



Walden University
ScholarWorks

Walden Dissertations and Doctoral Studies


Walden Dissertations and Doctoral Studies
Collection

2018

Public Elementary School Teachers' Experiences With Implementing Outdoor Classrooms

Lori Schultz Goff
Walden University

Follow this and additional works at: <https://scholarworks.waldenu.edu/dissertations>

 Part of the [Ecology and Evolutionary Biology Commons](#), [Educational Administration and Supervision Commons](#), and the [Environmental Sciences Commons](#)

This Dissertation is brought to you for free and open access by the Walden Dissertations and Doctoral Studies Collection at ScholarWorks. It has been accepted for inclusion in Walden Dissertations and Doctoral Studies by an authorized administrator of ScholarWorks. For more information, please contact ScholarWorks@waldenu.edu.

Walden University

College of Education

This is to certify that the doctoral dissertation by

Lori Schultz Goff

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

Review Committee

Dr. Katherine Emmons, Committee Chairperson, Education Faculty

Dr. Christina Dawson, Committee Member, Education Faculty

Dr. Andrea Wilson, University Reviewer, Education Faculty

Chief Academic Officer

Eric Riedel, Ph.D.

Walden University

2018

Abstract

Public Elementary School Teachers' Experiences With Implementing Outdoor
Classrooms

by

Lori Schultz Goff

MA, Pacific Oaks College, 2000

BS, University of Washington, 1993

Dissertation Submitted in Partial Fulfillment
of the Requirements for the Degree of
Doctor of Philosophy
Leadership, Policy, and Change in Education

Walden University

July 2018

Abstract

Children experience limited time outdoors and have few opportunities for outdoor learning in schools, putting them at risk for being unprepared to engage in solving environmental and societal problems. Researchers have examined outdoor learning at the preschool and high school levels; elementary school experiences have been explored less frequently. Guided by a conceptual framework informed by social emotional learning (SEL), ecological literacy, and teacher self-efficacy, this study investigated public school elementary teachers' experiences with outdoor classrooms including barriers and supports to creating and using outdoor classrooms. A qualitative design using in-depth interviews with interpretive phenomenological analysis techniques was conducted with 9 elementary teachers who had at least 2 years of recent experience working with outdoor classrooms in the U. S. Pacific Northwest. Thematic analysis of interview data, using a combination of a priori and open coding, identified primary themes related to academic rigor, district policies and budgets, and motivations for teaching ecoliteracy. Barriers including a lack of time and money needed to teach effectively using outdoor classrooms and the need for a stronger integrated curriculum that connects SEL, environmental education, and Next Generation Science Standards (NGSS) emerged as areas of concern. Recommendations based on these findings include ecoliteracy professional development for teachers which may contribute to positive social change by increasing teacher understanding of and involvement with outdoor learning and the integration of ecoliteracy in the pedagogy of K-6 programs.

Public Elementary School Teachers' Experiences With Implementing Outdoor
Classrooms

by

Lori Schultz Goff

MA, Pacific Oaks College, 2000

BS, University of Washington, 1993

Dissertation Submitted in Partial Fulfillment
of the Requirements for the Degree of
Doctor of Philosophy
Leadership, Policy, and Change in Education

Walden University

July 2018

Dedication

I dedicate this work to my daughter Samantha who I raised as close to nature as possible so that she could experience all the beauty and wonder that this world has to offer.

Acknowledgements

I am grateful to my parents for always encouraging every decision I've ever made throughout my life. As this journey has been one of struggle and accomplishment, I want to thank my late mother Shirley and my late brother Joe for giving me encouragement from above. I thank my sisters, Wendy, Trisha, and Melissa for showing me the true meaning of connection with family. I also thank my daughter, her father Mark, and my sister from another mister, Stina, for supporting me along the way. To Paige, Syd, Three Feathers, Cedar, Jon, Matthew, Collette, Ann, and Syd, my dearest friends – thank you for being my best teachers. To my mentors, guides, and angels, who have shown me that all experiences in life are intended to bring us closer to living as our highest Self.

I am thankful to Dr. Christina Dawson, whose dedication, inspiration, and assistance during this doctoral process helped make this degree possible. I am also thankful to Dr. Kate Emmons who gave me the courage and encouragement to get through this process ultimately presenting the highest quality study that is possible. Most importantly I want to thank the Divine Spirit, for which I am extremely grateful for providing us this beautiful big blue and green ball in the sky that I am proud to call home.

Table of Contents

List of Tables	v
Chapter 1: Introduction to the Study.....	1
Background	3
Problem Statement	6
Purpose of the Study	7
Research Questions.....	8
Conceptual Framework for the Study.....	9
Nature of the Study	12
Definitions.....	14
Assumptions.....	15
Scope and Delimitations	16
Limitations	17
Significance.....	19
Summary	20
Chapter 2: Literature Review	22
Literature Search Strategy.....	23
Conceptual Framework.....	24
Literature Review Related to Key Variables and/or Concepts	25
Understanding Outdoor Classrooms	26
Components of Ecoliteracy.....	27
Social-Emotional Learning	28

Developing a Sense of Well-Being in Children.....	29
Ecoliteracy and Teacher Leadership.....	31
Leadership Approaches.....	32
Teachers’ Experiences With Outdoor Classrooms	35
Barriers.....	36
Supports	43
Human Development Context of Outdoor Education.....	49
Children as Researchers	50
Benefits of Outdoor Learning	51
Summary of Major Themes	55
Summary and Conclusion.....	56
Chapter 3: Research Methods	58
Research Design and Rationale	58
Role of the Researcher	63
Methodology	64
Population	65
Sampling Strategy.....	67
Instrumentation	69
Procedures for Recruitment, Participation, and Data Collection.....	73
Data Analysis Plan.....	75
Issues of Trustworthiness.....	78
Credibility	78

Ethical Procedures	81
Summary	84
Chapter 4: Results	85
Data Collection, Participant Profiles, and Setting	86
Data Analysis	95
Coding Process and Subcodes	96
Emergent Themes	99
Discrepant Cases	102
Results	103
Theme 1: Increased Academic Rigor	104
Theme 2: Frequency of Changes to District Budgets and Policies	107
Theme 3: Demographic Differences Regarding Barriers and Supports	112
Theme 4: Passion for Teaching Ecoliteracy	119
Evidence of Trustworthiness	127
Summary	129
Chapter 5: Discussion, Conclusions, and Recommendations	131
Interpretation of the Findings	133
Research Question 1	134
Research Question 2	138
Research Question 3	141
Research Question 4	147
Limitations of the Study	153

Recommendations.....	155
Implications for Social Change.....	159
Conclusion	160
References.....	163
Appendix A: Consent Form.....	182
Appendix B: Interview Protocol.....	185
Appendix C: Interview Questions.....	188
Appendix D: Glossary of Terms.....	192
Appendix E: List of A-Priori Codes	193
Appendix F: Request for Participants Letter	194

List of Tables

Table 1. Participant Profiles Based on Gender, Current Position, and Demographic	88
Table 2. Codes Used in Data Analysis.....	97
Table 3. Emerging Themes, Concepts, and Subconcepts	99
Table A1. Steps for Participating in the Study	182
Table A2. Checklist for Prior to the Interview	185
Table A3. Checklist for During the Interview	186
Table A4. Checklist for After the Interview	187
Table A5. Interview Questions	188
Table A6. Probing Questions.....	190
Table A7. A-Priori Codes	193
Table A8. Script for Phone Call Prior to Interview	195
Table A9. Script for Beginning of Interview	196
Table A10. Script for Exiting of Interview	197

Chapter 1: Introduction to the Study

For the past several decades, elementary-aged children have spent a continuously decreasing amount of time in or near natural outdoor environments, which is detrimental to their cognitive, physical, social and emotional development (Chawla, 2015; Ferreira, Grueber, & Yarema, 2012; Malone, 2008; Silverman & Corneau, 2017; Quay, 2013). Malone's (2008) research showed that a lack of exposure to outdoor environments has "long-term implications for children's future development, health, and well-being" (p. 5). Evidence exists to demonstrate that U.S. public elementary (K-6) schools are contributing to this problem by reducing, and in some cases eliminating, time students spend outdoors throughout the school day (Bohn-Gettler & Pellegrini, 2014). Louv (2008) addressed this social phenomenon by using the phrase *nature-deficit disorder* to describe the effects of the decline of time spent outdoors by children, and therefore in nature. Recently, Louv (2016) coined the term *vitamin-n* as a means of counteracting this social phenomenon.

Nature-deficit disorder highlights the increasing imbalance between the amount of time children spend indoors versus outdoors, presenting it as both a social problem and a child development problem. Recent research shows that nature-based experiences are essential to children's emotional and physical development and contribute to reducing occurrences of attention-based disorders, childhood obesity, and childhood depression (Driessnack, 2009; Ferreira et al., 2012). According to several theorists and researchers, schools and other social institutions should include outdoor learning experiences that allow children to develop strong emotional, social, and ecological intelligences (Burdette & Whitaker, 2005; Gedzune, 2015; Orr, 1992, 2004).

In terms of elementary (K-6) schooling, a lack of exposure to outdoor learning affects children's social and emotional learning (SEL). As important as academic performance is to ensure that students become successful contributing members of society by mastering appropriate work habits and values, children and adolescents also need to learn how to successfully interact with other people in respectful and emotionally intelligent ways, so that they can become engaged, responsible citizens (Macklem, 2014). Especially as children move toward adulthood, they need to develop intellectual skills for making complex decisions, such as those necessary for developing ecological literacy (Carrier, Thomson, Tugurian, & Tate-Stevenson, 2014). A person with ecological literacy (ecoliteracy) understands ecology, has concerns related to environmental effects, and has the necessary skills to think about and work toward developing solutions for addressing societal problems (Hollweg et al., 2011). As Stevenson, Carrier, and Peterson (2014) stated, "Building environmental literacy among young audiences represents a critical step to ensure that future generations are prepared to engage in solving environmental challenges" (p. 1). Ecoliteracy is also important to children's SEL development because children's social competence when interacting with peers determines how well they will adapt to life's unpredictable challenges and is equally crucial for predicting school performance (Bohn-Gettler & Pellegrini, 2014).

In this chapter, I briefly summarize the background of the study, including why the study was needed to address the gaps that exist in the current knowledge. I also outline the problem statement that frames the problem in a way that builds on previous research findings. I identify the purpose of this study and discuss the research paradigm,

the intent of the study, the research questions, and the conceptual framework. Last, I focus on the rationale of the design that I selected for this study, and identify definitions, assumptions, limitations, and scope and delimitations.

Background

When children experience limited time and few opportunities for outdoor learning in schools, this puts students at risk for being unprepared to engage as adults in solving environmental and societal problems (Hollweg et al., 2011). Changes to public school policies in the United States have contributed to the growing problem. Stevenson et al. (2014) identified a lack of instructional time as the largest barrier to environment-based instruction (76.7%), followed by a lack of instructional resources (53.4%). Since the mid-1990s, federal, state, and local governments have enacted policies that place a stronger emphasis on academic rigor. Thus, school districts throughout the country have reacted to these policies by reducing outdoor recess, which for many school children is the only time during their day that they spend outdoors (Bohn-Gettler & Pellegrini, 2014; Pellegrini & Bohn, 2005). U.S. government policy makers and many school districts view this as a preferable means to address the trend toward increasing the amount of time allotted to academics throughout the school day (Silverman & Corneau, 2017). The idea that increasing academic rigor, and therefore decreasing physical activity, can have a positive influence on academic achievement is not supported in recent research (Barry & Celiberti, 2001; Castelli et al., 2014).

One important reason for children to have outdoor experiences throughout the school day is so they can recharge and return indoors more attentive during academic

instruction (Milteer & Ginsburg, 2012). Recent research has shown that having outdoor experiences is much more than a reprieve from indoor academic instruction. Although academic instruction constitutes a large portion of what many educators consider serious learning, the work that children do while spending time in nature in the outdoors is also serious learning (Larimore, 2014). By taking learning outdoors, teachers can counteract a growing trend of increased academic rigor by creating rich environments where both formal and informal learning can happen outdoors. When children experience more time in the outdoors, the benefits of outdoor learning can be expanded (Bohn-Gettler & Pellegrini, 2014; Gedzune, 2015; Rowe & Rowe, 1992; Toppino, Kasserman, & Mracek, 1991).

Many elementary school teachers understand that to provide a well-rounded education that includes inquiry-based instruction, they must incorporate learning experiences that capitalize on student's curiosity of the natural world (Piaget, 1984). Evidence suggests that elementary schools around the country have integrated Piaget's classic developmental stages theory by creating outdoor environments primarily used as places to conduct science experiments (Carrier, Tururian, & Thomson, 2013). These outdoor environments are becoming more commonly known as *outdoor classrooms*.

Outdoor classrooms are dedicated natural spaces where schoolyard garden and other habitat projects can foster many types of learning across the curriculum and provide an outlet for meeting national and state standards across different disciplines (Rios & Brewer, 2014). The growth of outdoor classrooms is significant and demonstrates an increasing interest in developing outdoor learning programs (Chawla, 2015). Many

examples exist of current nature-based programs throughout the United States to demonstrate this growth. According to Gilboy, Browning, Jessup, Wu, and Browning (2014), Greendale Elementary School in Virginia is working to increase awareness for the need of physical activity and the value of a healthy lifestyle. This outdoor classroom project addresses issues stemmed by obesity and poverty by encouraging physical activity in garden areas and on forest trails. Students learn how to grow vegetables, as well as the importance of how eating vegetables relates to proper nutrition. Another example is a Massachusetts program that establishes outdoor classrooms that combine rigorous investigations into science and literacy with opportunities for open exploration and independent learning. This program incorporates outdoor classroom curriculum (State of New Hampshire, 2015) that provides teachers with integrated lessons in science, math, history, and literacy, which align with the state's science standards. Programs also exist in my state that certify K-12 schools based on them meeting one or more of six environmental categories: energy, healthy school buildings, school grounds and gardens, transportation, waste and recycling, and water (Office of Superintendent of Public Instruction, 2016).

This qualitative study sought to understand teachers' experiences by examining the barriers and supports that elementary school teachers encounter when creating and improving outdoor classrooms. According to recent research, major barriers include a lack of: funding (Bohling, Saarela, & Miller, 2015), instructional time (Carrier et al., 2014; Stevenson et al., 2014), teacher self-efficacy (Moseley, Reinke, & Bookout, 2002), and professional development (Gedzune, 2015). The supports that this study affirmed

include designated outdoor classroom time (Louv, 2016), professional development (Bentsen, Schipperijn, & Jensen, 2013) environmental school climate (DiPaola & Tschannen-Moran, 2014), and a holistic education approach (Lewallen, Hunt, Potts-Datema, Zaza, & Giles, 2015). Despite the barriers and lack of supports, some teachers do persist by drawing on personal affect, teacher leadership skills, and motivation to help students develop ecological literacy (Gardener, 2006; Goleman, 1996; Orr, 2004).

Problem Statement

A resurgence has occurred in outdoor learning in public elementary schools (Chawla, 2015; Louv, 2016; McComas, 2008). Despite this interest, teachers often face a wide range of barriers when it comes to creating and improving outdoor classrooms (Ernst, 2014). The notion that teachers need supports to overcome those barriers has been studied by researchers with less frequency than the actual barriers have been studied. Stevenson et al. (2014) recommended that further research is needed to better identify and understand how teachers might reduce the barriers to creating outdoor classrooms. Upon further review of the literature, I found that the gap that Stevenson et al. (2014) identified has still yet to be fully addressed. Insufficient research has been conducted about supports that teachers have for creating outdoor classrooms.

Teachers committed to creating outdoor learning experiences for their students are faced with an increasing focus on standardized curriculum and high-stakes testing in educational systems throughout the country (Barry & Celiberti, 2001; Castelli et al., 2014). For the past 15 years, U.S. education policy has been highly influenced by the No Child Left Behind (NCLB) legislation (107th Congress, 2002), Common Core standards

(National Governors Association [NGA] 2010), and Every Student Succeeds Act (ESSA) legislation (114th Congress, 2016). The implementation of these policies has resulted in an atmosphere of high-stakes testing. U.S. government policies and state mandates have forced many teachers to lean toward teaching to the test and focusing on academic rigor (Lynch, 2011; Silverman & Corneau, 2017). This increased focus on academic rigor has resulted in a lack of support for outdoor learning, which is necessary for public school elementary teachers to create effective and well-integrated outdoor classrooms (Forbes & Zint, 2010; Spiropoulou & Antonakaki, 2007; Stevenson et al., 2014).

The pressure to focus more on academic rigor also affects teacher self-efficacy. Moseley, Rienke, and Bookout (2002) conducted a study to evaluate teacher self-efficacy in preservice teachers who were preparing to enter the environmental education field. They recommended that teacher self-efficacy become more of a major focus of future research on teacher preparation in outdoor education. Therefore, this study has been needed to better understand the perspectives of elementary school teachers who have established outdoor classrooms, and the extent to which they have encountered the aforementioned barriers and supports.

