor learning environment, and they were able to concentrate better overall (Taylor & Kuo, 2008, as cited in *Key Benefits of Outdoor Learning*, n.d.).

Schools in an urban setting tend to be at a disadvantage compared to those schools in a rural setting. Urban environments have been linked to attention deficits, while more natural environments have been linked to better working memory, cognitive flexibility, and attention control (*Current Directions in Psychological Science*, Vol. 28, No. 5, 2019, as cited in Weir, 2020). However, outdoor education is like exercise. Even just a little is good for you. So, the schools that are in a very urban area may not have access to remote natural areas, but having trees and grass or potted flowers, or a raised garden will still give students a positive mental boost. These things will also give students something physical to do like watering the garden or flowers which helps their physical development.

Physical development A child's physical development is impacted greatly by the amount of activity they partake in as a child. Michigan State University explains that physical development must include a proper diet and plenty of physical activity (*Physical Development and Health*). For a child to properly grow, they need to have the experiences one can only gain from spending time outdoors. Running, jumping, climbing, and walking are just some of the gross motor skills gained through outdoor play. All of which are necessary for their development. Children who lack some of these gross motor skills will struggle more as an adult when they try to learn these skills. It is easier to teach a child to jump, skip, and climb than it is to teach an adult. Adults are more wary of 'dangerous' activities, but most children will try almost anything.

They also gain fine motor skills including gripping small objects, stacking toys, and building with materials found in nature - like rocks, sticks, leaves, mud, and more. Additional motor skills are learned through outdoor activities as well. "... coordination,

endurance, and balance become better as a result of interactions with nature,” (Yildirim & Akamca, 2017). Children who spend the majority of their time indoors may lack some of these crucial skills that will help them later in life. They may end up falling behind their peers in school because they did not get this foundation of motor skills. Some skills like cutting with scissors and writing are usually taught in a classroom or at home, but even taking the children outside to practice those skills will benefit them. Having these skills gives students more confidence which improves their mental health.

Mental Health

The World Health Organization defines mental health as, “a state of well-being in which [an] individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community,” (*Mental Health Promotion*). By this definition, mental health encompasses a few different things. One must be without mental illness, as well as being psychologically well. There are quite a few elements that impact whether someone ends up with a mental health disorder. Some of these factors include “social, economic, psychological, physiological, behavioral, environmental, genetic, and epigenetic influences,” (Meyer-Lindenberg, 2019, as cited in Bratman et al., 2019). There are so many different ways mental health can be impacted, it is unreasonable to assume they all can be prevented by nature as Bratman et al., (2019) states: “It is important to note that, in many cases, these social and environmental determinants of health may outweigh the effects of nature contact on specific outcomes,”. This part of the literature review will dive into how nature impacts mental health, as well as the impact technology has on mental health.

How does nature impact mental health? Nature has incredible benefits for people of all ages. Children who spend more time in nature are at a lower risk of developing depression, anxiety, and many other mental health disorders. A study done in Denmark showed that people who spent less time exposed to green space in childhood were 55% more likely to develop a mental illness than those who spent more time in green spaces (Engemann, K., et al., *PNAS*, Vol. 116, No. 11, 2019 as cited in Weir, 2020). Clearly, nature is an extremely powerful tool that is not utilized as often as it should be. This is because people do not realize the true impact it can have on their mental health. It has been proven that being outside decreases stress - not only in children but in adults as well (Ginsburg, 2007 as cited in Yildirim & Akamca, 2017). Getting children outside is key to providing them with the best mental health possible.

The impact of technology on mental health. A recent movement has emerged intending to reconnect children with nature. This is likely because children are spending significantly less time outside than in previous years (Miller, 2021). This is clearly evident when looking at society today. Very rarely do you come across an adult who does not have a cell phone. Cell phones are how we communicate in the world and that's not a bad thing. However, a teacher one day said that one out of twenty-three of their students does not own a cell phone and that they know second graders with cell phones. Those kids are six and seven years old (Riesselman, personal communication, January 25, 2022). The problem the world is facing is not a technology problem - it is a lack of parental control. "Modeling appropriate cell phone use, limiting access, implementing parental control settings, and teaching children about the dangers of cyberbullying and how not to be a cyberbully can help prepare children for this responsibility" (Wood,

2022). Children feel more confident when they think their words cannot be traced back to them. They post things they would not normally post. Social media is the main source of that issue. There are six and seven-year-olds scrolling TikTok and seeing the inappropriate language and activities.