Purpose of the Study

The purpose of this qualitative study was to understand teachers' experiences by examining the barriers and supports elementary teachers in the Pacific Northwest encounter when creating and improving outdoor classrooms. By interviewing teachers at nine public school elementary schools (one teacher per school), I aimed to identify the barriers that teachers face and supports that teachers may need during the process of

creating and improving outdoor classrooms. Recent research identified lack of time and resources as the most common barriers to improving environmental literacy in classrooms (Stevenson et al., 2014). I also aimed to identify additional supports and barriers that may have been overlooked in prior research.

I focused on teachers at public elementary schools because a literature search uncovered a need for more scholarly research specific to elementary school settings, particularly related to children learning in outdoor classrooms. Recent research regarding nature-based environmental programming at the public school elementary school level mainly existed for early childhood programs, such as preschool- and kindergarten-aged students (Chawla, 2015).

Research Questions

The overarching research question that I examined was: What are Pacific Northwest elementary teachers' perspectives about the barriers that they face and the supports they need when creating and improving outdoor classrooms? The subquestions that I addressed in this study included:

1. What barriers do Pacific Northwest public elementary school teachers face when creating and improving outdoor classrooms?
2. What supports, including resources, do Pacific Northwest public elementary school teachers need in the implementation of outdoor classrooms?
3. What do Pacific Northwest public elementary school teachers identify as their motivations for creating outdoor classrooms?

4. In what ways do Pacific Northwest public elementary school teachers use outdoor classrooms to develop ecoliteracy in their students?

Conceptual Framework for the Study

A conceptual framework is a structure that researchers use to construct their research plan by building and shaping it, and along the way connecting to existing theories and recent research that helps refine the framework (Maxwell, 2013). This study was influenced by literature around social emotional learning (SEL), a benefit of ecological literacy (Gardener, 2006; Goleman, 1996; Orr, 2004). In *Ecoliterate: How Educators are Cultivating Emotional, Social and Ecological Intelligence*, Goleman (2012) interwove concepts that discuss how SEL, when expanded to include a framework of social justice at a macro-level, helps inform educators working with young children how to nurture students to become ecoliterate.

This conceptual framework also asserts that teachers are encouraged to provide nature-based experiences for their students by incorporating ecoliteracy principles into their curriculum. I chose to examine the research problem through the lens of ecoliteracy because research shows that teachers who teach using outdoor learning environments, such as outdoor classrooms, are more effective at facilitating a shift from learning that typically occurs indoors to a dedicated portion of each day that is spent outdoors in nature (DiPaola & Tschannen-Moran, 2014). The body of research that currently exists discussed how teacher effectiveness for creating and improving environmental education programs relies heavily upon school climate and teacher self-efficacy (Stevenson et al., 2014). School climate is about the characteristics of a school's environment and how

those characteristics affect student achievement and behaviors (Allen, Grigsby, & Peters, 2015). Self-efficacy in education relates to teachers' perceptions that they can effectively teach. However, this important construct has not been a major focus of environmental education research (Moseley et al., 2002). Nevertheless, some evidence suggests that improving teacher self-efficacy related to outdoor classrooms can also improve the education experiences for children, particularly those from low-income households and those who display behavior challenges in school (Asah, Bengston, & Westphal, 2012; Barry & Celiberti, 2001; Collado & Corraliza, 2015).

I also examined the professional development that public elementary school teachers may need to overcome the barriers that they encounter when creating and improving outdoor classrooms. One such developmental skill is related to teacher leadership. Teachers who have existing basic teacher leadership skills can easier facilitate a school climate shift from learning that typically occurs indoors to a dedicated portion of each day that is spent outdoors in nature (DiPaola & Tschannen-Moran, 2014). This research stated that what needs to be further examined is whether the barriers related to creating and improving outdoor classrooms are connected to a needed change in school climate, whereby teachers are adequately supported and empowered to overcome the barriers that they experience when creating and improving outdoor classrooms (DiPaola & Tschannen-Moran, 2014).

The barriers that teachers encounter when creating outdoor classrooms are thus related not only to time and money, but also to the likelihood that school climates need a transformational shift. According to (DiPaola & Tschannen-Moran, 2014), a solution for

such a transformational shift may be best described in terms of supports that teachers need to build personal characteristics and qualities of self-efficacy and teacher leadership. When acquired, these supports may help teachers overcome the barriers related to funding, instructional time, and pedagogy in ways that promote an increased outdoor learning model at the school climate level. Although outside the scope of this study, a shift such as this could possibly redefine the notion that some teachers lack the leadership skills necessary to further the development of outdoor classrooms.

Rubin and Rubin (2012) examined the idea of using a conceptual framework by stating that qualitative researchers must aim to sift through participants' prior experiences to "build or construct their understanding of the external world" (p. 16), so that they can discover new themes and explanations. My conceptual framework sought to further the understanding of how outdoor education is important for ecoliteracy development. By asking targeted questions to further construct knowledge in this area, I aimed to be more effective at answering this study's key research questions. I did this by focusing the interview questions on what the barriers and supports that teachers experience when creating outdoor classrooms in the first place. I anticipated that asking questions about motivation would help answer, "Why use outdoor classrooms for teaching and learning?" Asking targeted questions about the supports and resources for which teachers have used to overcome barriers to creating outdoor classrooms might have best revealed the "how" of the findings. By getting at what motivates teachers in the first place when creating outdoor classrooms, I aimed to add to the body of research that promotes the expansion

of ecoliteracy into the public schools' curriculum, and further the justification for inclusion of ecoliteracy in the common core academic standards.

Nature of the Study

The nature of this study related to the qualitative design using in-depth interview questions with interpretive phenomenological analysis techniques, as guided by Smith (2011) and Smith et al. (2009), to gain information from teachers who have expertise in outdoor classrooms. I specifically aimed to recruit teacher participants with at least 2 years' recent experience teaching in an outdoor classroom who at the time of the study had access to an outdoor classroom and had contributed to either creating or improving an outdoor classroom at some point in their careers. By asking in-depth questions and carefully listening to teachers' responses, I sought to establish an interviewing partnership that enabled me to extend an objective level of thoroughness to the nature of my study. According to Rubin and Rubin (2012), "By listening carefully to others, researchers can extend their intellectual and emotional reach across a variety of barriers" (p. 3). These study-related obstacles may have included communication challenges due to gender identity, racial, cultural, economic status, age, sexual orientation, and occupation differences between me and the participants. All protections for avoiding obstacles were offered to all participants.

A qualitative design addressed the key research questions by helping me gain an understanding of the perspectives of the teacher participants. I conducted interviews to gain an understanding of the barriers and supports that elementary school teachers in the Pacific Northwest encountered when creating and improving outdoor classrooms.

Specifically, interviews I conducted were with public elementary school teachers who had at least 2 years' recent experience teaching in an outdoor classroom, who had recent access to an outdoor classroom, and had contributed to creating or improving an outdoor classroom at some point in their career.

I sought to understand teachers' experiences by examining the barriers and supports that public school elementary teachers encountered when creating and improving outdoor classrooms. The research design was a qualitative interview study with nine teachers, conducted face-to-face in a public meeting space or via a teleconference call using Skype. Teacher participants were identified with help of the publicly accessible websites and optional snowball sampling. The interviews were recorded with digital audio equipment. I transcribed data collected into electronic documents. I took observation notes to capture nonverbal body language, and these notes are considered as a second source of data.

This was a qualitative study using interviews and interpretive phenomenological analysis techniques as guided by Smith (2011) and Smith et al. (2009). I examined teacher perspectives and experiences by gathering interview data from a representative sample of teachers, not as a specific case study. Interviews were semistructured. The interviews included open-ended questions and were given in person or via a Skype call to a representative sample of elementary teachers with at least 2 years' recent experience teaching in an outdoor classroom who had recent access to an outdoor classroom, and had either contributed to creating or improving an outdoor classroom at some point in their careers.

I accessed a publicly-available interactive database of certified public green schools throughout my state to obtain teachers' work contact information. Teaching in a certified green school was not a condition of participation; however, I used this as a method of recruiting teachers, because their contact information was listed in this publicly accessible database. I planned on initially contacting teachers directly via email to establish a participant pool. Eligible participants included teachers with at least 2 years' recent experience teaching in an outdoor classroom who had access to an outdoor classroom and had either contributed to creating or improving an outdoor classroom at some point in their career. I did end up conducting a snowball sample because I needed two more participants, ensuring that each was from a different school, so that I could include a broad range of participating schools. Once I confirmed teachers' participation over the telephone, I achieved a representative sample. I coded and classified data into categories and subcategories consisting of codes aggregated with the purpose of forming common themes, concepts and subconcepts.

Definitions

I used the following key terms in this study:

Certified green school: Green Schools offers a framework for schools to investigate environmental issues, enabling students to create action plans, and make recommendations for positive changes at the school. To become recognized as a state recognized Green School, schools can become certified in one to six environmental categories, including energy, healthy school buildings, school grounds and gardens, transportation, waste and recycling, water (Green Schools, 2017).

Ecoliteracy: Socioemotional and ecological intelligence are important aspects of the universal intelligence in humans that develops starting inward and going outward throughout the world; from the self, to include others, and ultimately all systems of living beings (Goleman, Bennett, & Barlow, 2012).

Outdoor classroom: Dedicated outdoor spaces included, and were not limited to, outdoor gardens, seating areas where teachers can conduct lessons outdoors, walkways, natural structures, woods, ponds, and exploratory natural environments, such as areas with plants and trees. Outdoor classrooms in this study included examples of educational environments that:

- Encourage both scientific and experiential-based inquiry.
- Enhance students' cross-discipline learning experiences.
- Provide a positive environment for children of all abilities, including those living with physical disabilities and behavior disorders.
- Help children develop an appreciation for the natural world (Carrier et al., 2013).

Outdoor programming: A place where educational activities happen outside of school buildings on a regular basis, and took place in various settings, such as parks, natural habitats, local community parks, and rural areas (Jordet, 2007).

Assumptions

This study included assumptions that I could not control as the researcher. As a study that involved human factors, there was a chance that participants may not have told

the truth or may have exaggerated a situation. In this study, I justified how I minimized the assumptions for my study to move forward (Simon, 2011).

I applied the following assumptions to this study:

- I asked participants to read and indicate that they understood the contents of the interview questions and would answer truthfully.
- I asked participants to understand that their answers to the questions would remain confidential.
- I told participants that their outdoor classroom budgets would not be impacted in any way, because of participating in this study.
- I told participants that the schools or organizations that they work for do not need to necessarily agree nor support the opinions expressed by the participants.

Scope and Delimitations

The scope of this study refers to the domain parameters for which the study operated under (Wiersma, 2000). The domain for this study was public school elementary teachers of kindergarten through sixth grade classrooms, specifically teachers with at least 2 years' recent experience teaching in an outdoor classroom who had recent access to an outdoor classroom and had either contributed to creating or improving an outdoor classroom at some point in their career.

This scope of this study aimed to understand how public school elementary teachers encountered barriers and supports when it came to creating and improving outdoor classrooms. Recent research had also shown barriers to include a lack of time

and funding, as well as a lack in teacher leadership skills necessary for partnering with community organizations, organizing fundraising campaigns, and applying for grants (Bohling et al., 2015; Carrier et al., 2014. I included other barriers not mentioned here in the scope.

Delimitations were the characteristics of this study that I could attempt to control, yet they could also limit and define the boundaries of the study. Researchers must justify how they have ensured the delimitations for a study to move forward (Simon, 2011). The delimitations of the study involved populations that were included and excluded. The participants I chose to include were educators who were (a) teachers at a public elementary school; (b) teachers with at least 2 years' recent experience teaching in an outdoor classroom who had current access to an outdoor classroom, and had either contributed to creating or improving an outdoor classroom at some point in their career; (c) in the Pacific Northwest region of the United States; (d) available to meet for a one-on-one interview in a public location or teleconference call using Skype; and (e) teachers with at least 2 years' experience in an elementary school. I excluded other potential participants who did not meet the criteria specified above from this study.

Limitations

Limitations are potential weakness of a study that were out of my control. In this study, I justified how I minimized the limitations for my study to move forward (Simon, 2011). I included the following limitations for this study. This study:

- Included a representative sample, and not a random sample; the results of my study cannot be applied to the national population.

- Was conducted in the Pacific Northwest region of the United States; the results of my study cannot be generally applied to other parts of the United States, only suggested.
- Had time as a limitation, as the data collection needed to happen before the end of the 2018. This interval is time dependent, based on the circumstances that occurred in this timeframe.
- Had participants who were teachers at public elementary schools; the results of my study may or may not have applied to other age groups or elementary educators who taught at private schools.
- Was obtained through participant interviews. Interview studies can be limited, in that they may not provide the data researchers need to fully answer their research questions (Maxwell, 2013). I helped alleviate this risk by field testing my questions before conducting this study, and by including several probing questions for each interview question.
- Involved interviewing teachers who already had experience with outdoor classrooms. Therefore, the perceptions of these teachers in these types of schools may likely be different from those teachers in other types of schools without this designation. Although this designation was intentional so that I could collect the data that I needed to complete this study, I remained aware of this bias in terms of the study findings and recommendations.
- Involved interviewing teachers who if I professionally knew them would be considered my peers. Because I am an experienced environmental educator, I

have profound direct experience teaching in environments like those that my participants teach in. I remained aware of this bias and made sure that I came to each interview with an open mind that was free of judgement of the opinions expressed by the participants.

Significance

In this study, I focused on the experiences of public school elementary teachers in a state in the Pacific Northwest region of the United States who had created and/or who recently used outdoor classrooms. The results of this study represent a potential contribution to the existing literature that discusses teachers' perspectives about barriers and supports when creating and improving outdoor classrooms. Teachers who can overcome barriers to creating outdoor classrooms can increase children's exposure to outdoor learning environments, and therefore increases the impact on student's ecological literacy (Gardener, 2006; Goleman, 1996; Orr, 2004).

The results of this study may be of interest to audiences who aspire to gain a better understanding of how outdoor classrooms are created and improved upon. The results of this study may also assist in the overall understanding of the barriers and supports that elementary teachers in the Pacific Northwest encounter when creating and improving outdoor classrooms. The study findings have the potential to inform best practices and to enhance the ways in which teachers can create and improve outdoor classrooms. The potential positive implications for social change may include more awareness about the importance of outdoor learning and integration of ecoliteracy in the pedagogy of K-6 curriculum and educational programs. This information is important for

teacher preparation programs and those providing ongoing professional development for teachers looking to implement outdoor classroom and ecoliteracy programs.

I found that most relevant research about outdoor classrooms and integrated nature-based education is specific to preschool and early childhood settings (Chawla, 2015). Social change involves an increasing interest in outdoor education as the key to developing responsible citizens who become stewards of the earth and develop a connection between social justice, equality and environmental awareness (Silverman & Corneau, 2017). In this study, I primarily addressed the gap in the research related to elementary classrooms by adding to the body of research for elementary education and outdoor classroom use.

Summary

I focused on the experiences of elementary school public school teachers in a state in the Pacific Northwest region of the United States. Participants had at least 2 years' recent experience teaching in an outdoor classroom, had current access to an outdoor classroom, and had either contributed to creating or improving an outdoor classroom at some point in their career. The study findings may have informed best practices and enhanced the literature by further understanding the actions that public elementary school teachers can take to facilitate a school climate shift from learning that typically occurs indoors to a dedicated portion of each day that is spent outdoors in nature.

The study findings may be important for teacher preparation programs and those providing ongoing professional development for elementary school personnel seeking to develop skills necessary for teaching ecoliteracy in the classroom. This study may also be

important for any school in the process of implementing an outdoor classroom. Last, teachers who are working as family support workers or in special education positions may find value in reading this study. In Chapter 2, I provide a critical review of literature to support the conceptual framework and foundation for this study.

Chapter 2: Literature Review

Public elementary school teachers often face a wide range of challenges in creating and improving outdoor classrooms. Major barriers include a lack of: funding (Bohling et al., 2015), instructional time (Carrier et al., 2014; Stevenson et al., 2014), teacher self-efficacy (Moseley et al., 2002), and professional development (Gedzune, 2015). Researchers (Stevenson et al., 2014) have found that one gap in the recent research is a need to identify further supports and resources that teachers need to overcome these barriers.

The purpose of this qualitative study was to understand teachers' experiences by examining the barriers and supports that public elementary teachers in the Pacific Northwest encounter when creating and improving outdoor classrooms. The results of this study may inform best practices for professional development, as the basis for discussion of how outdoor classrooms can positively effect ecoliteracy education.

The synopsis of recent research that I examined identified a gap that exists in the literature regarding elementary school educators' perspectives regarding outdoor classrooms as integrated learning environments. I located studies relating to outdoor classrooms in early childhood programs and how they relate to child development. I also included literature related to how teachers' self-efficacy and teacher leadership skills play an important part in the development of successful outdoor classrooms. Last, I located literature providing support for the importance of outdoor learning specific children's cognitive, emotional, physical, and behavior development.

In Chapter 2, I referenced studies aimed at developing a sense of the importance of the role of outdoor classrooms in early childhood and adolescence. To better understand this role, I included the following sections: understanding outdoor classrooms, components of ecoliteracy, ecoliteracy and teacher leadership, teachers' experiences with outdoor classrooms, human development context of outdoor education, and summary of major themes.

Literature Search Strategy

The review of the literature consisted of reading recent peer-reviewed articles related to outdoor classrooms, nature-based learning, and environmental programs geared toward early childhood education.

A critical review of the literature contributed to the conceptual framework of outdoor classrooms as discussed in this study. I conducted complete literature searches using the following research library databases: Educational Resources Information Center (ERIC), Education: a SAGE full-text database, Education Research Complete, ProQuest Central, ProQuest Dissertations and Theses, and Teacher Reference Center. I used search terms individually and in combination including the following terms: *outdoor learning, ecoliteracy, ecological, outdoor classrooms, nature-based learning, elementary education, No Child Left Behind (NCLB), Next Generation Science Standards (NGSS), Common Core standards, student achievement, public education, school climate, school reform, school culture, environmental programs, ADD, ADHD, obesity, low-income, K-6 education, outdoor classroom statistics, outdoor education, nature-deficit disorder, teaching outdoors, environmental education, teacher leadership, school climate, recess,*

ecological literacy, transformational leadership, school reform, and cognitive and physical development.

When locating articles, I identified key terms using as many Boolean combinations as possible. In addition to peer-reviewed articles on outdoor classrooms and nature-based learning, books on the theories of experiential education, naturalist intelligence, and I referenced ecological literacy to acquire clear and accurate definitions, as well as to develop the conceptual framework for this study.

Conceptual Framework

I built this study on the recent research inherent in the framework of outdoor classrooms in elementary school settings. I examined the research problem through the conceptual lens of ecoliteracy, which significantly affects teachers' perspectives of the school environment (DiPaola & Tschannen-Moran, 2014).

The review of the literature helped me gain an understanding of the role that outdoor classrooms play in early childhood and adolescence. This conceptual framework had been applied and articulated in previous research influenced by SEL, a benefit of ecological literacy. In *Ecoliterate: How Educators are Cultivating Emotional, Social and Ecological Intelligence*, Goleman (2012) interwove concepts that discuss how SEL, when expanded to include a framework of social justice at a macro-level, helps inform educators working with young children how to nurture them to become ecoliterate. This conceptual framework asserted that educators must be encouraged to provide nature-based experiences for their students, by supporting an increased conceptual understanding of environmental and ecological (ecoliteracy) principles in their pedagogy.

Literature Review Related to Key Variables and/or Concepts

This literature review is organized by themes to give a complete picture of my research topic of outdoor classrooms, by defining what they are, describing how they fit with the social-historical context of U.S. culture, and explaining how outdoor nature-based learning can enhance student achievement. I located literature to provide a historical context about outdoor learning environments and how they contribute to lowering the risk of child obesity, ADD, ADHD, and other health risks. The research I found also discussed how outdoor education enhances children's social and cognitive development and integrates well with academic subjects typically taught in elementary schools.

The organization of this literature review gave me a lens for examining outdoor classrooms in public elementary school classrooms. This helped me gain a clear understanding of what the recent research says about the supports and barriers that teachers face when implementing and improving outdoor classrooms, and insight into the ways in which teachers have overcome those barriers, to create successful learning outcomes for students. Researchers in the discipline that this study was based upon included both strengths and weaknesses inherent in their approaches. These strengths and weaknesses helped me identify a gap in the literature. This gap in recent research is regarding nature-based environmental programming at the public school elementary school level mainly exists for early childhood programs, such as preschool- and kindergarten-age students (Chawla, 2015).

Understanding Outdoor Classrooms

The focus of this study related to outdoor classrooms. An outdoor classroom can be as any size, small to large. Outdoor classrooms can exist in urban, suburban, and rural settings (Rios & Brewer, 2014). What is most important is for outdoor classrooms to include a basic form of a natural habitat, such as a vegetable garden, a wooded area, a meadow, a wetland, or any outdoor natural space. Effective outdoor classrooms can be created with or without land. The smallest of outdoor classrooms could include planter boxes placed on and asphalt playground or bird feeders hung on school property (Rios & Brewer, 2014).

Outdoor classrooms are dedicated natural spaces that are determined by teachers, parents, and other school staff with intention, pedagogy, and learning objectives in mind (Nelson, 2012). Outdoor classrooms assist with reducing nature-deficit disorder by getting children outside so that they can become more active. According to Louv (2016), children involved in hands-on, discovery-based outdoor learning are more likely to become experts at learning how to handle outdoor risks safely, connecting them with nature in ways that encourages them to think more deeply. What children need most for education in the 21st century are teachers who provide them with a range of outdoor activities that support their holistic development, also known as experiential learning, based on “cause and effect” whereby children grow through experiences involving outdoor and interpersonal activities (Nelson, 2012).

Sometimes the outdoor classroom is part of a nearby community property, such as a city or municipal park or local nature trail (Jordet, 2007). Larger scale outdoor

classrooms can include rain gardens, butterfly houses, shelters, seating for students, natural play structures, walkways, landscaped areas, natural and human-made bridges, caves, hills, forts, tree swings, climbing structures, sandboxes, ponds, and so on (Dennis, Wells, & Bishop, 2015; Eick, 2011). These outdoor habitats often naturally attract wildlife and other creatures that put the natural world right at children's fingertips. They are living nature-based laboratories that offer a rich environment for exploring all subject areas of elementary education, including science, nutrition, social studies, math, language and literacy, physical education, art, music, movement, and history (Jordet, 2007).

Components of Ecoliteracy

Humankind continues to be impacted by environmental challenges, such as climate change, population growth, and ecological impact from industrialism. Because of these challenges, when elementary students approach adulthood they are required to make more complex decisions that require ecological literacy (Carrier et al., 2014). To prepare elementary students for the complexity of living in the modern world, many teachers have begun incorporating ecological literacy into their curriculum and pedagogy (Goleman, 2012).

Ecological literacy (ecoliteracy) is considered a subset of environmental literacy (Hollweg et al., 2011). Developing ecoliteracy is essential for students to counteract nature-deficit disorder by developing a clear understanding about the connection between the environment and human relationships with societies, nations, and global systems (Berkowitz, Ford, & Brewer, 2005; Louv, 2016, Slobodkin, 2003; Speth, 2004).

Social-Emotional Learning

The biggest impact of nature-deficit disorder in terms of K-6 schooling is how it affects children's social-emotional learning (SEL) (Goleman, 2012). Even though academic competence is important, children also need to be taught to interact with other students and adults in respectful ways, develop excellent work habits and values, and learn skills to contribute as productive members of a society (Macklem, 2014). According to Lewallen et al. (2015), developing the whole child requires teachers take a more active teacher leadership role in children's socio-emotional development. School climate, based on shared perceptions that teachers have of their inclusive work environment, includes the core structures that distinguish one school from another, as well as the attitudes and behaviors of the members of the school community (DiPaola & Tschannen-Moran, 2014). School climate impacts students' academic performance and socio-emotional development, in terms of how students engage with other students, staff, and family. School climates that are positive in terms of socio-emotional learning promote healthy development and a supportive learning environment for students (Lewallen et al., 2015).

As children approach adulthood, they are increasingly required to make complex decisions that require ecological literacy (Carrier et al., 2014). Goleman (2012) discussed teacher leadership concepts that show how SEL, when expanded to include a framework of social justice at a macro-level, can help inform educators working with young children how to nurture them to become ecoliterate. His conceptual framework asserts that educators must be encouraged to provide nature-based experiences for their students, by

supporting an increased conceptual understanding of environmental and ecoliteracy principles in their pedagogy (Goleman, 2012).

Developing a Sense of Well-Being in Children

The approach of this study is meaningful because it aimed to further environmental education research based on classic early childhood development principles. As social beings, humans are always looking for ways to connect with each other and the natural world, both of which further development of a sense of well-being. Starting at birth, the process of early learning begins at home, and regular contact with the people in the infant's life is critical for successful child development (Kolb, 1984). As Piaget (1952) documented, there are universal developmental stages which all children, regardless of where they were born, experience in their natural environment. Socialization starts in the womb, as research shows the unborn fetus connects with sounds, such as music, which is outside the boundaries of its current environment (Graven & Browne, 2008). After a child is born, he or she immediately begins the process of socialization by taking in all the sights, sounds, smells, tastes, and touches it can by utilizing all of his or her senses to explore the immediate surroundings. Once a child is preschool age, their learning increases exponentially, especially for those children who attend daycare and preschool programs. During this time, children become more active outdoors, and the physical nature of running and playing outdoors results in opportunities to develop large motor skills and reduce stress and anxiety (Bohn-Gettler & Pellegrini, 2014).

Developing ecoliteracy can lead to children having more feelings of well-being, and contribute to the development of their self-reliance, and healthy bodies and emotional states (Chawla, 2015; Gilboy et al., 2014). Chawla (2015) explained how outdoor experiences in nature can benefit overall child development. In her study, she examined how “cultures express human potentials for action and experience differently but contend that basic capabilities are universal, defining what it means to be human” (p. 434). Nussbaum’s (2013) “capabilities approach” promotes social justice through encouraging human development of certain capacities that are essential to what it means to be a human being. Chawla (2015) contended that governments have an obligation to provide opportunities within their institutions that enable every contributing citizen to realize their full potential in terms of human “central capabilities”.

Nussbaum (2013) stated, “The ten central capabilities of a flourishing life worthy of human dignity and well-being are:

- *Life*: Living to the end of a life of normal length; not dying prematurely
- *Bodily health*: Capable of achieving good health
- *Bodily integrity*: Moving freely from place to place
- *Senses, imagination, and thought*: Being able to use the senses and have pleasurable experiences; to imagine, think, and reason
- *Emotions*: Healthy attachment to things and people outside of ourselves; feel a range of emotions; not having one’s emotional development blighted by fear, anxiety, or restricted experiences

- *Practical reason*: Forming a conception of the good and engage in critical reflection about the planning of one's life
- *Affiliation*: Live happily with and towards others, and to recognize and show concern for other human beings
- *Other species*: Live with concern for and in relation to animals, plants, and the world of nature
- *Play*: Ability to laugh, to play, to enjoy recreational activities
- *Control over one's environment*: Care of one's property and exercise property rights; having the right to engage in political participation" (p. 33).

Although these characteristics mainly refer to well-being during childhood, there is more research that can be done to discuss how those characteristics could be applied to educational goals and outcomes specific to schooling (Chawla, 2015).

Ecoliteracy and Teacher Leadership

In this study, I focused on understanding the perspectives of teachers by examining the supports and barriers to which elementary school teachers have experienced when implementing outdoor classrooms. Specifically, teachers who work in a school climate where a transformational shift that embraces the importance of outdoor learning has occurred prior to the last 2 years or more. This qualitative study also examined this research problem through the lens of school climate, which includes teacher's perceptions of the school environment (DiPaola & Tschannen-Moran, 2014). What is needed is more research aimed at gaining a better understanding of the decision-

making processes that teachers follow to successfully implement and improve outdoor classrooms using transformational teacher leadership practices.

The Children and Nature Network (C&NN) organization was created by Richard Louv in 2005. Louv (2016) discussed how he created the organization to bring awareness to the fact that all children benefit from outdoor play and exploration in the natural world. Their mission has been to further the nature-based education movement by helping children, families and communities develop a strong connection to nature through exploring ideas, using evidence-based resources tools, and establishing a broad level of support and collaboration starting at the grassroots level (Children and Nature Network, 2015).

C&NN is interested in this important child development issue because of the societal trend over the past several decades involving children having less exposure to the natural world. This change has evolved due to several factors, such as increased technology-based screen time, outdoor safety concerns due to the perceived fear that leaving children unattended outdoors is dangerous and increased academic rigor and high-stakes testing at school. These factors have resulted in less time that children spend doing outdoor activities (Children and Nature Network, 2015).

Leadership Approaches

Teacher leadership in educational settings must be set in a positive direction to effectively impact teachers' perceptions of the school environment (DiPaola & Tschannen-Moran, 2014). To achieve this, teacher leaders need to focus on the vision of

the school, remain optimistic about the school's ability to achieve its mission, and aim to overcome unexpected challenges. They can be better equipped to do this, especially when facing uncertainty by using Focused, Optimistic, Striving, and Smiling (FOSS) attitudes (Rajbhandari, 2011).

Over the past several decades, federal, state, and local governments have been placing a stronger importance on academic rigor, and have therefore reduced outdoor recess time, which for most school children is the only time during their day that they spend outdoors (Chawla, 2015). The notion that reducing recess time, and therefore physical activity, can have a positive effect on academic achievement is not supported in recent literature (Castelli et al., 2014). Repeatedly, educational research has supported the idea that recess is a necessary time for students to have a break from academics so they and recharge and be more attentive and ready to return to school work. Therefore, outdoor classrooms should not be viewed as a replacement for recess, nor as an opportunity for teachers to have additional time for breaks or lesson planning (Bohn-Gettler & Pellegrini, 2014).

Missing in the literature is research related to gaining an understanding of what steps public elementary school teachers can take to facilitate a school climate shift from learning that typically occurs indoors to a dedicated portion of each school day being spent outdoors in nature (Bohn-Gettler & Pellegrini, 2014). What needs to be examined further is the evolving outdoor learning model that requires a transformational shift occurring at the school level. Thus, also redefining the notion that the only time children should spend outdoors is during recess. The failure of some schools to recognize the

importance of this transformational and school climate shift indicates the need for examining teacher leadership practices and developing a school climate that encourages the development of outdoor classrooms (Ardoin, Clark, & Kelsey, 2013).

Transformational leadership. Because of the growing interest in creating outdoor classrooms at the elementary school level, a need has arisen for teachers to further develop teacher leadership skills that will enable them to create and improve outdoor classrooms (DiPaola & Tschannen-Moran, 2014). When teachers receive support such as professional development to help them improve their teacher leadership skills, they become more effective in the classroom. Allen et al. (2015) stated, “This implies that principals who want to positively impact school climate should focus on providing teachers with the necessary support and resources” (p. 4). In this study, I aimed to discover necessary teacher leadership skills that will help teachers provide effective learning opportunities that involve experiences with nature-based and outdoor learning.

Transformational leadership is one of the most recent leadership models taught at colleges with social justice at the core of their vision statement, such as it is at Walden University. Transformational leadership helps teachers avoid socially unjust outcomes and maintenance of the status quo (Laureate Education Inc., 2012; Moolenaar, Daly, & Slegers, 2010). Transformational leadership, specifically as it relates to education, focuses on raising others' consciousness around the value and importance of designated school outcomes and ways of achieving them (Hayashi & Ewert, 2013). Teachers who create outdoor classrooms and those who also practice transformational leadership

sometimes deal with situations where they've chosen to stand up to the status quo, so they're more able to achieve their outdoor classroom goals (Bogotch & Shields, 2014).

Transformational teachers are more able to work towards facilitating school climate change in environments that discourage power struggles, especially those that could shake the school at the moral and ethical levels. Bogotch and Shields (2014) stated that transformation leadership is specifically targeted at the moral and ethical issues that are related to power relationships of complex social systems, which often propagate inequity and inequality throughout the organization. For this reason, teachers' willingness to engage in transformative leadership is strongly linked to self-efficacy, that is their belief that they possess the ability to be an effective teacher, as well as the level of trust that they have in their school, their colleagues, and their administration, such as the school principal, (Allen et al., 2015).

Teachers' Experiences With Outdoor Classrooms

Teachers enter the education field with varying degrees of prior scientific knowledge, perspectives toward the environment, and understanding about how to complete lessons outdoors. To examine attitudes about science education and environmental issues from a teacher's point of view, Carrier et al. (2013) conducted a mixed-methods study. The participants in their study included principals, teachers, and other staff members. These researchers decided to use quantitative and qualitative methods to determine what limitations, if any, were preventing teachers and students from achieving their goals for scientific exploration of the natural world. They intentionally chose a school that was very new to the idea of outdoor classrooms. The

teacher participants had little experience in implementing a science curriculum in an outdoor setting. Although prior to the 1980s most science education has primarily occurred indoors even when the lesson and/or activity was nature-based, Mutisya and Barker (2011) recognized that at the turn of the 21st century, such reforms as place-based education sought to change scientific inquiry to include outdoor learning.

This indoor/outdoor scientific approach measured by Carrier et al.'s (2013) study showed that “despite both teachers’ efforts to include science inquiry opportunities and their described inquiry goals, students’ perceptions did not support these goals” (p. 2073). While not completely realized in their study, improvements to the environmental attitudes and academic achievement of the fifth-grade student participants could be improved if teachers would embrace the notion that teaching science is not only related to students learning about the world, but more importantly teaching children how to engage with the world (Carrier et al., 2013).

Barriers

Engaging with the natural world is what outdoor classrooms encourage students to do. Some teachers face barriers when creating and improving outdoor classrooms that can get in the way of this aim. Many teachers experience barriers to including ecoliteracy in their classrooms. There are many reasons for these barriers, including lack of preparation time, testing pressure, and lack of teacher confidence in terms of content knowledge (Stevenson et al., 2014).

Although statistical data about the total number of outdoor classrooms in use across the United States is not widely available, it is far more prevalent for school garden

programs, which have been on the rise in U.S. public school elementary schools since 2006 (Turner, Sandoval, & Chaloupka, 2014). Even with a 15% increase of school gardens, about 75% of U.S. public elementary schools still do not have an outdoor classroom (Turner et al., 2014). The reason for this has not been fully researched, but their survey stated that financial barriers and technical skills and resources are likely to be the reason that schools fail to implement more programs. Therefore, a need has developed for elementary teachers to further develop skills, so that they can overcome these barriers. This could involve teachers developing expanded teacher leadership skills, such as those necessary for partnering with community organizations, organizing fundraising campaigns, and applying for grants. These skills, in turn, may also enable them to provide more effective learning opportunities involving experiences with nature-based learning and environmental education (Ernst, 2014).