In a study done at UCLA in 2014 and published in *Computers in Human Behavior*, it was found that children have a harder time grasping others' emotions. The study found that preteens who had to interact with others face to face without screens for 5 days had improved nonverbal emotional cue recognition compared to controls who used screens regularly for both facial expressions and videotaped scenarios (Bhat, 2019).

More and more often teachers are seeing students who are completely oblivious to social cues. Teachers are having to teach social skills to large chunks of their classes and the evidence shows that technology is likely the reason why. Cell phones are just the beginning. Video games are another source of technology that has major potential to destroy a child's mental health. Recently, there was a game called *Poppy Playtime* with a character named Huggy Wuggy. While the name sounds innocent enough, the character is actually a monster who hunts down the player as the player is trying to solve puzzles to escape. This has reached elementary-aged students and has recreated itself in different forms on the playground. Kids are chanting the scary Huggy Wuggy song while trying to hug other kids.

Videos and movies are another issue especially when parents are nonchalant about what their children are watching. *Squid Games* was a popular Netflix show that made its way to elementary school and onto the playground. The show is a much more violent,

disturbing version of The Hunger Games. There were online games made about the show that kids were managing to play during school hours. Kids in elementary school have no reason to be watching these types of shows or games. The gore, violence, language, and innuendos in these types of shows are more than enough to mentally harm children.

Children have become addicted to technology the same way a smoker is addicted to cigarettes. When technology is taken away, children can exhibit ‘withdrawal’ symptoms. Susan Bhat (2019) explains that,

In my own practice, I have witnessed kids having panic attacks and appearing extremely stressed out when parents attempt to take away their tablets or phones. Younger ones roll angrily on the floor or scream hysterically, while teens either sulk, grow tearful, argue, swear at parents, and appear as if their very life has come to a standstill. The consequence of losing a device can be devastating and somewhat traumatic.

A fifth-grade teacher told me that in their own classroom, each student gets their own Chromebook to do schoolwork on. Occasionally they could earn free time to play games on their Chromebooks. When told to put them away to transition to the next activity there are always whining and stalling. The students ask every day if they can have free time on their Chromebooks and then whine when told no (Riesselman, personal communication, March 9, 2022). This addictive effect that technology has on children is extremely harmful to their mental health as well as their physical health.

Physical Health

A child’s physical health is greatly dependent upon their parents or guardians. Adults who encourage outdoor play, family bike rides, walks, and more, are setting their

children up for a healthier lifestyle. Physical health is defined as making lifestyle choices that ensure health, avoid diseases, and that allow you to live a balanced life (Physical Wellbeing Journal, n.d.). As children, some of these lifestyle choices are not really choices. They are choices that are made for us by our parents or guardians. The choices our parents and guardians make impact our physical health for years to come. These can be good impacts or bad impacts, it just depends on the choices that were made.

Guidebooks and Physical Activity. The first step to getting kids to do physical activity is to get them outside. Kids are more likely to enjoy playing and running around outside in nice weather than they would inside a gym. Outdoor education allows that first step to occur: getting kids outside. Once outside, their physical activity is increased dramatically. Outdoor education generally involves squatting, kneeling, standing, walking, carrying things, and much more. Compare that to a regular classroom. Many times students sit at their desks or their spots and do not move for a long period of time. Already a student's physical activity has increased just by moving class outside. In a study done by Miller (2021), it was found that there was a "statistically significant increase in at least one aspect of physical activity as a result of nature-based learning,". Incorporating outdoor education into daily classroom life can majorly impact the amount of physical activity a student gets in one day.

Reviewing the previously mentioned technology section of this chapter, as society continues to advance, technology becomes more prevalent than in previous years. This means that children are being exposed to more and more technology like video games, social media, and streaming platforms. Many children spend far less time outside today than their parents did thirty years ago (Miller, 2021). That means they are getting less

physical activity. Encouraging as much outdoor activity as possible during the school day is crucial to allowing every student to get in their physical activity for the day. A study from Oxford Journals showed that outdoor education in green spaces around a school can help combat childhood obesity (Key Benefits of Outdoor Education, n.d.). Not only does it combat childhood obesity, but time outdoors may also reduce the risk of a child developing myopia, or nearsightedness (Key Benefits of Outdoor Education, n.d.). Clearly, being outside is good for many different aspects of physical health.

Guidebooks and Healthy Eating. When a child is allowed to spend time outdoors, they learn many things. One common lesson in outdoor education is teaching children about gardens and the foods they eat. In these situations, children are often encouraged to help plant the garden, water the plants, and harvest them when appropriate. By doing this, the children are learning about where their food comes from and what is healthy for them. This may be an unconscious type of learning or a guided lesson by a parent or teacher. Either way, it is important for children to have an understanding of where their food comes from. Studies have suggested that when children understand where their food comes from, they are more likely to eat fruits and vegetables (Key Benefits of Outdoor Education, n.d.). Many schools have science curriculums that cover how plants grow, but not many go so far as to actually grow their own garden. So now, not only are the students learning about the structure and function of a plant, they are also learning about where their food comes from and what the nutritional value is of the food they are growing.

Guidebooks and their Purpose

There has been minimal research done about the best practices for designing teacher guidebooks. This lack of research does not negatively impact this project since there is enough research to draw upon to make this guidebook successful.

When we think of curriculum and best practices, every teacher thinks of something slightly different, depending on how long they have been teaching. Teachers who have been in the field for twenty years or more may remember teaching using a textbook, worksheets, and chapter tests. Today's teachers might think of best practices as using visual aids, auditory cues, and kinesthetic movements to best reach every student. Curriculum books do not generally give auditory cues or kinesthetic movements to do with the students. The teachers create those things to expose students to the same material in a variety of different ways. Overall, the curriculum as a whole is only a small part of each lesson throughout the day.

The idea that teaching every student the exact same way and expecting them to reach the standards is extremely outdated. Differentiating instruction is the current best practice within education because it allows all students the opportunity to learn the skills at their own level. The Oxford University Press states, "We all know that feeling – 24 teaching hours a week, different classes at different levels and NO TIME to prepare! Many of us, therefore, rely on the teacher's book for guidance and inspiration," (ELT, 2013). Guidebooks are adjustable to whatever student a teacher is trying to reach. Outdoor education goes well with guidebooks because the lessons can be modified based on location and student wants and needs.

When teachers plan lessons, oftentimes the first step is figuring out what the goal of the unit is. Teachers then create objectives and outcomes which they use to plan lessons. Lesson plans often include an introduction, location, audience, differentiation strategies, duration, and assessments. These things will look different at every grade level, in every lesson, and with every teacher. In general, most teachers use a variety of differentiation tools like graphic organizers, auditory cues, visual cues, and hands-on learning (Riesselman, Wakeling, Johnson, personal communication, April 15th, 2022). For assessments, they generally use both types, formative and summative, to best gauge their student's learning.

In today's society, resources can be shared far more easily than they were in the past. Google Drive has been a huge resource for teachers as well as social media. Teachers are now able to access resources that they could not before. With Covid-19 having recently occurred, technology has taken part in a majority of teachers' and students' lives. With schools open again, teachers are using technology to meet the needs of their students even more extensively and effectively than ever before. This is in part due to the vast number of resources available now. The best teacher resources are digital because they can be shared, edited, and differentiated as needed.

This guidebook will fill in gaps for teachers who have limited experience implementing outdoor education. There are many resources out there about outdoor education, but very few have examples, suggestions, and resources all in one place. This guidebook fills that gap and puts those resources in the same place, thus, making it easier to implement outdoor education for teachers. It also gives veteran teachers who have

experience implementing outdoor education the chance to find new resources and ideas to implement.

Summary

This chapter discussed outdoor education in elementary school and explained what outdoor education is and why it is important. Outdoor education is any learning that takes place outside whether it is guided lessons or exploration. It is important because it allows children more freedom to express themselves, as well as having academic, mental, physical, and developmental benefits.

It then dived into academic achievement in elementary school and how it relates to outdoor education. When children are given more opportunities to learn outdoors, their grades tend to increase as well as their engagement in the lesson. This is true for all children, not just elementary school students.

The third section discusses the impact on a child's development and its relation to outdoor education. Studies have shown that children who spend more time outdoors have better fine and gross motor skills than children who do not spend much time outdoors. These skills include running, jumping, skipping, writing, cutting with scissors, and much more.

The fourth and fifth sections of this chapter are related and they discuss the mental and physical health of children relating to outdoor education. In terms of mental health, children who spend more time outdoors are less likely to develop mental health issues like depression and anxiety. They also tend to be happier overall. In terms of physical health, children who spend more time outdoors are less likely to become obese in the future. Outdoor education may also reduce overall childhood obesity. These

children are also more likely to eat healthier because they know where their food comes from through their outdoor education lessons on plants and gardening. The final section of the chapter explained what guidebooks are, how they are beneficial to teachers, and the best practices for using them.