Researchers Stevenson et al. (2014) identified a gap in the recent literature about the supports and resources that teachers need to reduce barriers to creating outdoor classrooms. Their research cited a lack of pedagogical resources as a major constraint to teachers providing environmental literacy instruction (Stevenson et al., 2014). This a barrier related to teachers not having the skills necessary to recognize potential opportunities for learning in the outdoors, nor how outdoor learning opportunities align with pedagogy (Ernst, 2014).

Teachers are mainly responsible for creating a learning environment in their classrooms, delivering instruction to students, and assessing their students' needs and progress. This makes their role integral in supporting developmental education using

outdoor classrooms and helping parents and staff understand the benefits of outdoor learning to children's intellectual, socio-emotional and physical development (Bohling et al., 2015). For teachers to do this effectively, they need supports targeted at helping them understand how to better connect outdoor experiences with improving their students' ecological literacy, which in turn helps students develop strong emotional, social, and ecological intelligences (Gardener, 2006; Goleman, 1996; Orr, 2004).

For Orr's (2004) and Goleman's (1996) ideas about ecoliteracy (another name for environmental literacy) to be integrated into the curriculum, teachers need to be adequately prepared for how to create outdoor classrooms for teaching students about nature, sustainability and ecoliteracy. Gedzune (2015) indicated that environmental education should emphasize the necessity of placing respect, responsibility, and care at the forefront of human understanding of nature and sustainability. Teaching using outdoor classrooms requires expanding elementary teachers' ability to pay attention to the inclusion of nature and human impact in the Earth's community of life (Nussbaum, 2013).

Researchers Stevenson et al. (2014) set out to identify a gap in research about the curriculum emphasis on reading and mathematics testing through the NCLB legislation that began in the U.S. in 2002. They asked related questions as I did for this study, as their study included a sample of elementary teachers in North Carolina. They randomly selected 90 schools of all 1,571 elementary schools. But unlike my research study, they conducted online surveys resulting in quantitative data. Their analysis included a series of one-tailed t-tests to determine what the percentage of teachers chose a statistically higher

barrier to teaching environmental literacy. They addressed the validity of their analysis by ranking a series of t-tests. Their results showed that on average the knowledge level of environmental literacy was relatively high, 89.9% on the environmental knowledge scale. Although the (Stevenson et al., 2014) study was quantitative in nature, the most interesting part of their results was the teacher comments. Many reported that barriers such as “science standards do not carry the weight of importance of mathematics and reading” (p. 5). This is what accounted for their result of the highest barrier, which is a lack of time to teach environmental literacy.

Outdated education system. Since the inception of the American education system, teachers had been typically stationed at the front of their classrooms providing mostly direct instruction. That is until the 1970s, when researchers began to challenge the idea that practice through direct instruction was not developing adequate comprehension skills (Pearson & Dole, 1987). According to Ahlquist, Gorski, and Montaña (2011), progressive educators have been working to change this paradigm for nearly half a century. All the while, many teachers have often been at odds with the direction that U.S. politicians and federal governance structures want them to go in in terms of education reform. Every time a new macro-initiated reform movement is introduced, a new set of curricula, teacher’s manuals, student textbooks, standardized tests, and computer programs is needed (Ahlquist, Gorski, & Montaña, 2011). The report *A Nation at Risk* emphasized the need for academic standards so that U.S. citizens could be better prepared to contribute to the nation’s economy (Johnanningmeier, 2010).

Teacher preparation gap. Research exists regarding outdoor classrooms that is specific to environmental programs in elementary schools and outdoor classrooms as they relate to teachers' abilities to teach various subjects, mainly science and ecological literacy (Carrier, et al, 2013). According to Carrier et al. (2014), many American teachers perceive that a major barrier to teaching in outdoor classrooms is the avoidance of inquiry-based instruction, a holistic education approach. Some teachers have the perception that the constructivist approach is too unstructured, and therefore more difficult to teach. In parts of the world outside of the United States, outdoor classrooms have received the attention of many educators who have an increased interest in outdoor learning environments, because they believe it complements the well-established constructivist approach (Dhanapal & Lim, 2013). By creating outdoor classrooms that focus on teaching ecoliteracy, elementary teachers can bring more academics to the outdoors (Carrier et al., 2013).

More teacher education is needed to prepare teachers for teaching curriculum related to sustainability and human inclusion in nature (Gedzune, 2015). Teachers need more professional development targeted at helping them understand how to connect outdoor experiences with improving their students' ecological literacy, which in turn helps students develop strong emotional, social, and ecological intelligences (Gardner, 2006; Goleman 1996; Orr, 2004). For Orr's (2004) and Goleman's (1996) ideas about ecoliteracy to be integrated into education, teachers need to be adequately trained in how to create outdoor classrooms for teaching students about nature, sustainability and ecoliteracy. Gedzune (2015) indicated that teacher education should emphasize the

necessity of placing respect, responsibility and care at the forefront of human understanding of nature and sustainability.

Teaching in outdoor settings requires expanding teacher education programs. The future of professional development for teachers should focus upon the inclusion of the human connection between nature and the Earth's life cycle demonstrated in outdoor settings (Gedzune, 2015). Gedzune (2015) set out to explore how a pre-service teacher's identity "emerges at a pathway towards human inclusion in nature, which should be pursued in education for sustainability" (p. 112). Twenty-nine teachers were asked to participate in a reflective practice that involved writing by way of creative expression of prose and poetry to uncover attitudes and how they view the world and their way of being. The findings included teachers recognizing that sustainability-related education should invite students to think more deeply about environmental issues, as well as enable them to express their values and attitudes towards the human-nature relationship (Gedzune, 2015).

Limited perceptions of outdoor learning. Limited research studies exist that relate to teacher perspectives regarding developing nature-based early childhood programs (Bohling et al., 2015). Findings from their previous studies showed that teachers have an integral role in supporting students' and parents' understanding of the benefit of outdoor classrooms, including the health and learning benefits of outdoor play. Researchers (Bohling et al., 2015) conducted a case study to examine teachers' perceptions of the newly implemented nature-based program through focus groups and interviews. The data identified a lot of feelings of frustration about the changes, which

many of them described as a culture shift. 70% of the teachers interviewed identified formal training on how to teach children in outdoor programs as important to be able to successfully transition to a nature-based program (Bohling et al., 2015).

Teacher priorities related to children's experiences in nature are likely to have a strong impact on whether students are engaged when participating in activities held in outdoor classrooms (Fraser, Heimlich, & Yocco, 2010). In a study by Ernst (2014), survey research was conducted with 46 educators in Minnesota to examine their perceptions and beliefs related to outdoor learning. Their results showed the strongest issue pertaining to the barriers of implementing outdoor learning was 67.7% related to the difficulty in using natural outdoor settings, particularly as it pertained to lack of time, winter conditions, and safety concerns. Ernst (2014) stated, "Early childhood educators see the alignment among early childhood education pedagogy, development outcomes across multiple domains, and experiences in natural outdoors settings" (p. 745). The teacher participants had a clear understanding that outdoor experiences are valuable for children but expressed a need for professional development to implement them effectively.

Self-efficacy shortfall. How teachers perceive their own ability to succeed at a specific task is categorized as self-efficacy. All too often, teachers with high environmental knowledge have low outcome expectancy because of the barriers to teaching in outdoor classrooms. Moseley et al. (2002) set out to examine the connection between self-efficacy and outcome expectancy by conducting a study of environment education student teachers. This quantitative study used a pre-test and post-test design

with one group identified as a control group and the other an experimental group. Their results showed no significant difference between the control group and the experimental group's scores on the pretest. They attributed the lack of significance to the fact that all participants were presented with the same collection of activities. Therefore, they may have had a perceived confidence of teaching environmental education with materials the teachers were given.

The research method that I used in this study involved interviewing teachers with at least 2 years' recent experience teaching in an outdoor classroom who had recent access to an outdoor classroom and had either contributed to creating or improving an outdoor classroom at some point in their career. Perhaps Moseley et al.'s (2002) research findings may have been different if they had examined a group of seasoned teachers attending an environmental education class, which would include a more diverse participant pool.

Supports

This section discusses supports teachers may need to become well prepared for teaching in the 21st century. According to Palmer (2002), "Few would doubt the urgency and importance of learning to live in sustainable ways, of conserving the world's natural resources, and of taking care of the Earth today, so that future generations may not only meet their own needs, but also enjoy life on our planet" (p. ix). For the U.S. education system to meet the needs of future generations, especially for families living in diverse communities, such as those with schools whose populations include mostly people of color and low-income families, U.S. policy makers should consider reform strategies that

include supports for teachers' developing skills, such as those identified in the "21st-century skills" movement (Silva, 2009). According to the Center for Teaching Quality, there are five things that all well-prepared teachers must know by 2030, including how to: a) teach Google- and computer-savvy learners, b) partner with a student body that will become 40% English as a Second Language (ESL) learners, c) prepare students for competing in a global marketplace by teaching the new basics, d) help students monitor their own learning, and e) connect teaching to a broader spectrum of community needs (Teaching 2030, 2011).

Outdoor school day. Louv (2016) discussed the importance for present-day teachers and schools to incorporate outdoor environmental programs by taking small steps at building an education system for the 21st century. Louv (2016) recommended starting with grassroots efforts, such as teachers choosing one day a week, for example Forest Fridays, which is dedicated to teaching and learning in outdoor classrooms. This step would require teachers and staff to gain the support of their school, and in some cases, district level. In many European countries, such as Denmark, a weekly 'Outdoor School Day' involves weekly visits to forests, parks, and farms (Jordet, 2007). A study of 400 Danish teachers who practice Outdoor School Day set out to find out what teachers use, and preferences were for outdoor space. Researchers' Bentsen et al. (2013) results showed that most teachers used the same outdoor space most of the time. Most participants expressed a desire to teach children about the local flora and fauna of the outdoor area they frequented. But one unexpected finding had to do with the high variation in how teachers used the green spaces, in terms of length of visits, accessibility,

and integration with academic subjects. They recommended that more research is needed for professional development aimed at teachers to help them to make better informed decisions, plan more consistently, and manage outdoor learning more effectively (Bentsen et al., 2013).

Although many U.S. school districts subscribe to the notion that the only way to reduce the achievement gap is with standards-based curriculum and high-stakes testing, research shows that the current gender and ethnic diversity in elementary schools point to a need for schools to better involve students from diverse backgrounds in outdoor learning. This would help ensure that students from all ethnic and cultural backgrounds avoid an achievement (or knowledge) gap that would prevent them from fully engaging in emerging environmental challenges (Carrier et al., 2014). Getting children outdoors to connect with nature more regularly should not be the single responsibility of teachers and school staff to address these issues by themselves. Parents, policy makers, district administrators, and entire communities must get involved in making these changes (Louv, 2016).

Holistic education approach. Like Nussbaum's (2013) capabilities approach to preparing students for realizing their full potential, the holistic educational approach is also worthy of examination. During the spring of 2013, educators from the fields of health and education came together. Lewallen et al. (2015) stated, "To ensure the implementation of policies that would result in successful learners who are knowledgeable, emotionally and physically healthy, civically active, artistically engaged, prepared for economic self-sufficiency, and ready for adulthood" (p. 730). Because of

these discussions, Lewallen et al. (2015) developed an approach that places the focus of learning on the whole child, with a holistic view of schools, children and their families, as well as entire communities at the center of the model.

The idea of educating the *whole child* is appropriate for creating outdoor learning opportunities that place value on children's need to have adequate experiences in nature. Research shows that characteristics of a holistic approach include learning environments where each student enters school to achieve the skills necessary to grow up and enter the adult world as a happy and healthy contributing member of society (Lewallen et al. 2015). According to Lewallen et al. (2015), educating the whole child means that schools make the student the focal point by ensuring that each child learns about and practices healthy living, is exposed to an environment that is physically and emotionally safe for students and adults, is engaged in learning that is connected to the school and the broader community, has access to individualized learning supported by a qualified and caring staff, is challenged academically to succeed in college or employment, and is in touch with the global environment. These kinds of educational experiences, when combined with different dimensions of child development, represent the whole child, in terms of how they can develop a flourishing and healthy well-being (Chawla, 2015; Nussbaum, 2013; Sadlowski, 2011).

Recess redefined. At the start of the 21st century, nearly 40 percent of American elementary schools were considering eliminating or reducing outdoor recess (Louv, 2008). Outdoor recess has typically been viewed by students and teachers as a break time. Historically, recess has been designated as providing an opportunity for students to

unwind and interact with each other and teacher with colleagues, respectively, with the expectation that teachers and students will go back to their classrooms after recess filled with a renewed interest in teaching and learning (Bohn-Gettler & Pellegrini, 2014). In a study conducted by Hofferth and Sandberg (2005), researchers analyzed students' journal entries. Their findings showed that children (ages 3–11 years) spend only 30 minutes per week on outdoor activities. Other studies have shown that over 50% of waking hours for adolescents (ages 11-15 years) are spent engaging in sedentary activities (Tremblay et al., 2014).

Outdoor classrooms should not be viewed as simply recess in terms of break time, but instead a paradigm shift that involves a rich learning environment where a valuable pedagogy is offered to students outside (Chawla, 2015). Nelson (2012) went further by stating that teachers need to think about the idea of recess in a completely new way. Instead, educators should think about indoor and outdoor classrooms the same way in terms of teaching and learning. The only difference is that the outdoors has no floors, walls, and ceilings. Time outdoors is not simply a break from important learning. Learning outdoors is just as important as the learning that happens indoors (Chawla, 2015).

Cross-disciplinary education. Outdoor settings have the potential to offer interdisciplinary (or cross-disciplinary) instruction, which is typical of environmental education (Stevenson et al., 2014; Torquati, Cutler, Gilkerson, & Sarver, 2013). Shortly before the turn of the millennium, Goleman (1996) and his colleagues at The Center for Ecoliteracy first stressed the importance of extending students' abilities beyond empathy,

concern, and perspective, to include a cross-disciplinary understanding of natural systems and cognitive higher order thinking. Later this understanding grew to become more specific as to how natural systems are necessary for sustaining life on the planet (Goleman et al., 2012).

Because of this evolving educational philosophy at the turn of the 21st century, Howard Gardner (2006), when publishing the 10-anniversary edition of his groundbreaking Multiple Intelligences (MI) theory, added the “naturalist intelligence” as the eighth intelligence that all humans possess. Gardner (2006) stated, “Persons with a high degree of naturalist intelligence are keenly aware of how to distinguish the diverse plants, animals, mountains, or cloud configurations in their ecological niche” (p. 19). This naturalist intelligence is intricately connected to scientific inquiry, but also involves other intelligences and academic disciplines.

Researchers Stevenson et al. (2014) discussed the idea that although outdoor learning and environmental literacy are multi-disciplinary because they include aspects of social studies, history, culture, and science, most elementary teachers still see environmental education as only connected to science. Their study sought to identify barriers that teachers face in terms of teaching environmental literacy as a multi-disciplinary subject. They identified a lack of time as the major barrier to teaching environmental literacy, which they’d identified in prior research suggesting that elementary teachers experience pressure to teach to more heavily tested areas of math and science instead of interdisciplinary subjects (Evans, Whitehouse, & Gooch, 2012; Marx & Harris, 2006; Stevenson et al., 2014).

Dyment (2005) investigated the outdoor opportunities for Australian schools to incorporate outdoor learning in an interdisciplinary way. Participants in her study reported that most outdoor activities taught at their schools involved teaching science and physical education, but rarely for teaching language arts, mathematics, and geography. Outdoor classrooms have progressed over the past ten years, whereby now they provide a more real-world setting for teaching traditionally science-based studies. Eick (2011) affirmed this in a multi-disciplinary approach to teaching environmental literacy led to an increase in standardized testing for third-grade students in reading and writing. In this case study, researchers examined third-grade teachers' use of teaching language arts along with science using an outdoor classroom. According to Eick (2011), "Children's structured experiences in nature and natural discoveries occurred at different times during a school day, including science, the language arts block, and recess. The outdoor classroom in this case study also provided the context for reading and writing about science and nature from experience" (p. 801). This case study showed how teachers can seamlessly integrate science and literacy subjects in a multi-disciplinary way using outdoor classrooms and a nature-based approach to meet state academic standards.

Human Development Context of Outdoor Education

According to Harvard biologist E.O. Wilson (1984), human beings are genetically wired to interact with nature. Wilson (1984) stated, "The connections that human beings subconsciously seek with the rest of life is the very essence of our humanity and binds us to all other living things" (p. 85). This idea of humanity at the core of the human development context of learning is what defines early childhood education. Chawla

(2015) discussed how providing children with experiences in nature contributes to the health and well-being of children and enables them to realize their full potential in terms of their capabilities. Previous research about outdoor education goes back to the 1980s, when a convincing body of evidence showed how children's inquiry-based interactions with natural materials found in the outdoors formed the basis for healthy human development (Moore, 1980).