Conclusion

Today, children spend less time outside than in previous years. One way to stop this is to take learning outdoors. I asked, *How can an outdoor education guidebook and an outdoor learning environment benefit elementary school students?* This chapter explained the benefits to outdoor education and outdoor learning environments. It discussed guidebooks and their purpose in the elementary school classroom as well. Chapter three will be looking specifically at the guidebook and who it was made for, the timeline for making it, and the assessment used to gauge the effectiveness of the guidebook.

CHAPTER THREE

PROJECT DESCRIPTION

The guidebook that was developed focused on the research question in chapter one: *How can an outdoor education guidebook and an outdoor learning environment benefit elementary school students?* This topic is important because many people do not know the benefits of outdoor education and there are a lot of them. Exposing people to these benefits will allow for a more positive learning experience as children. The guidebook that was created addresses this topic because it is a resource for teachers that gives ways to incorporate outdoor education into their daily school lives. Chapter two, which discussed the effects of outdoor education, showed that when students have classes outside they are more likely to be engaged in the lesson, retain more information, and be an overall healthier child. Chapter three is focused on the construction of the outdoor education guidebook.

The key piece within the design of the guidebook was to make it digital, shareable, and editable for all teachers. The intended audience for the guidebook is elementary school teachers and it was designed to assist those teachers in four distinct ways. Part one, titled *How To: Steps for Implementing Outdoor Education*, provides the initial steps for elementary school teachers to implement outdoor learning within their classrooms. Part two, titled *Resources*, provides resources for teachers to use within their lessons to encourage outdoor learning while also increasing engagement. Part three, titled *Samples*, provides sample lesson plans for a range of grade levels throughout the four seasons. Part four, titled *Teacher Contributions*, is a section where other teachers and

outdoor educators can link their lessons, ideas, and suggestions to collaborate and share ideas.

Methodology

Oftentimes teachers focus so much on making lessons fun and engaging that they exhaust themselves and then lack enthusiasm for the lesson. This guidebook has solutions to some of those issues. Teachers are so overworked and stressed out so the goal of this project was to lay everything out very simply so it is easy to find and use. It is an online guidebook. I chose to do it online because the vast majority of teachers have access to a cell phone or computer more easily than they would a physical guidebook. It is also easier to carry around and is harder to lose. The organization of the guidebook is extremely beneficial to teachers and will help them find information efficiently and effectively.

Organization of the Guidebook. The guidebook has four distinct parts. Each part has subsections to make it easy for teachers to find the information they are looking for. The first part is titled *How To: Steps for Implementing Outdoor Education* (Staniforth, n.d.), Within this section, there are step-by-step instructions on how to implement outdoor education at a variety of grade levels and schools.

Part two is titled *Resources* and is a section for teachers to find activities and ideas for implementing outdoor education in their classrooms. There are links to websites, photos, books, articles, and more. Each item includes a way to incorporate outdoor education into the classroom. Some ways are simple while others are more complicated.

Part three is titled *Samples* and has example lesson plans for teachers to use. There are lessons in multiple subjects at multiple age levels. Some lessons have been

done in a classroom while others have not. There is a variety of subjects and grade levels within these lessons and most of the lessons are adaptable to other grade levels.

At the end of the first three parts, there is a section titled *Teacher Contributions* where teachers can add links, photos, videos, lesson plans, books, and more. This way other teachers can see what resources are available and have access to them easily.

Within the *Teacher Contributions* section, there are multiple sections for teachers to add to. There is a section for books, websites, personal links, lesson plans, and a section titled *Miscellaneous* for teachers to put any extra materials that do not fit into any of the other categories.

Audience

This guidebook was designed for an audience of any and all elementary school teachers. Oftentimes teachers are not properly trained in every area of study they are expected to teach. Many teachers struggle with teaching science especially. This can prevent the teacher from attempting to teach science at all as it can be very overwhelming trying to teach something unfamiliar. This guidebook was created to give those teachers more confidence in teaching the Next Generation Science Standards (NGSS) as well as to encourage spending time outdoors.

The guidebook gives resources for teachers to use whether they want to modify their current lesson plans or create an outdoor education class. This guidebook also instructs teachers on ways to incorporate nature into their daily lessons. Examples, ideas, and suggestions are found throughout the guidebook for the following subjects: math, reading, writing, social studies, science, and art. Any teacher can use the guidebook to enrich their lessons and encourage time outside. Middle and high school teachers will

also find value in this guidebook. Many of the suggestions are adaptable to higher grade levels as well as a variety of subjects.

This guidebook was created to assist teachers with lesson enrichment, classroom engagement, and student health. Teachers of any grade level and any subject will benefit from this guidebook although it is specifically designed for elementary school teachers. The next section of this chapter will discuss the time it took to create this guidebook as well as the time it took to implement it within a school.

Timeline

The whole process of researching, planning, creating, and implementing took a very long time. Many months were spent researching and planning the guidebook and how it would be formatted, the order of information inside it, design choices, and more. There were two main parts to the guidebook timeline. The first was the actual creation of the guidebook and the second was the implementation of the guidebook within an elementary school. These two parts took place over a time frame of about three months; June through August 2022. The project was completed in the middle of August 2022 and shared with other teachers at that time.

Creation of this guidebook. The physical act of creating this guidebook involved more than one might think. First, research was gathered and organized into appropriate categories relating to the guidebook topics. The guidebook was then typed into a document in the general format it would end up being. Once everything was typed up, the detailed formatting began. Pictures were added, chapters bumped, and colors and fonts were changed. This whole process took around two months to complete. It was done

during June and July 2022. Once the guidebook was created, it was time to implement it within the schools.

Implementation of this guidebook. Implementing this guidebook did not take as long as creating it. The first step in the implementation process was to discuss the guidebook with the school's principal and explain the goals behind using it. Once the principal was on board, the next step was to schedule a short thirty-minute meeting with the school's elementary school teachers. At this meeting, the guidebook was introduced, explained, and reviewed with time for teachers to ask questions and voice any concerns. Examples and strategies were shown from the guidebook and then demonstrated to show a realistic idea of what the guidebook could do. After the meeting, the principal sent every summer school teacher a link to the guidebook and encouraged them to try out one of the ideas or strategies sometime that week. The summer school teachers were the first ones to try out the guidebook. Assistance was given to those who felt they needed it, and another meeting was held the week after to discuss thoughts and opinions on the guidebook. At the second meeting, many of the teachers felt excited that it was easy to use and were planning on continuing to use it throughout the 2022-2023 school year. The teachers were also encouraged to pass the link along to any other teachers they knew and the principal sent the link to all other teachers in the building. In all, the implementation process at one school took about two weeks. By the end of the two weeks, most of the teachers felt confident and comfortable with using the guidebook. The guidebook was then sent to the middle and high school teachers as strategies and examples they could differentiate to fit their classes. In the elementary school, more practice was encouraged to get the best feel for the guidebook possible. After two more weeks of use during

summer school, the teachers were asked some questions about the guidebook. These questions were given to help assess the guidebooks' effectiveness within the classroom, school, and district. The teachers as well as the principal were given these questions.

Assessment

The best way to assess the effectiveness of the guidebook was to get direct feedback from the people using it. The teachers and principal at the school were asked a series of questions and statements which were split into two groups. The first group were questions one through eight and they were answered with the following scale: 1 - strongly disagree, 2 - disagree, 3 - agree, and 4 - strongly agree. The second group were questions nine through twelve and were answered using the following scale: 1 - not effective at all, 2 - somewhat effective, 3 - effective, and 4 - very effective. The questions and statements on the survey were:

1. I enjoyed using the guidebook.
2. The guidebook was easy to use.
3. I found things quickly in the guidebook.
4. The guidebook was difficult to maneuver through.
5. I liked that it was online.
6. I feel as though I could use the guidebook almost anywhere with my students.
7. I will continue to use the guidebook throughout the year.
8. I would recommend this guidebook to other teachers.
9. The strategies given were _____.
10. The suggestions would be _____ with my class.
11. This guidebook is _____ for my grade level.

12. I think the guidebook would be _____ for middle school and/or high school teachers.

The assessment survey was distributed via a Google Form approximately one month after the initial meeting to introduce the guidebook.

Conclusion

This guidebook was created with the average teacher in mind and what they would benefit from most. The guidebook answers the question, *how can an outdoor education guidebook and an outdoor learning environment benefit elementary school students?* This chapter discussed the project description, audience, timeline, and assessment of the guidebook. Each of these sections explained what the guidebook was, who it was for, the time it took to create it, and how its effectiveness was assessed. Chapter four is a reflection of the guidebook and discusses implications, limitations, and future research relating to outdoor education.

CHAPTER FOUR

INTRODUCTION

The research question was: *How can an outdoor education guidebook and an outdoor learning environment benefit elementary school students?* Throughout the first three chapters, this question has been researched, questioned, explained, and supported. This final chapter dives into the project and assesses the different aspects of the creation and implementation of the project. It will discuss the major learnings, both personal and professional, implications in education and the science field, limitations at the elementary, middle, and high school levels, future research and projects surrounding the guidebook, and final thoughts about the project.