Developing an appreciation of nature, in terms of its aesthetic qualities, can be viewed as a way of being for children that is critical to their human development. Quay (2013) defined the meaning of an aesthetic experience as a direct and immediate reaction that stirs human emotions. Outdoor educational research, therefore, should not only be concerned with practical applications of outdoor learning. If it were, research would repeatedly overlook the creative, thought- and feeling-provoking side of children's experiences in nature, and therefore not view the importance of outdoor education in a holistic manner (Quay, 2013). Emotion is central to human development, and therefore, central to outdoor education (Boniface, 2000; Campbell, 2010; Quay, 2013; Wolfe & Dattilo, 2007).

Children as Researchers

Children are born as natural research scientists. Therefore, outdoor learning is essential for their development because it embraces methods that honor children's perspectives (Green, 2015). Green (2015) discussed the importance of environmental education scholars to use theoretical and methodological approaches to critically examine the participation of young children as active scientific researchers. Mainly this is because

they have a unique perspective of their own and other's environments, and their participation as environmental researchers gives them the freedom and liberty to express their own opinions, be listened to, and make choices (Green, 2015). Experiences such as these can spark an interest in acquiring knowledge and ecological literacy.

When children acquire environmental knowledge in and of itself, there is no guarantee that they will also possess the emotional intelligence necessary to develop an appreciation for environment problems (Goleman et al., 2012). This requires that children acquire both knowledge and empathy, to grow up and become concerned citizens who wish to make positive changes for the environment and the planet. According to Goleman et al. (2012), "Even when a young person's knowledge and empathy have been awakened, it can be a magnificent challenge to help him or her understand how to make a positive difference in the world today" (p. 5). This education problem creates an opportunity for teachers to make a long-term difference in their students' lives using outdoor classrooms.

Benefits of Outdoor Learning

Human capacity in children is worthy of examination, in terms of how outdoor learning has positively affected children's health, social, emotional, physical, and cognitive benefits, in recent peer-reviewed research. Healthy child development enables human potential; therefore, it can be a predictor of a person's ability to participate fully in socio-political and civic life (Zubrick et al., 2009). There is also a considerable amount of evidence supporting the idea that the time young children spend in or near natural outdoor environments is important to their cognitive, physical, health, social, and mental

and emotional development (Driessnack, 2009; Ferreira et al., 2012; Gill, 2014). The adolescent years of a child's life (ages 7-14) are especially critical to forming foundations of physical, emotional, social, and cognitive well-being, because this is a time when they are more likely to develop concern for the environment and their own connectedness to the natural world (Gill, 2014; Larouche et al., 2016).

Health benefits. Research has shown that exposure to nature is essential to the human experience, including many benefits to physical, spiritual, intellectual, and emotional health (Beattie, 2015). In response to the concern about a lack of exposure to nature and the outdoors, childcare centers and early childhood programs have incorporated nature-based and related outdoor learning models. This model assumes that direct contact with nature is necessary for children (Gill, 2014). In a Canadian study, for which my state shares a portion of their border, researchers (Larouche et al., 2016) examined the association between exposure to the outdoors and their physical activity, sedentary time, and overall health in 7-14-year-olds. After analyzing survey results from 350 Canadian citizens, the researchers found that for each hour spent outdoors, youth gained an average of almost 1,000 steps and 13 less minutes of sedentary time. Their study findings included “on average, 7-14-year-olds reported 2.3 hours a day outdoors and accumulated 59 minutes a day of moderate-to-vigorous physical activity (MVPA) per day” (p. 6). This increased their activity levels and improved peer relationships as a benefit of outdoor activities. Beattie (2015) stated that she identified a gap in the research because her assessment is that most education research specific to the environment is conducted mainly with high school students. Interestingly, she may have observed a

similar gap as I have, but on the opposite side of the spectrum. For her literature search she may not have sought out studies for early childhood education, which Chawla (2015) described as plentiful, in terms of environmental research for preschool- and kindergarten-aged children.

Impact on social-emotional behavior. Recent research showed that experiences in the natural world are crucial to a child's physical and emotional development, and contribute to minimizing rates of childhood obesity, behavior and attention-related disorders, and mental health conditions, such as depression (Driessnack, 2009; Ferreira et al., 2012; Louv, 2008). Research also supports the idea of integrating outdoor education with academics in elementary schools, including environmental programs and curriculum that help reduce childhood physiological behaviors, such as ADD and ADHD (Faber Taylor & Kuo, 2011; Van Den Berg & Van Den Berg, 2011). Regardless of the root cause of nature-deficit disorder, the impacts of the lack of time spent outdoors by children impact all aspects of children's intellectual, psychological and physical development (Cleland et al., 2008; Ferreira et al., 2012; Ozdemir & Yilmaz, 2008).

Access to outdoor spaces can increase the resilience in children (Wells, 2014). The aim of his research on supporting "wellness rather than illness" has sparked an interest in studying what environmental factors enhance the well-being of children. According to Wells (2014), "In the field of psychology, an interest in resilience and positive psychology has emerged after decades of focus on dysfunction and disorder" (p. 96). Researchers have also shown how exposure to nature, by way of access to trees,

vegetation and open spaces, corresponds to outcomes that include social, psychological, cognitive, and physiological well-being (Chawla, 2015; Wells, 2014).

Cognitive improvements. Cognitive learning opportunities associated with outdoor experiences involve important social peer interactions and can affect school performance. These interactions are important to child development. As Pellegrini and Bohn (2005) stated “children’s social competence with peers is a powerful and complementary predictor of school performance and adjustment” (p. 16). Pesce et al. (2016) conducted a study involving 920 children (ages 5-10 years) to see if a physical intervention that involved outdoor play would influence the children’s health, as well as having cognitive benefits. Their quantitative study included statistical analyses with SPSS statistics measured in a pre- and post-test. Pesce et al. (2016) findings supported the trend in cognitive neuroscience that “view cognition as subservient action and being grounded in sensorimotor interaction” (p. 14). The results showed that the children involved in the enhanced intervention involving outdoor play demonstrated progress in motor coordination, including manual dexterity, balance and large motor skills. Extensive research exists that shows how outdoor experiences, such as the Outward-Bound program, support the idea that intense physical activity increases cognitive functioning in students. Intentional outdoor programs, such as these, support a new line of research that connects physical exercise with outdoor learning as having cognitive benefits for children (Mackenzie, Son, & Hollenhorst, 2014).

Recent research also showed a connection between environmental education and student outcomes. Even though most students in poor urban districts have limited

experiences in the outdoors, playing outside is often their only source of outdoor exploration. Ferreira et al. (2012) set out to find out whether partnerships between a local university and the school district could result in positive education outcomes due to increased outdoor experiences. Although the participants consisted of sixteen teachers from seven elementary schools, 63% were African-American, which would provide valuable results because the teachers represented similar ethnic backgrounds to the students being taught. In this study, I used a mixed-methods approach to show how teacher preparedness for teaching environmental education increased their effectiveness. By analyzing results based on a four-point scale system using pre- and post-test, the qualitative portion included an analysis of portfolios which consisted of the teachers' personal reflections on the process. The qualitative data was analyzed using codes and themes. After participating in the program, the teachers felt more prepared to teach environmental subjects using real-world, hands-on activities (Ferreira et al., 2012).

Summary of Major Themes

To summarize the major themes in the literature, I discuss how outdoor education has changed over the past several decades. There has been a long history of research on outdoor education, but not a lot of research related to how it can be used to treat urban schooling challenges (Ogilvie, 2013).

Mannion and Lynch (2015) discussed how the purpose of outdoor education has changed in the broader socio-political landscape of education reform. Educators have experienced the direct effects of this over the past several decades, having long been influenced by the ongoing rhetoric focused on the importance of raising academic rigor

and increasing standardized tests. In contrast, Broda (2007) suggested that “outdoor education is not a subject area, rather, it is an instructional tool that can be used to enhance instruction in a variety of disciplines” (p. 11). Over the past fifty years, environmental issues have continued to arise, yet outdoor education has been minimized and compartmentalized in terms of its importance to overall educational outcomes. For example, environmental awareness is now considered key to character building, which itself was a key component of the character education philosophy that was popular in the 1990s (Mannion & Lynch, 2015).

What is well known in the literature is related to the lack of children’s experiences with nature. Recent research has shown that outdoor experiences are critical to a child’s intellectual, emotional, and physical development (Ferreira et al., 2012). Nearly 40 years ago during 1980s elections in the United States and United Kingdom, conservative governments basically ended an era of “health for all” in most areas of social life. UNICEF at that time restructured more narrow goals, such as oral rehydration and inoculation, despite the objections by some of their managers that they were focusing less on the whole child (Chawla, 2015). As the review shows, history repeated itself in shifting priorities regarding health-related research on children and nature.

Summary and Conclusion

Following a review of research findings and current practices, I identified a gap exists in the research regarding elementary school educators’ perceptions of outdoor settings as cross-discipline learning environments. There have been minimal studies devoted to identifying nature-based curriculum geared towards teaching about

sustainability in early childhood settings. More specifically, a lack of studies exists that address the relationship between teacher in-service trainings and sustainable student outcomes as it pertains to environmental education (Bohling et al., 2015).

To better understand teachers' experiences when creating and improving outdoor classrooms, I examined the supports and barriers that elementary teachers encounter. I conducted a qualitative study by interviewing nine public elementary school teachers using open-ended interviews. The interviews, facilitated face-to-face in a public meeting space or a teleconference call using Skype, will be conducted using semi-structured queries and probes. In the next chapter, I explain the rationale for selecting the design and approach, research population and sample, instrumentation of the interviews, procedure and protocol, data analysis plan, and ethical considerations for this study. In chapter 3, I present the research methodology engaged in this study.

Chapter 3: Research Methods

The review of the literature in Chapter 2 helped me gain an understanding of the role that outdoor classrooms plays in early childhood and adolescence. Following the literature review process, I identified several gaps in the research. The largest gap I that identified is that most recent research regarding nature-based environmental curriculum at the public school elementary school level mainly exists for early childhood programs, such as preschool- and kindergarten-age students (Chawla, 2015).

The purpose of this qualitative study was to understand teachers' experiences by examining the barriers and supports that elementary teachers in the Pacific Northwest encounter when creating and improving outdoor classrooms. In this chapter, I identify the research design for studying outdoor classrooms. I also include a detailed synopsis of the methodology of this study. To expand on the methodology, I include the following sections in this chapter: Research Design and Rationale, Role of the Researcher, Methodology, Issues of Trustworthiness, and Data Collection and Analysis. I will also discuss threats to quality, feasibility, informed consent and ethical considerations. In the summary at the end of this chapter, I provide an overview of the methodology and data collection and analysis processes.

Research Design and Rationale

The central concept of this study was to better understand teachers' experiences when creating and improving outdoor classrooms by examining the barriers and supports that public elementary school teachers encounter. This was a qualitative study using interviews and interpretive phenomenological analysis techniques as guided by Smith

(2011) and Smith et al. (2009) to gain information from teachers with at least 2 years' recent experience teaching in an outdoor classroom who had current access to an outdoor classroom and had either contributed to creating or improving an outdoor classroom at some point in their career.

The overarching research question was: What are Pacific Northwest elementary teachers' perspectives about the barriers that they face and the supports they need when creating and improving outdoor classrooms? The subquestions I addressed in this study include:

1. What barriers do Pacific Northwest public elementary school teachers face when creating and improving outdoor classrooms?
2. What supports, including resources, do Pacific Northwest public elementary school teachers need in the implementation of outdoor classrooms?
3. What do Pacific Northwest public elementary school teachers identify as their motivations for creating outdoor classrooms?
4. In what ways do Pacific Northwest public elementary school teachers use outdoor classrooms to develop ecoliteracy in their students?

To understand this problem at the elementary school level, it was necessary to study those teachers who are on the front lines, creating and improving outdoor classrooms, and working with children and ecological literacy. More research has been needed to identify the barriers and supports that teachers encounter when developing outdoor classrooms. These concepts were identified in recent research as mainly financial and technical skill barriers. Because of this, a need has arisen for elementary teachers'

additional professional development, so that they can develop the skills to overcome these barriers. This could involve teachers developing leadership skills, such as those necessary for partnering with community organizations, organizing fundraising campaigns, and applying for grants to improve their outdoor classroom.

I used interviews and interpretive phenomenological analysis techniques, as guided by Smith (2011) and Smith et al. (2009), aimed at informing best practices for enhancing the overall understanding of this research problem. I chose a qualitative interview design (Rubin & Rubin, 2012) to provide a baseline of data around understanding the barriers and supports that elementary school teachers in the Pacific Northwest encounter when creating and improving outdoor classrooms. As Dilley (2004) stated, “Meaning is not ‘just the facts’, but rather the understandings one has that are specific to the individual (what was said) yet transcendent of the specific” (p. 128). Specific details about the participants’ experiences were best obtained through interviews, which transcended not only what the participant said, but how they said it, how I heard what the participant said, and how to convey meaning behind what was said (Dilley, 2004).

The rationale for this research design was based on a qualitative paradigm. Researchers conduct qualitative research because a problem needs to be addressed or an issue needs to be explored (Creswell, 2013). Because I aimed to gain an understanding of the barriers and supports that public school elementary teachers encounter when creating and improving outdoor classrooms, other methods for my research design fell short. For example, I first considered traditional phenomenological research as a possible design

strategy. But this approach was not appropriate for my study because it is a distinct qualitative method that is used for examining the underlying essence of a shared experience (Patton, 2015). Although outdoor classrooms can be considered a social phenomenon, the basis for my study was to identify the barriers and supports that public elementary school teachers have experienced, specifically when working to create and improve outdoor classrooms.

Another idea that supported my decision to conduct a qualitative research design was my primary focus of investigating beliefs, attitudes, and opinions, for which there is published evidence for their validity and reliability (Merriam, 2009). I examined case study as a possible approach for this study. But case studies involve in-depth study of a few schools, which would require special approval from school principals. The sample size would be too limited to get the level of breadth that this study required. I determined that accessing teachers at a cross-section of urban, suburban, and rural schools who make the front-line decisions about their outdoor classrooms was most useful for completing this study.

The qualitative interview process enables researchers to find out what their participants think and believe about the world they experience at a deep level. Rubin & Rubin (2012) stated, "Through this you can understand experiences and reconstruct events in which you did not participate" (p. 3). Crafting semistructured interviews elicited conversations that enabled participants to describe their experiences with outdoor classrooms on their own terms. This is because the relationship between interviewer and

interviewee enables a process that brings data to the surface that is both interesting and ethical (Rubin & Rubin, 2012).

It is important for researchers to develop a strong relationship between concepts and their qualitative approach (Creswell, 2013). Qualitative research methods that I used provided valuable descriptions of interrelated phenomena and documenting the interpretations of experiences had by participants, who often have different stakes and roles within the setting being studied. By choosing an interview-based design, a researcher can help provide a voice to a diverse range of viewpoints, some of which are rarely heard (Rubin & Rubin, 2012). The most effective qualitative research is organized and rigorous. But it also seeks to reduce the risk of bias and errors, so it can identify evidence that confirms or disconfirms the research question being examined (Sofaer, 1999).

I also examined a few other approaches to help support the rationale for choosing an interview design for my study. Ethnomethodology studies explore how people interpret their everyday lives and answers questions about what is ordinary and commonplace (Creswell, 2013). This approach also examines the ways in which people get things done in a way that is so commonplace that it does not need explanation. Semiotics studies explore phenomena that are communicated through signs and symbols. Semiotics includes examining the rules and types of languages as well as the interconnections between languages and behavior (Patton, 2015). I considered these other design approaches for their viability and potential appropriateness for this dissertation topic. Although they all have merit in terms of qualitative research, none of them would

suffice as an approach for this study better than an interview study using interpretive phenomenological analysis techniques.

Role of the Researcher

I have never worked for any of the schools where the interviews were conducted. Because I have been involved with environmental education for the past twenty years, I realize that I brought some biases with me that I addressed by practicing mindfulness before each interview. I exercised reflexivity, which is the act of the researcher positioning themselves in the study by explaining to the participants what their background (Pillow, 2003). My background was explained in detail in the interview protocol (see Appendix B). I explained how my background would inform the interpretation of the data, as well as what I had hoped to gain from doing the study.

During the interviews, my intention was to be present and remain an active listener of the participants throughout. This helped develop rapport and trustworthiness, and therefore avoided leading the participants. Sometimes novice researchers can be more focused on analyzing how the participants' responses align with their own personal and professional interests, or they will be moving ahead in their thoughts to the next question, instead of remaining focused on what the participants' responses are (Roulston, deMarras, & Lewis, 2003). The way that I tried to alleviate this risk was by recording the interviews using a digital recorder. After transcribing the digital audio, as part of member checking, I had the participants review the transcripts to make sure that I documented their responses and interpreted the data correctly. It is a risk for the interviewer to get overwhelmed by all the things that require attention during the interview, and therefore

they can become distracted. Audio recorded interviews and transcripts helped ensure that I paid attention to the content and the interview process (Roulston et al., 2003).