Major Learnings

Throughout the course of this capstone project, there has been many things I have learned both personally and professionally. Each one has impacted my life in some way and has changed the way I live my life.

Personal. Within my personal life, one of the biggest things I have learned throughout this capstone project is to really appreciate the time spent in nature. Previously, I enjoyed spending time outside and knew that it made me feel better if I was sad, but now it is so clear to me the benefits of being outdoors. So often we get caught up in the whirlwind of life and forget to stop and smell the roses. Taking that extra time to slow down and appreciate what's in front of me has really put things in perspective. That is why one of the most valuable resources for this capstone project was the article titled *Nurtured by Nature* by K. Weir. Weir discussed the impact outdoor education has on mental health and was one of the guiding sources for this project. Weir's work caused me

to realize the true impact of the outdoors and that is what lead to this major learning. The guidebook has many resources not only for teachers, and I think the more people that have access to it, the better off we are. There are activities that allow you to slow down and really discover and uncover the unique world around us, and I think that is awesome. In addition to the major learnings I had in my personal life, I also had some in my professional life as well.

Professional. The major learnings from my personal life expand into my professional life, but there are some things I learned that only apply to my professional life. One of these things is how I run my classroom. F. A. Staley was a source that influenced this learning. Staley's work titled *Outdoor Education in the Total Curriculum* talked about teaching in an outdoor education based classroom and how to implement it into the curriculum that is currently used. In previous years, I tried to get my students outside for extra recess or science lessons, but that never seemed like enough time. After working through this capstone project, I learned that it really was not enough time. Going forward, I will be taking my students outside as often as possible to do our different lessons. Even when it is cold and snowy, I would like to get them outside to experience something different. I had many major learnings throughout this capstone project in my personal and professional life and the next section is going to explain the implications of the guidebook within education and within the science field as a whole.

Implications

There were many things I learned throughout the course of this capstone project as well as many implications that can be drawn based upon the guidebook. These

implications can be drawn in two major areas: education and science. Both these areas play an important role in the guidebook, and the implications for each will be explained.

Education. The educational implications of the guidebook are simple; outdoor education is a newer field which therefore has fewer experts than other fields, and not every child is going to respond the same way to the lessons in the guidebook.

Starting with the idea of outdoor education being a newer field, there are many teachers who are wary about trying it because they are unfamiliar with it. There is not as much research done on it as other areas of study so it can be harder to comprehend. Additionally, veteran teachers tend to like to do things the same way they have been doing them and outdoor education would be changing the way they do things. They do not always like that or appreciate that.

Not only do teachers not react to outdoor education the same way, students will not react the same way either. Each child is different and for the vast majority of students, outdoor education will be beneficial in some way, there are a handful of students who will not benefit from outdoor education and that is okay. Those students tend to have varying needs already, and outdoor education may not be the way to reach them more successfully. These implications within education are the major ones however, there are other ones within the science field that are different.

Science. Within the science field there is one major implication that stands out. Research about outdoor education has only just begun. As more and more research is completed, more and more people will elect to send their children to a non-traditional nature school. I know of a handful of people right now who plan on bypassing the traditional education system and are electing to send their children to a nature-based

montessori school. These types of schools are becoming more common and that impacts the science world. These classrooms have teachers with backgrounds in science fields as well as education, so the more schools there are, the more people in the science field. The science field of outdoor education will only continue to grow and expand and while there are some limitations to outdoor education, there are far greater successes.

Limitations

There are some limitations surrounding this project and different grade levels. Some are easier to resolve than others, but each of the following sections will discuss, in depth, the limitations applicable to that grade range. The sections are elementary school, middle school, and high school.

Elementary School. Limitations at the elementary school level are minimal compared to the other levels. There are two limitations that are most common at this level and they are a lack of teacher confidence and knowledge, and lack of outdoor space.

This guidebook was created with the intent to make teachers more comfortable teaching outside of the classroom. However, some teachers will still be uncomfortable and unfamiliar with the material and concepts, therefore, this guidebook will not be as effective in some classrooms.

In addition to lack of teacher confidence and knowledge, there are many schools who lack good outdoor space to do these lessons. While most schools have some sort of playground, schools in large cities have less green space than schools in more rural areas. Ideally, green spaces are most effective for lessons from this guidebook, but some are possible without green space. One way to combat this limitation is by building a school garden, with administrative permission of course.