As an ethical researcher, my primary role was to collect and analyze data for the sole purpose of completing this study. I may have been perceived from the participants as an expert implementing outdoor classrooms. Therefore, I made a commitment to take steps to remain in the role of a researcher until the dissertation is complete, and not reply to any questions appealing to my expertise or experiences in implementing outdoor classrooms. I do not have any conflicts of interest or power differentials. Qualitative researchers collect data by analyzing documents, collecting raw data, observing behavior, and interviewing participants (Seidman, 2012). To avoid demonstrating bias, I was prepared for the unexpected. Qualitative researchers should trust their instincts and be prepared for participant responses that may throw them off guard. By creating probing questions, interviewers can be prepared to keep the interviewee on track (Jacob & Furgerson, 2012).

Methodology

In this qualitative study, I sought to understand teachers' experiences when creating and improving outdoor classrooms by examining the barriers and supports that elementary school teachers have experienced. I collected data by way of interviews with nine teachers (one teacher from each school), conducted face-to-face in a public meeting space or via a teleconference call using Skype.

Population

The population for this study included nine teachers from nine unique public school elementary schools with purposefully selected elementary teachers with at least 2 years' recent experience teaching in an outdoor classroom who had recent access to an outdoor classroom and had either contributed to creating or improving an outdoor classroom at some point in their career. IRB granted permission to me to conduct this study prior to contacting any potential participants. To accelerate the process of collecting and informing study consent forms, I contacted each participant via an email message. If a participant requested a phone call follow-up, and could not be reached by phone, I left a voice message. I had permission to email teachers based on their publicly available contact information, so I emailed teachers a recruitment letter along with a consent form. In the recruitment letter, I asked potential participants to contact me if interested. I made interview appointments via sending email messages. For interviews that I met the participant in person, I had the participant sign a consent form at the beginning of the interview before answering any questions. For those participants who I interviewed via a Skype call, I emailed the consent form before the interview, and they gave a verbal consent on the call before answering any questions. For all nine participants, I gained consent before the interview began.

In this study, I conducted interviews in a semi-natural setting, which meant that all participants worked at a public elementary school setting; but all interviews took place at a different location other than at the participants' school setting. All in-person interviews were conducted near the location where the participants worked. All

participants were asked interview questions face-to-face in a public meeting space or via a teleconference call using Skype. The actual setting for which the participant's work was located was a school setting. All nine participants were educators who teach in public school elementary classrooms at the location where they experience the issue that I am studying. For all in-person interviews, I met the participants at a nearby local library or other public space to ensure a quiet interview setting. If the participant is not able to meet in person, I arranged to interview them via a conference call using Skype.

In this study, I utilized interviews that embodied semi-structured methods. This study supported Maxwell's (2013) notion that less structured methods enable flexibility in terms of changing the focus of the phenomenon being studied, as it relates to different individuals or settings. Because there was no step-by-step manual for qualitative methods, decisions I made about research methods depended on areas specific to my study and the context of my research and design, as guided by Maxwell (2013). I tried my best to avoid making any changes to my research methods after I receive IRB approval. Therefore, I did not need to resubmit changes to my methods to the IRB for consideration.

When planning my research study, it was most important for me to design a well thought out detailed plan. I kept in mind that any revisions that I found necessary during the data collection phase must be approved by the IRB. Therefore, I did not change my design. I mitigated this risk by using Creswell's (2013) structured approach for analyzing data. Structured design approaches help ensure the comparability of data across variables, in terms of settings and participants' beliefs and characteristics, which can be especially useful for analyzing participant responses (Maxwell, 2013).

Sampling Strategy

My research aimed to ask general questions about a broad population, and thereby I considered snowball sampling to gain as close to a random sample as possible.

Goodman (1961) stated that a snowball sampling procedure is a type of random sample of participants that is drawn from a specified finite population. It was necessary for me to conduct a snowball sample; because I needed two more participants, each from a different school, and I was committed to including a broad range of participating schools. To complete this study, I did not anticipate having any issues obtaining the number of participants that I needed.

The inclusion criteria specified teacher participants who taught in public school outdoor classrooms in the Pacific Northwest region of the United States, teachers with at least 2 years' recent experience teaching in an outdoor classroom who had recent access to an outdoor classroom and had either contributed to creating or improving an outdoor classroom at some point in their career. To seek participants, I used the Green Schools (2017) public website with access to teachers at schools in the Pacific Northwest that have environmental programs that included outdoor classrooms. I developed a sample from those teachers listed in directories of public websites only. These directories published teachers' publicly available work email addresses and phone numbers. Based on estimates I gathered by looking at these public websites, I had access to email addresses from approximately 50 schools from around the Pacific Northwest region that included a range of rural, suburban, and urban schools.

Excluded from the participant pool were those teachers who did not teach in a public school in the Pacific Northwest and who did not teach in an outdoor classroom for at least 2 years. According to Maxwell (2013) “A sample study justifies the sampling strategy as a way of attaining representativeness of the specific data collected for the population sampled” (p. 78). In this study, I limited participants to include only public school teachers because I want to gain the perspective of the U.S. education system, which often has more financial and policy barriers when it comes to investing in environmental education programs (Barlow, 2007). Framing my questions in terms of the specific public-school setting helped protect the study from inappropriate generalizations, by attempting to avoid the findings to be drawn from conclusions that ignored or minimized the differences between public and private school settings (Maxwell, 2013).

Because this sample included a limited group, the network of teachers who were in this niche may have been difficult to find. Snowball sampling helped me find participants in the most random and most unbiased way. Potential psychological, relationship, legal, economic/professional, and physicals risk were considered for this study. The risk to participants was minimal or none, because the nature of the study was such that participants had the right to withdraw from the study at any time. The participant also had the right to stop at any time during the interview process and terminate their participation. The consent form attempted to fully acknowledge potential risks and benefits of being in the study. All protections to minimize risks were offered to all participants.

I knew that I maximized the sample size when I reached the logical saturation point in the data collection process. Lichtman (2013) stated, “You collect your data and analyze your data at the same time. At some point, you complete collecting data” (p. 261). This is described by many qualitative theorists as the point at which you are interviewing participants, but not learning anything new. By analyzing the data, I coded it into chunks, combined codes into categories, and therefore the concepts can begin to form (Lichtman, 2013).

To describe the relationship between the saturation point and the sample size, first a researcher must ensure they are thorough in their investigation (Rubin & Rubin, 2012). According to Rubin and Rubin (2012), they do this by examining not only the explanations based on what the interviewees have said, but by also exploring and extrapolating alternatives that have not been touched on by the participants. Therefore, I didn’t need many interviews to demonstrate saturation. In this study, the participants expressed all points of view that I set out to fully explore and addressed all my research questions. According to Rubin and Rubin (2012), “You probably want to interview at least two or three people from each relevant vantage point, both to assure that you have abundant illustrations on each point of different aspects of a process or incident” (p. 63). I anticipated the saturation point will be achieved after nine interviews, but I was fully prepared to conduct more interviews until the saturation point was achieved.

Instrumentation

I used an interview format for the research instrument that included open-ended questions produced by myself. I asked the questions in a single interview session that did

not last longer than 60 minutes per participant. I did not need to go longer than 60 minutes. But had I done so, to complete the interview, I would've asked the participant if they could go a little longer than 60 minutes. Since that did not happen, I did not need to schedule another time with them to complete the interview. Interview questions were peer reviewed for content and language prior to conducting the interviews. The interviews included 20 open-ended questions that solicited the participants' experiences, which were mostly told as stories.

In this study, I considered that interviews play an important role in the data collection process for general qualitative studies, as they ultimately affect all individuals involved in the research study. Successful interviews evoke all kinds of emotions, thoughts, feelings, and intellectual capacities of both the interviewer and the interviewee (Patton, 2015). Therefore, I included in the interview several questions targeted at generating a response that would invoke participants' feelings. The interview questions were expert reviewed prior to conducting interviews, to enhance the credibility of the general qualitative research (Spillett, 2003). To facilitate this review process, I had the questions reviewed by two education scholars in the field. They helped me confirm that the time it takes to complete the interview is under 60 minutes. I created a contingency plan if the interview went over the allotted time, which it didn't. I asked the peer reviewers to provide feedback regarding the writing style and appropriateness of the questions. In the final version of the interview questions (see Appendix C), I condensed the number of questions to 20, and edited them to improve the overall alignment with the research questions.

Because the interviews were part of a semi-structured process, I provided participants with a glossary of terms (see Appendix D). Before each interview, I went over key terms and review the consent forms that the participant signed before the interview. I based this study on the idea that researchers who make the effort to provide both formal and informal communications throughout the planning process, are more likely to build a trusting relationship that will make the interviews more comfortable for the participants (Lichtman, 2013).

The interviews included open-ended questions (see Appendix C), which solicited the participants' experiences, usually told as stories. This helped uncover the participants' inner-most thoughts and feelings. Rubin and Rubin (2012) suggested asking follow-up questions (see Appendix C), also called probes, to uncover more focused responses from the participants:

- Continuation probe: Encourages the interviewee to keep going with the current response.
- Elaboration probe: Asks for more explanation on an aspect of a participant's response.
- Attention probe: Lets the interviewee know you understand what they are saying and are listening.
- Clarification probe: Asks for better definition or explanation, especially if the researcher is confused or could not follow the thread of the story.
- Steering probe: Intends to get the story back on topic (Lichtman, 2013).

If a participant were not available to meet in person in a public location, such as a public library, I interviewed them via a teleconference call using Skype. Disqualifying a participant was a last resort, which I did not have to do. If I did, I planned on explaining the requirement to meet in person at a public space or meet using Skype in my recruitment letter. I was prepared for the situation that a participant who had agreed to meet in person may have a life event come up that prevented them from following through on their commitment. To exit the study, I went go over the interview exit script (Appendix G). Once I completed the interviews, collected and transcribed data, personally by me, the data from the participants' responses, I stored the raw data in Excel spreadsheets and Word documents.

To best ensure that the interview questions were constructed in a way that would most ensure content validity and reliability in a research study, I followed Kvale (1996) suggestions that “researchers follow these steps for crafting interviews and making the most meaning out of the data collected:

- Collect the subjects' descriptions.
- Allow for the subjects' self-discovery.
- Condense and interpret the interview event by the interviewer.
- Interpret the transcribed interview by the interviewer.
- Observe if interviewees begin to act differently from the insights of being involved in the research” (p. 189).

To establish sufficiency of data collection instruments to answer the research questions, this study was triangulated during the data collection process. Triangulation

can be achieved by conducting interviews with a diverse group of individuals and settings, over a designated time (Denzin, 1970). For my study, I included multiple sources—interviews, transcriptions from digital recordings that were member checked, and notes taken during the interviews. The types of data sources included digital recordings of the interviews, my observation logs as described above, and transcribed copies of the interviews stored on a computer. Triangulation also reduced the risk of systematic biases due to using only a single method. This process enabled analysis of the data using concise assessment and avoided possible generalizations and misunderstandings that a researcher could make (Maxwell, 2013).

Procedures for Recruitment, Participation, and Data Collection

I planned on contacting participants by way of sending email messages to teachers listed in a directory available at public websites. The directory included schools who participated in environmental education programs and outdoor classrooms. These public schools had been identified as having made “significant progress towards providing effective environmental and sustainability education, incorporating STEM, civic skills, and green career pathways” (OSPI, 2016).

In addition, I indicated the process for participant participation as follows:

- Participating in this study was completely voluntary. Participants could quit from this study at any time without any deliberate consequences.
- I included an email to identified teachers that outlined my request for participants (see Appendix F).
- Once a participant had agreed by email to be part of my study, I emailed them a

copy of the consent form (see Appendix A) prior to the interview. Before the interview began, I asked them to sign two copies of the consent form. One copy was for the participant, and the other was for my records.

- I aimed to overrecruit participants, so that my interview pool allowed for potential cancellations. If I were to have too few participants, I expanded my reach for participants by initiating a snowball sample. I did this by asking two of the participants that I interviewed if they knew of other teachers in their professional network who would be willing to participate. I recruited three additional participants using the snowball method.
- I aimed for maximum variation to increase the participant pool to include a heterogeneous group that included urban, suburban and rural schools.
- If I needed more clarification from interviewees, I asked follow-up probing questions (see Appendix C).
- For all email messages that I sent participants, I made sure to send an email response-confirmation request.
- Once I received a confirmation that a teacher I've contacted was interested in participating in my study, I followed-up with an email response. I responded with a phone call if they requested. One participant requested a phone call follow-up before she agreed to participate in the study. During the phone call, she agreed to be a participant in the study.
- For phone conversations, I used a telephone script (see Appendix G).
- Interviews were held in public locations where private meetings could be held,

such as a public library study room that I made reservations for.

- I protected participants' confidentiality by making sure that I contact them only through their public work phone number and/or email address.
- I selected a public location for the interview for those participants who agreed to meet in person.
- I did not need to schedule any follow-up interviews for gaining clarifications or further understanding of the responses to the interview questions.

The data collection process was key to determining how well the data analysis phase would go. How a researcher manages a qualitative study strongly influences the types of analyses that are possible and the rate at which they can be done (Miles, Huberman & Saldaña, 2014). It was also important for this researcher to understand the relationship between research questions and interview questions.

I made sure that the data collection would happen in the most protective and accurate way possible. All records have been stored in a secure location for a minimum of 5 years. The types of data sources included digital recording of the interviews, my observation logs as described above, and transcribed copies of the interviews stored in Microsoft Word and Excel. All electronic files have been backed up to a password-protected storage device.

Data Analysis Plan

For analyzing data, I applied complex reasoning by using inductive and deductive logic. I identified patterns, categories, and themes from the data by organizing the information into more and more abstract data chunks (Rubin & Rubin, 2012). Methods of

deducing the data collected began the analysis process. Because data analysis was a process of systematically examining data by concepts, themes and categories, I sorted the data into appropriate groups and compared them, while looking for patterns and connections within the data (Rubin & Rubin, 2012).

Comprehending and understanding participants' responses was key to the data analysis phase of this qualitative research. Qualitative interviews do not guarantee that the researchers get useful data or reliable results, as it is a craft that relies upon the judgement and analysis of a qualified researcher (Kvale, 1996). The data included the information I collected by way of the interviews. The types of data sources included digital recording of the interviews, my observation logs as described above, and member-checked transcribed copies of the interviews stored on my computer. The data I analyzed included a combination of using both a hand- and computer-based process for coding. A priori codes were identified using hand coding (see Appendix E). Lichtman (2013) stated, "Key concepts are derived from the data through a process of coding, sifting, sorting, and identifying themes" (p. 243). I created "a priori" codes as initial codes that were concerned with the main topic of the response. I took the responses from the first interview and completed a hand-coding run on it first to see how that process went. This gave me a feel for what was working and whether any of my codes needed to be modified. The interview questions were peer reviewed, and I tested the interview questions beforehand to make sure that the interview did not take longer than the time that I reported in my IRB application.

The second form of data analysis I conducted is hand-coding, using a combination of software programs, including Microsoft Word, Microsoft Excel, and Atlas.ti. There were many computer-based data analysis programs out there, and I used several of them in my Walden courses, including InVivo and Atlas.ti. It was most important to select a computer program that I was comfortable using. I selected a software program that seemed comparable with my research needs and personal ways of working.

In qualitative studies, researchers agree that the goal of analyzing data collected is to achieve common themes, a process in which data is organized into codes, phrases, segments, and categories (Lichtman, 2013). Once I completed the data collection process, I coded and classified the data into codes, categories, and themes:

- A code is a word or short phrase that assigns an attribute, idea, or quality to a portion of text or visual data.
- A category is a collection of these codes that share attributes, meaning, and/or intent. It is also labeled with a word or short phrase.
- A theme is developed from one or more categories and can represent a “manifest” (directly observable) or “latent” (underlying) aspect of the phenomenon (Miles, Huberman, & Saldaña, 2014).

Themes are broad categories consisting of codes aggregated with the purpose of forming common themes. These then involved a process of reducing them to a small, management set of themes to write into the final analysis (Lichtman, 2013).

I used a combination “a priori” codes and emergent codes (see Appendix E). Regardless of which start codes I created beforehand that I used to analyze the data, the

most useful codes were not developed until I reviewed all the data that was collected. For this reason, I leaned towards the provisional coding structure approach. This approach started when the coding process began. Then, based on the initial investigation of the data, I created new emergent codes that I collected and analyzed the data. Existing codes were then modified and expanded to include new codes. Some codes that I did not use were deleted. This was the recommended approach for qualitative studies that built upon prior research and investigations (Miles et al., 2014).

For the data analysis process, I evaluated collected data in digitally-recorded audio interviews using three sources. First, as mentioned above, I transcribed, personally by me, stored audio-taped interviews, and reread the transcriptions several times to make sure the recordings were transcribed accurately. Once I was sure that the transcripts were transcribed properly, I sent an electronic summary of the transcripts to the participants via email to confirm that it was accurate. If they had changes, I reviewed the changes and verified if they were acceptable. Second, I analyzed notes from my observation logs that documented reflections regarding the participant's non-verbal communication. I report the data analysis results in Chapter 4.

Issues of Trustworthiness

Bias and reliability were key components of ensuring that this study was as ethical and valid as possible. I considered how the data analysis included tactics for testing or confirming findings.

Credibility

These tactics included generating meaning and assuring validity or

trustworthiness. I was mindful about the possible sources of analytic bias that could potentially weaken or even invalidate my findings. Some of these biases include:

- The holistic fallacy: Evaluating patterns as more interconnected than they actually are.
- Elite bias: Interviewing participants from a well-educated or topic-knowledgeable group, and therefore underrepresenting data from less informed populations.
- Personal bias: Developing findings regarding an issue that the researcher has a personal agenda, and therefore skews the data analysis to represent and support their opinion.
- Lack of bracketing: Developing findings that do not match the full perspectives of the participants, due to a lack of building a logical chain of evidence when developing themes and patterns (Miles et al., 2014).

I intended on remaining as unbiased as possible, as I was collecting participants' experiences, none of which were right or wrong in the context of this study. Patton (2015) stated, "The purpose of a research interview is first and foremost to gather data, not to change people" (p. 495). I made sure to remain aware that any assumptions that I made could be rooted deeply in my training and reinforced by the scholarly community in which I worked (Rubin & Rubin, 2012). I remained consistently aware that any assumptions I made about how the participants might respond to specific questions were left completely out of my research findings.

To manage bias during the data analysis phase, I conducted member checking by

emailing summaries of the transcripts of the interviews to each participant for review.

None of the participants had any conflicts with how I interpreted the data collected. I did not need to ask them for further clarification.

Transferability

In this study, I included participants who were classroom teachers. I included participants regardless of their race, ethnicity, culture, languages spoken, sexual orientation, gender preference, age, ability, or physical appearance. If a participant needed an interpreter or translator to complete the interview, I was willing to provide one for them. I did not need to provide any translators.

I had certain requirements that the teacher participant must have an established outdoor classroom for at least 2 years. I had a concern about creating inter-school conflict in the case that I decide to turn an interested teacher away who doesn't meet the criteria. I did not need to address this concern. There was no need to avoid creating any uncomfortable feelings with some teachers, as I did not need to exclude any teachers from participating.

Dependability

For my study dependability, or the ways in which qualitative studies are reliable, I used triangulation by including multiple sources; interviews, transcriptions from digital recordings that were member checked, and notes taken during the interview. The types of data sources included digital recording of the interviews, my observation logs as described above, and member-checked transcribed copies of the interviews stored on a computer.

I understood that it was my responsibility to provide an audit trail, which is a transparent description of the research steps taken from the start of a research project to the development and reporting of findings (Malterud, 2001). These are records that I will keep regarding what has been completed during my study. I have secured audit trail records including secure data storage of all raw data, written field notes, measures, forms, and documents with password protection on electronic files and locks for physical data.

Confirmability

For this study, I as the researcher was a key instrument. I used “reflexivity”, which is the act of the researcher positioning themselves in the study by explaining to the participants what their background is, and how it informs their interpretation of the data, as well as what I hoped to gain from doing the study (Rubin & Rubin, 2012). This information was provided in the email that accompanied the consent form.

Ethical Procedures

For adult individuals to participate in this study, the participants agreed to the interview consent form (see Appendix A). Each participant was made aware of the interview guidelines about participant anonymity, privacy, and use of fictitious names in the findings, via the consent form they were required to read and sign or give verbal consent as a condition of their participation. Institutions and contacts from organizations remain confidential and were not included in the results of the study. My contact information was provided on the consent form. This enabled participants to request the results of the study, which I distributed to them by email.

Because most interviews happened face-to-face, I considered the extra time and

potential travel expenses of administering interviews in person. To ensure the data analysis was thorough, I used a digital recorder to record each interview. I then transcribed the interview recording using Microsoft Word and Microsoft Excel and then stored on a password-protected computer. Using Rubin and Rubin's (2012) techniques, I read through the computer transcriptions several times, highlighted emerging themes and concepts, identified potential statements that can later be used to construct meaning. Together the themes, concepts, and statements were weaved together to form a tapestry that answered each of the research questions.

I used non-coercive methods to recruit public elementary school teachers. By contacting teachers individually via email, they were not influenced by the responses of other teachers within their school. I offered a small compensation, a \$10 gift card as a token of appreciation for their time. I gave them the card right before the start of the interview.

Before I conducted this study, I submitted a request to the Institutional Review Board (IRB) at Walden University. The IRB process required that the interviews and research procedures ensured that all human subjects be treated fairly and ethically. This approval was attached to the interview as part of the consent form that the participants agree to sign.

The consent form (see appendix A) included all necessary information regarding the study such as voluntary participation, risk and benefits. If any participant were excluded from participating, their exclusion would be justified based on the consent form and study participation requirements. This did not happen. No participants changed their

mind after agreeing to become a participant nor withdrew from the study for any reason.

The tools that I used to store data collected following the interviews included a data recorder and computer. I used the data recorder to record the interview sessions, and then transcribed the interviews and stored in Microsoft Word. The data storage for both the recorded interviews in Word documents and Excel spreadsheets have been stored in a locked cabinet in my personal home office.

To ensure confidentiality of the participant's personal information, I systematically followed the protocol for securing records including secure data storage with password protection on electronic files and locked for physical data. To protect the participants' identity, I used pseudonyms in place of their real names. Also, I did not include the name of the participants' schools in my study. That information has been stored separately in an Excel file that is password protected on my computer. Also, I sent a copy of a summary of the digitally recorded transcripts to the participants to verify that I've transcribed each interview accurately. There were no changes that the participants asked to make to the transcription, I went back to the original recording to verify it for accuracy.

The participant's participation in this research project was voluntary. I made sure that each participant understood that he or she would not be paid for participating. They were told they could withdraw and discontinue participation at any time without penalty. This was not the case. None of the participants declined to participate or withdraw from the study.

Summary

For this study, my goal was to understand teachers' experiences by examining the barriers and supports that public elementary teachers in the Pacific Northwest encounter when creating and improving outdoor classrooms. In this chapter, I identified the research design for studying outdoor classrooms. Following the literature review as a guide, I outlined the research goals for developing a general understanding for how to teach cross-disciplinary academic subjects most effectively in educational settings that incorporate outdoor classrooms.

Chapter 4: Results

In Chapter 4, I provide a critical analysis of the data that I collected during the interviews. In this study, I collected data from a representative sample of public elementary school teachers with at least 2 years' recent experience teaching in an outdoor classroom who had recent access to an outdoor classroom and had either contributed to creating or improving an outdoor classroom at some point in their career. The purpose of this qualitative study was to understand teachers' experiences by examining the barriers and supports elementary teachers in the Pacific Northwest encounter when creating and improving outdoor classrooms. I conducted this study in a manner that was consistent with the interpretive phenomenological analysis techniques, as guided by Smith (2011) and Smith et al. (2009), to allow other researchers to build upon this study in the future.

This chapter includes the results of an interpretive phenomenological analysis of the perspectives of nine public elementary school teachers. Using procedures described in Chapter 3, I analyzed data collected to formulate results, which have been triangulated to ensure accuracy. All interview transcriptions were member checked. I reviewed the observation notes for accuracy.

The research questions that I examined in the critical analysis included:

1. What barriers do Pacific Northwest public elementary school teachers face when creating and improving outdoor classrooms?
2. What supports, including resources, do Pacific Northwest public elementary school teachers need in the implementation of outdoor classrooms?

3. What do Pacific Northwest public elementary school teachers identify as their motivations for creating outdoor classrooms?
4. In what ways do Pacific Northwest public elementary school teachers use outdoor classrooms to develop ecoliteracy in their students?

This chapter includes the following sections: Data Collection, Participant Profiles, and Setting, Data Collection, Data Analysis, Evidence of Trustworthiness, and Results.

Data Collection, Participant Profiles, and Setting

I interviewed the nine participants in one-on-one meetings that were private in nature so that confidentiality was maintained. There were no visible distractions during the interviews, as I conducted five of the nine interviews in private study rooms at a public library of the participants' choosing. I conducted four of the nine interviews via a Skype call in the privacy of the participants' homes. The participants chose all interview locations, as there were no comments or concerns during the interviews about the setting choice. I did not witness any visible distractions that could have influenced the results of this study. Only one of the interviews needed to be rescheduled, as the participant had forgotten about the in-person meeting. Due to the scheduling change, I requested that we meet via a Skype call, and the participant fully agreed that it would be acceptable by her.

Nine participants agreed to participate in this study and arrived at the appointments on time (one appointment had to be rescheduled and was completed the next day). All the participants were willing to take part in a 60-minute interview, and they all commented that they did not mind the time spent.

The recruitment procedure consisted of me obtaining publicly available email addresses of elementary school teachers who at the time of this study worked at schools identified as “green schools” through the organization’s public website. I sent a participant invitation letter to 22 schools throughout the state. Of the 12 teachers who responded, I was able to select nine public elementary school teachers who met my criteria of having taught in an outdoor classroom for at least 2 years, who had recent access to an outdoor classroom, and had contributed to creating or improving an outdoor classroom. I followed up with an email message that contained the formal consent form. I did not consider gender as a factor in the recruitment process. Six females and three males committed to participating in the study, as well as agreed to complete member checking of the interpretation of their responses. They were all licensed teachers in the state at the time of the study and employed at nine different elementary schools. I categorized the schools as two rural, three suburban, and four urban settings. I verified each participant’s employment by looking on the school district’s websites.

The participants for this study were nine career teachers from a range of public elementary school settings throughout one state in the Pacific Northwest region of the United States. Each participant met my criteria of having taught in an elementary school using an outdoor classroom for at least 2 years, who had recent access to an outdoor classroom, and had contributed to creating or improving an outdoor classroom.

Of the nine teachers who participated, four were from rural, three were from suburban, and two were from urban areas. Eight of the teachers had been in their current position for at least 4 years, and 1 had recently transferred from a suburban district to an

urban one. Table 1 displays the participants' profiles, followed by brief descriptions that introduce their background and motivation for teaching using outdoor classrooms.

Throughout the remainder of this study, I will use pseudonyms when discussing the teacher participants.

Table 1

Participant Profiles Based on Gender, Current Position, and Demographic

Participant pseudonym	Gender	Current position	Demographic
Arthur	Male	Garden resource teacher	Urban
Dana	Female	5th- and 6th-grade teacher	Suburban
Karen	Female	kindergarten teacher	Suburban
Lucia	Female	5th-grade teacher	Urban
Lola	Female	Early childhood teacher	Rural
Mary	Female	3rd-grade teacher	Urban
Pablo	Male	Math resource teacher	Suburban
Tessa	Female	Garden resource teacher	Urban
Thomas	Male	6th-grade science teacher	Rural

Arthur is a garden resource teacher at an urban school for the largest school district in the state. Before he became a certified teacher 9 years ago, he worked with environmental programs that included a wildlife sanctuary in Florida. He led education programs for 4 years, that include programs for children. He has been teaching as the school's only garden enrichment educator for the past 3 years, after teaching third grade for 5 years prior to his current at the same school.

Dana has been an elementary school teacher for 19 years. Most recently she has been a fifth- and sixth-grade teacher at a suburban school that has a looping policy, so that she has students for 2 years at a time. Her school district, which is the second most culturally and racially diverse in the state, hired a new superintendent 2 years ago, who has cut many of the district's environmental programs. Prior to this change, 8 years ago Dana helped create their first outdoor classroom that gained recognition as a recipient of a national award.

Karen has more than 28 years' experience as an elementary school teacher. For the past several years, she has been teaching kindergarten at a suburban school in the northwest part of the state. She accepted the position at her current elementary school because there was a forested wooded area that is located on the school property. After being inspired by listening to a National Public Radio (NPR) news report on outdoor classrooms in Vermont, she aspired to be the first teacher to create an outdoor classroom at her current school.

Lucia teaches fifth grade at an urban elementary school in the western part of the state. Recently she left a position teaching at an elementary school that had developed an academy for sustainable environments that she helped create from the ground up. Prior to leaving that position, her district, which is the second most culturally and racially diverse in the state, hired a new superintendent two years ago, who has cut many of the district's environmental programs. Because of these cuts, Lucia decided to move to a new district, and now teaches fifth grade in the third largest district in the state. In her new position, she has agreed to spend her first year mostly "observing" as advised to do by her

principle, but on her own time, she is making plans to improve the outdoor classroom at her current school starting this fall, when she'll be starting her second year at her new school.

Lola has been teaching early childhood education in this island school district for the past 6 years. The rural district is small, containing one elementary school, one middle school, and one high school. Located in the middle of the three schools is a well-established outdoor classroom that includes a garden, a pond, woods, and forest trails. Although the outdoor classroom was created long before she began teaching at the elementary school, she finds herself drawn to taking her classroom outside each and every school day.

Mary has been teaching third grade at an urban school for the largest school district in the state for the past 6 years. Prior to coming to her current school, she taught third grade at a nearby urban school that has a well-established outdoor classroom that she was instrumental in creating. For the past 6 years, Mary has been working with the school district to establish an outdoor classroom at her current school. Finally, two years ago, the district finished rebuilding her school from the ground up, and since then she's been able to slowly develop an outdoor classroom that is a fraction of the size of the one she created at her previous school.

Pablo is a math resource teacher at a suburban district in the northwest part of the state. For the past 6 years, he has been teaching students in grades K-6, as he is the Title 1 math resource teacher for the entire school, which means his position is funded by the federal government to help students who struggle in math. He has created an outdoor

classroom in response to his observation that children, particularly those students who struggle with traditional learning methods, find academic success learning math outdoors. He develops all his own outdoor curriculum and teaches other teachers about his unique methods at conferences and workshops all over the country.

Tessa is a garden resource teacher at an urban school for the largest school district in the state. She has been teaching all children at her K-5 school for the past 4 years. Prior to becoming a certified teacher, she got a job working through AmeriCorps for an environmental education council. In her first environmental education position, which began over 10 years ago, she visited schools all around her current district to plan and organize habitat restoration projects with many different classrooms at a variety of schools. One of those schools she worked with was her current school, so she has been involved with creating and maintaining the outdoor classroom for the past 9 years.

Thomas has been teaching sixth-grade science in this remote school district for the past 10 years. The rural district is small, containing one elementary school, one middle school, and one high school. Located in the middle of the three schools is a well-established outdoor classroom that includes a garden, a river running through it with close public access to hundreds of acres of woods and forest trails. During his experience as an undergraduate student, Thomas worked through AmeriCorps for a rural island community environmental education program.

All participants' contact with children was in a blended indoor/outdoor classroom environment with access to adequate outdoor spaces, such as a school garden or other natural space. One participant, who was a teacher in the most remote part of the state,

reported that he worked in a district that was considered to be fully supportive of outdoor education with unlimited funding available for whatever he needed to do his job effectively. All other participants did make comments that pertained to their districts having less commitment to funding science and environmental education, as well as outdoor classrooms.

I collected data from nine participants during a 6-week period. I identified locations throughout the Pacific Northwest region and school demographics to locate potential participant schools that qualified as a green school. Prior to the start of data collection, I created a table identifying schools on the Green Schools website and the state Green Ribbon schools' website. I sent email invitations using Mail Chimp, email distribution Software as a Service (SaaS) to teacher email addresses at 22 schools located throughout the state, which I accessed using online public-school directories that contained teacher names and email addresses. I then sent a single follow up email to the 22 schools again after completing four interviews, as at least four more participants were needed to complete my interviews. After four weeks, I still needed a few more participants, so I used snowball sampling by asking three environmental education leaders who I knew had connections with schools that had outdoor classrooms. In an email request, I asked if they knew of any teachers who might be interested in being participants in my study. First, was the program coordinator of Green Schools, the second was the director of a local school district's school garden program, and the third was one of my professors who I knew had contact with a school near her rural hometown that had an outdoor garden and forested area with trails utilized by a local public elementary

school. After six weeks, I stopped soliciting participants, because I reached the saturation point. I felt confident that the study included an adequate sample size and deemed it unlikely that interviewing additional teachers would provide any significant data beyond what had already been collected Lichtman (2013).

I collected data from one-on-one interviews as planned using audio-recordings that were completed with nine teachers. Five interviews were conducted at public libraries, and 4 were conducted over Skype audio calls. Before each interview, I sent each participant an email with the official consent form along with a confirmation of the interview date, time, and location. Hard copies of the signed consent form for those participants whom I interviewed in person are securely stored, and verbal consent recordings have been stored in digital audio files for those participants who I interviewed over Skype.

Each participant had access to my phone number via the initial request for participant email, which included an invitation to talk on the phone before the interview, to answer any questions they had prior to the interview. Lucia did request a phone call, so I did phone her to discuss the purpose of the study and gain rapport. At the end of the phone call, she agreed to be a participant. There was no other preliminary communication with the other participants other than the coordination of meeting times and days. Each participant agreed to the terms of the consent form prior to the beginning of the interview, which lasted approximately 1 hour each. I recorded all interviews using a digital voice recorder app on my cell phone, and the audio files were saved as .MP3 files. I transcribed the interviews using Dragon software. After the auto-transcription occurred, I compared

the digital audio recording with the transcription to make sure that the typed words matched verbatim what was spoken by each participant. After all interviews were completed, recorded, and transcribed, the total number of single-spaced pages generated equaled 74 pages of raw data. I reviewed each transcript for accuracy and compared to each of the voice recordings. All transcripts required a minimal number of corrections that were fixed as I listened to each recording for a second time.