Lack of teacher confidence and knowledge and lack of green space are the biggest limiting factors in elementary school. As students move to middle school, the limitations change slightly. This will be discussed in the next section.

Middle School. While middle schools sometimes face similar limitations as elementary school, they also have some different ones. The biggest change is the length of class periods. Many middle schools follow a routine of forty-five to sixty minute class periods. While that may be enough time for some lessons, others are simply too complex to complete within that short time frame. However, some middle schools follow what is called a block schedule. This is where they have half as many classes as traditional schools but twice as long. For example, a traditional school may have six academic class periods that are fifty minutes long. A block schedule would have three academic class periods that are around one hundred minutes long. There are pros and cons to each, but for the sake of this guidebook, traditional class periods present more of a limitation than block class periods.

Another limitation that shows up in middle schools is the age level of the students. At this period of their lives, many of them are focused on impressing their friends and fitting in socially with their peers. This results in some limitations when going outside. In cold weather, many students will not want to wear a hat because it will ruin their hair. In warm weather many students worry about sweating and if they put on deodorant or if their makeup will run. These things limit the success of the guidebook because the students are not engaged in the lessons, thus, they will likely not show improvement or learning of the material.

While middle school and high school have similar limitations, high school presents different ones than elementary school. The next section discusses the largest limitations in high school in regards to this guidebook.

High School. High school and middle school limitations are very similar. One of the similarities is the setup of class periods. Traditional classes versus block classes. The same issues involving these in middle school apply to high school as well. There is not enough time in a traditional class period to adequately finish certain lessons from the guidebook.

One limitation unique to high school is what many people refer to as the “senior slide” meaning students who are seniors, or in their last year of high school have already been accepted into their college or job so therefore they can “slide” through senior year doing the very minimal amount of work. Many seniors will not gain much from this guidebook as they are putting little effort into the work.

Those are the two biggest limitations of this guidebook at the elementary, middle, and high school levels. Although some limitations are similar across levels, each one presents unique opportunities to adapt and change to most effectively reach the students. The next section will discuss the future of the guidebook and the future research that could happen surrounding the guidebook.

Future

While there are limitations at each schooling level, the future holds a great deal of opportunity not only to resolve those limitations, but to grow the overall success of outdoor education. One project that a teacher could take on would be creating a school garden. This could be as simple as some potted plants and flowers or as complex as a

vegetable garden where the school gets some of its food. A project like this could majorly impact the amount of outdoor education students are getting during the day. Gardens take responsibility which means someone has to care for it. Classrooms could rotate caring for the garden and over time, benches and tables could be installed to provide more adequate space for lessons to take place. This is a project I would recommend as a next step for any school looking to increase their outdoor education experiences.

Taking it another step forward, once a garden has been established the school could work on composting and using that compost in the garden. This would give more opportunities for students to learn and it is extremely hands on. Learning about composting not only gets students outside now, but it is a lesson they can take into adulthood and use then which gets them outside as an adult as well. Overall, the future holds many opportunities to expand outdoor education. The next section discusses any final thoughts about the guidebook.

Final Thoughts

Using the results from the survey discussed in chapter three, I will be able to make changes necessary to make the guidebook more effective which then leads to teachers being more effective because they have successful resources at their disposal.

This project is going to be extremely beneficial to many teachers and students across the country. Since the project uses the Google platform it is easily shareable and accessible to all teachers. It will be sent to teachers within the district I teach in as well as to teacher friends in other districts. They will then be able to share it with their coworkers and teacher friends and it will keep being shared and added to. The guidebook will help teachers improve their teaching methods and knowledge of outdoor education.

REFERENCES

- Becker, C., Lauterbach, G., Spengler, S., Dettweiler, U., Mess, F., (2017). *Effects of regular classes in outdoor education settings: A systematic review on students' learning, social and health dimensions. International Journal of Environmental Research and Public Health, 14*
- Bhat, J., & Wartski, S. (2019, November 1). *The effects of screens on kids and how to set limits*. Find a Psychologist. Retrieved April 12, 2022, from https://www.findapsychologist.org/the-effects-of-screens-on-kids-and-how-to-set-limits-exploring-the-cognitive-psychosocial-and-psychological-impact/?gclid=Cj0KCQjwxtSSBhDYARIsAEn0thQHxM4xFDbodxTekBNG0m4B4X4MDK9FtsAYZ8JfYnXrlfn_1CWfqcEaAte_EALw_wcB
- Bratman, G. N., Anderson, C. B., Berman, M. G., Cochran, B., de Vries, S., Flanders, J., Folke, C., Frumkin, H., Gross, J. J., Hartig, T., Kahn, P. H., Kuo, M., Lawler, J. J., Levin, P. S., Lindahl, T., Meyer-Lindenberg, A., Mitchell, R., Ouyang, Z., Roe, J., ... Daily, G. C. (2019). Nature and mental health: An ecosystem service perspective. *Science Advances, 5*(7). <https://doi.org/10.1126/sciadv.aax0903>
- ELT, O. U. P. (2013, February 14). *Why use a teacher's book? (part 1)*. Oxford University Press. Retrieved April 28, 2022, from <https://oupeltglobalblog.com/2011/06/03/why-use-a-teachers-book-part-1/>
- Kuo, —D. M., & Suttie, J. S. J. (2018, May 14). *The Surprising Benefits of Teaching a Class Outside*. Greater Good. Retrieved February 20, 2022, from https://greatergood.berkeley.edu/article/item/the_surprising_benefits_of_teaching_a_class_outside

- Mental Health Promotion. (n.d.). Retrieved March 27, 2022, from
<https://www.health.state.mn.us/communities/mentalhealth/#:~:text=The%20World%20Health%20Organization%20defines,to%20his%20or%20her%20community.%22>
- Miller, N. C., Kumar, S., Pearce, K. L., & Baldock, K. L. (2021). The outcomes of nature-based learning for primary school-aged children: a systematic review of quantitative research. *Environmental Education Research, 27*(8), 1115–1140.
<https://doi-org.ezproxy.hamline.edu/10.1080/13504622.2021.1921117>
- NHS. (n.d.). *Physical Wellbeing*. NHS choices. Retrieved April 3, 2022, from
<https://wearenchc.nhs.uk/wellbeing/physical/>
- Rios, J. M., & Brewer, J. (2018, February 5). *Outdoor Education and Science Achievement*. NAAEE. Retrieved February 20, 2022, from
<https://naaee.org/eepr/research/library/outdoor-education-and-science-0>
- Smith, J. W. (1955). Adventure in outdoor education. *Journal of Health, Physical Education, Recreation, 26*(5), 8–18.
<https://doi.org/10.1080/00221473.1955.10628949>
- Staley, F. A. (1983). Outdoor Education in the Total Curriculum. *Journal of Physical Education, Recreation & Dance, 54*(1), 56–57.
<https://doi.org/10.1080/07303084.1983.10631215>
- Staniforth, S. (n.d.). *Get outdoors! an educator's guide to outdoor classrooms - metro Vancouver*. Retrieved April 13, 2022, from
<http://www.metrovancouver.org/events/school-programs/K12publications/GetOutdoors.pdf>

- The Key Benefits of Outdoor Learning / Education for Children and Teens.* (n.d.). Plant a Seed and See What Grows Foundation. Retrieved March 1, 2022, from <https://seewhatgrows.org/key-benefits-outdoor-learning-education-children-teens>.
- Tremblay, M. S., Gray, C., Babcock, S., Barnes, J., Bradstreet, C. C., Carr, D., Chabot, G., Choquette, L., Chorney, D., Collyer, C., Herrington, S., Janson, K., Janssen, I., Larouche, R., Pickett, W., Power, M., Sandseter, E. B., Simon, B., & Brussoni, M. (2015). Position Statement on Active Outdoor Play. *International journal of environmental research and public health*, 12(6), 6475–6505. <https://doi.org/10.3390/ijerph120606475>
- Weir, K. (2020, April 1). *Nurtured by Nature*. Monitor on Psychology. Retrieved March 26, 2022, from <https://www.apa.org/monitor/2020/04/nurtured-nature>
- Wood, S. (2022, April 7). *What age should kids get a phone?: Children's bureau*. Child Abuse Prevention, Treatment & Welfare Services | Children's Bureau. Retrieved April 12, 2022, from <https://www.all4kids.org/news/blog/when-should-children-get-cell-phones-2/>
- World Health Organization. (n.d.). *Mental Health*. World Health Organization. Retrieved March 27, 2022, from https://www.who.int/health-topics/mental-health#tab=tab_1
- Yıldırım, G., & Akamca, G. Ö. (2017). The effect of outdoor learning activities on the development of preschool children. *South African Journal of Education*, 37(2), 1–10. <https://doi-org.ezproxy.hamline.edu/10.15700/saje.v37n2a1378>