During the interviews, I asked each of the participants the same 20 interview questions. I investigated and discussed each of the four research questions using a recursive process. I did this by asking each participant the interview questions and some of the “possible probes” (see Appendix C). As the only researcher of this study, I was successful at interviewing using an inductive approach, as described by Smith et al. (2009) as the way in which the researcher is always looking for emergent patterns, so that I could build on each of the participants’ responses to the interview questions. I used active listening techniques that I acquired from working as a coach and educator in my career as a parent coach, teacher, and preschool director. During the interviews, I encouraged a rich and deep conversation by using active listening and probing techniques (Rubin & Rubin, 2012). At the end of each interview, I informed the participants that I would send them a copy of the transcription and asked them to conduct member checking. I also asked if they had any questions or information regarding this study, and if so they could contact me via phone or email. The only response came from Dana, who sent me a link to a website about a school she’d suggested I consider including in my study. It was a good match, and I was able to contact one of the teachers at the school

Dana recommended and set up and interview with Thomas. This fit within the guidelines for the snowball sampling method described in my research design.

Data Analysis

I used Microsoft Word, Excel, and Atlas.ti Software to code the transcripts. Interview transcripts were combined into one master project. Data were coded separately into each of the four research questions, and codes were broken into categories and frequency reports were run on each question to separate the data based on the research question.

As described by Smith et al. (2009), I used an inductive approach by creating open and axial codes to identify themes that emerged from the data. The data analysis from the interview transcripts was an inductive process and the results contributed to the conclusions of this study, which are detailed in chapter 5.

The following steps were used to analyze the data from the interviews:

1. “Provisional coding took place to sort the data into 5 codes” (Saldaña, 2013, p. 144).
2. “Subcodes using categories and subcategories were determined” (Saldaña, 2013, p. 13).
3. An inductive approach took place during a “process of developing emergent themes” (Smith et al., 2009, p. 91).

I coded the supports and barriers to align with each theme and compared the most frequent supports and barriers based on the degree of implementation as identified in the

data. I also used codes and categories to identify key themes and patterns in the data.

Lastly, I analyzed the data in accordance with each of the research questions.

Coding Process and Subcodes

I followed the first cycle coding process that Saldaña (2013) suggested and used “lean coding” as a provisional coding method. Using Atlas.ti, I then entered these provisional codes which were derived directly from the participants’ words in the transcripts. Codes were then sorted into categories and hierarchical themes, with subcategories that identified associated concepts. Eight broad themes emerged from my analysis. The following table displays the 52 codes used in the data analysis.

Table 2

Codes Used in Data Analysis

Code	Code
Academic standards	Native American
Administration	NGSS
Barrier	Outdoor classroom
Behavior	Outdoor learning
Budget	Parents
Common core	Passion and excitement
Community	Principal
Counselor	Professional development
County	PTA
Curriculum	Rural
Discovery	Safety issues
District	Science
Ecoliteracy	Self-efficacy
Environmental	Social emotional learning
ELL	Special education
Experience based	State level
Financial	STEM
Frustration	Stewardship
Funding	Suburban
Garden	Support
Grant	Sustainability
Green schools	Testing
Integrated learning	Time outdoors
Leadership	Time
Maintenance	Urban
National level	Weather

From the 52 codes, I grouped the codes into categories and subcategories, which are included in the following list:

- Standards
 - Academic standards, science, Common core, NGSS
- Leadership

- Principal, District, Parents, State level, National level, Native American
- Barriers
 - Time, Funding, Administration, Self-efficacy, Testing, Weather, Maintenance, Safety issues, Budget, District, Financial, Frustration
- Supports
 - Principal, PTA, Counselor, School district, Administration, Parents, Curriculum, Professional development, Grant, Community, Academic standards, County, District, Green schools
- Ecoliteracy
 - STEM, Integrated learning, Curriculum, Discovery, Experience based, Passion and excitement, Environmental, Sustainability, Time outdoors
- Benefits of outdoor learning
 - Social emotional learning, Behavior, Experience based, Special education, Science, Integrated learning, Time Outdoors, Stewardship, ELL
- Outdoor classroom
 - Community, Sustainability, Curriculum, Discovery, Ecoliteracy, Environmental, Experience based, Garden, Integrated learning, Outdoor learning, Science, Stewardship, Time outdoor, Weather
- Green schools
 - Rural, Suburban, Urban

Emergent Themes

Emergent themes surfaced by examining the codes, categories, and sub-categories. In this section, I discuss the themes and concepts that I developed through analysis of the data. Each hierarchal theme had several significant key concepts, some that were interrelated. I performed an item by item comparison to find the emerging themes. For example, “testing” was listed as a subcategory for eight of the nine participants. This allowed me to go back through each of the transcripts and read about how the participants viewed testing as having an impact on their outdoor classroom. Overall the theme that emerged was involving a reduction of district-level and school support due to an increase in pacing requirements and standardized testing.

The table below identifies four emergent themes and their corresponding key concepts and subconcepts. A narrative follows in this section, defining each theme, associated concepts and interrelationships, and cites individual responses to reveal participants’ perceptions considering outdoor classrooms.

Table 3

Emerging Themes, Concepts, and Subconcepts

No.	Theme	Concept	Subconcepts
1	Increased academic rigor	Changes in district- and school-level support due to an increase of pacing requirements, academic standards, and standardized testing	<ul style="list-style-type: none"> • Each year is increasingly difficult for teachers to take their children outside to utilize the outdoor classroom, esp. in the spring, when the weather is most conducive to outdoor learning • Teachers in all demographics (urban, suburban, and rural) are

2	Frequency of changes to district budgets and policies	Teachers with school-wide support in urban districts have more access to PTA funding and other supports than teachers in suburban districts	<p>facing increased pressure from district and state standardized testing requirements</p> <ul style="list-style-type: none"> • District requirement to teach according to “pacing guide” and highly-structured schedules • Barriers that teachers face in urban districts are different than those teachers who have school-wide support for the outdoor classroom as compared to suburban teachers without that support • Suburban classroom teachers with less school-wide support have more barriers related to basic supply needs • Frequent changes to district budgets, policies, and curriculum impact teacher’s ability to take children outside • Re-justification of outdoor classrooms each year affects mostly the urban and suburban schools • Changing district curriculum every 2-3 years causes a ripple effect throughout the schools in terms of having to re-justify their environmental programs annually, even when substantial student achievement increases have occurred
		Teachers having to re-justify the existence of their outdoor classrooms every year	
3	Demographic differences regarding barriers and supports	Teachers at rural schools with outdoor classroom features beyond garden-only get ongoing support at the school, district, and community level	<ul style="list-style-type: none"> • Rural schools had more well-established outdoor classrooms in use with unlimited access to hundreds of acres of woods, ponds, wetlands, trails, rivers, gardens, and farm-to-classroom gardens • Rural areas have more reliable school levies to create

Teachers with less school- and district-wide support act as a “lone wolf” and therefore struggle to gain support

In schools, regardless whether urban, suburban, and rural, weather is a barrier that is specific to the Pacific Northwest region

4 Passion for teaching Teachers’ level of motivation is reflected in their passion

consistent and ongoing financial support

- Rural schools have outdoor education highly embedded in their community culture
- Rural communities are typically closer to nature, in terms of social and economic activities
- Teachers with school-wide support in urban districts have more access to supports and PTA funding than “lone wolf” teachers in suburban districts
- Barriers that “lone wolf” classroom teachers have are more related to basic supply needs
- Other teachers in schools with non-school-wide support don’t “get” what the lone wolf teachers do in outdoor classrooms
- Most teachers mentioned how weather can alter their plans to use the outdoor classroom, leading to time as a barrier to going outside
- Unforeseen barrier related to fear of upsetting the maintenance/custodial workers
- Most teachers didn’t have supports in place for how to better deal with weather constraints
 - Cost of boots, weather appropriate clothing, ways to clean off mud before entering classroom are barriers
- Teachers would like more covered spaces outdoors
- Teachers had childhood experiences in the outdoors that

ecoliteracy	<p>about teaching ecoliteracy using outdoor classrooms</p> <p>Teachers make little distinction between their passion for and educational value of their outdoor classroom, regardless of size, type of features, or location</p> <p>Integrated learning experiences relate to students' ability to develop ecoliteracy, environmental awareness, and an increased sense of community and overall well-being</p>	<p>were memorable and positive</p> <ul style="list-style-type: none"> • Teacher preparation prior to becoming a teacher include AmeriCorps and other college-based learning opportunities • All teachers, regardless of what their outdoor classroom looked like, in terms of size, number of areas, features, etc., had a passion for their outdoor classroom <ul style="list-style-type: none"> • Lots of experiences with students developing stewardship after being exposed to outdoor classrooms • Ecoliteracy as a vehicle for connecting integrated reading, writing and math curriculum more effectively • Positive impact on student achievement, especially for students with behavior issues and special needs • Ecoliteracy enables connection of social-emotional learning, ecoliteracy, and student's sense of well-being
-------------	---	---

Discrepant Cases

I did not find evidence of specific discrepant cases. For this study, no discrepant cases, or responses that were unique or outside of the context of what I expected to encounter, occurred. This is likely due to the homogeneous group of teachers who participated and their responses to the interview questions. Although the opinions expressed by the participants were not all equal in their expression, I was able to make connections necessary to identify themes from the analysis of the participants'

individualized lived experiences. The topic of outdoor classrooms was familiar to all participants, and therefore they each described their programs and outdoor spaces, forming an example of a consensus. Even though each participant described their outdoor classroom as having unique characteristics, all the participants were able to clearly conceptualize their outdoor spaces to be defined as an outdoor classroom as they understood it to be. As major themes emerged concerning the barriers and supports involved with creating and maintaining outdoor classrooms, I discovered an overall consistency among all participants' responses.

Results

The data generated from the interview questions was demonstrative of deep discussions, which enabled me to establish clear themes that I discuss in this chapter. Upon further analyzing the data and emerging themes, I was able to draw relevant conclusions and make recommendations as delineated in Chapter 5 of this study. I identified four emergent themes from the data analysis. This section details the themes that emerged from the most pertinent data in the interviews. The description of results reflects the frequency and relevance of the participants' responses. The approach that I took in creating the interview questions was consistent with the interpretive phenomenological analysis techniques, as guided by Smith (2011) and Smith et al. (2009). By delving deeply and intrinsically into the topic of outdoor classrooms, participants had ample opportunities to express their experiences regarding barriers and supports when it comes to creating and maintaining outdoor classrooms.

Theme 1: Increased Academic Rigor

Changes in district- and school-level support due to an increase of academic standards, pacing requirements, and standardized testing. Seven of the nine participants mentioned one barrier to outdoor learning is having to reduce the time that they spend in their outdoor classroom due to an increase in academic standards, pacing requirements, and standardized testing. When I asked Karen “What are some things that make it difficult to carry out your design ideas/plans of what you want your outdoor classroom to become?” she said:

Not enough time outside. It helps the kids to be outside, as they have stresses and being outside gives them a sense of calm, especially the kindergarteners. Where they now have to sit for longer periods and write. And there is math that they need to be able to write three sentences by the end of kindergarten, and an opinion piece and information piece, and pass this reading test, and know forty sight words. Especially when the parents don't even look at the report cards or the test scores in kindergarten. All that really matters is if a student ends the year with perseverance, confidence, and initiative.

All participants discussed how they see some benefits to academic standards and think that they are important, but six of the nine participants complained about the increased rigor in teaching to the standards, as well as standardized testing. When asked the question, “Please share an example or two about how the 2013 changes to the state environmental education standards has applied directly to how you teach ecological literacy?” only one participant knew about this change to the state's standards. Five of the

nine participants responded that their schools are integrating the Next Generation Science Standards, or NGSS (National Research Council, 2013), which I discuss in more detail in Chapter 5. These new nation-wide standards are connected with Science, Technology, Engineering, and Math (STEM) education. Four of the five participants who mentioned NGSS also discussed how STEM has positively impacted their outdoor classrooms. One participant was not so positive about the exclusivity of STEM.

Dana had the opinion that *all* schools should have STEM funding. When asked the question, “Is there anything else you’d like to add before we conclude this interview?” she said:

Our mission was to get other schools on board with our STEM project, and we did! We succeeded with the district and community efforts. If the leaders in our district would stop long enough to look around see what is happening in the state’s biggest district, to see that kids can learn at a remarkably high level using green technologies. This will create leaders for the future and really prepare kids for the 21st century jobs and for the jobs that don't exist yet. We should be doing STEM and green schools everywhere! I guess that's the big question. The best future for our students and scholars should be in outdoor education.

Environmental sustainable practices should be in all schools, not just in STEM schools.

Dana was the most vocal about her dislike of pacing requirements, which she stated her district now institutes “pacing guides”, which are instructions for teachers to be facilitating a pre-specified lesson at a pre-specified time on a pre-specified day. Below is

When asked the question: “What are some things that make it difficult to carry out your design ideas/plans of what you want your outdoor classroom to become?” Dana said:

The district gives you reasons you can't take your classroom outdoors. They're all about the standards, and in order to keep pace with them, you can't afford to take one day here and one more day there to take your classroom outside. They say what you should be doing is to not get behind on the pacing guide. If there is one day that you're not doing what everybody else is doing in the pacing guide. I very much agree with having standards, but to our district science standards are the least important ones.

Two of the seven participants listed standardized testing as a barrier to implementing their outdoor classrooms. They both mentioned the fact that spring is the best time to get children outside, especially given the Northwest region of the U.S. often has harsh winter weather conditions. So as soon as teachers have an opportunity to overcome a barrier due to weather, they're hit with another barrier, two weeks of standardized state testing in the spring. When I asked Thomas the question, “How do feel about the amount of time you and your students are spending outdoors?” he replied:

I feel it's adequate, but I would love to do more in the spring. One of the barriers is about the state testing. In the spring it goes on for a couple of weeks. Why do it during the time of year when in the spring the mornings are some of the best days to go outside. But when they do the testing in the mornings, students are pretty wiped out after the testing, so it prevents us from going anywhere beyond where we can walk in a short distance in the afternoon.

When I asked Arthur the question, “What types of barriers have you experienced when implementing an outdoor classroom?” he replied:

From the time that I’ve been a classroom teacher, the barriers have to do with how much we have to teach. In general, even though I like to get outside as much as possible, we have so many standards to cover. We have this much reading to cover, math to cover, and the sciences get pushed to the back because as a district we have a lot less funding in science over the years. We have a lot fewer reasons to outside because of this, and the timeframe makes it really tough. When there was testing in the spring, unfortunately it’s during that time when there is good weather and it’s the best time to go outside. Science is getting less attention, and I know that they don’t test science until kids get into 5th grade, so a lot of schools will put it off and then backload it in 4th and 5th grade. They’re testing kindergarteners now in reading and math, and they didn’t used to. The testing, there has been an increase for years and years. The expectations of testing and having to teach to the test has a big impact.

Theme 2: Frequency of Changes to District Budgets and Policies

Teachers with school-wide support in urban districts have more access to PTA funding and other supports than teachers in suburban districts. Three of the four participants who teach in urban schools work for the largest school district in the state. All 3 of those participants had similar responses in terms of their district- and school-level support, which made logical sense because they all teach at schools in the same district. These three teachers, Mary, Arthur, and Tessa all mentioned barriers

related to the complexity of the district-level approval process for making purchases for their outdoor classroom. Much of the delay in the approval process had to do with ongoing policy changes. They also indicated that their access to PTA funding for purchases was not as much of a barrier as the approval process itself. In all three interviews, these participants discussed their likes and dislikes of the bureaucratic manner in which they're required to submit requests for improvements to their outdoor classroom.

When asked the question, "What are some things that make it difficult to carry out your design ideas/plans of what you want your outdoor classroom to become?" Tessa said:

The district can add constraints to make it difficult to be successful. It being a big urban district, because it's big and there are only two folks serving a large number of schools and they have a large number of projects to approve. It's difficult for us to communicate effectively with them when we all have a limited amount of time. Things can snowball out of control and make it very difficult to complete the project on time. There are only two people for the entire district. They're in charge of a wide variety of projects. All of our district's outdoor classrooms are funded by PTAs. Basically, those two have to approve anything that a school's PTA is funding. They make sure it's all above board. I know one school where the parents wanted to create a "little free library" stand to set up in the front of the school. Something so simple like this can take a long time. I spoke to one of the parents who was frustrated because all they were asking for is to have a few free

books available to people by the curb. The more I work with the district the more I've come to understand that new rules are created every year because, for example something bad happens at one school, and in some cases, parents have threatened sued the district. Their rules are usually related to minimizing litigation risks for the district.

Funding was more of a major barrier for the three of the nine participants who teach at schools in suburban districts. Although they each have their principal's support for their outdoor classroom, there is little school-wide support resulting in less PTA funds accessible to them. This means they maintain their outdoor classrooms on a shoestring budget, and in all three cases there was little discussion of asking their school's PTA for funds to aid in the expansion projects for their outdoor classrooms. In the case of Dana, Karen, and Pablo, these three participants all talked about how they spent their own personal money on supplies and materials for their outdoor classroom. Pablo said he regularly purchased paint for his "number and geometry patches". He said that if he needed paint and brushes to create his number grids, for example, most of the time that money comes out of his pocket. Karen expressed that one of her shortcomings as a teacher was asking the PTA for money.

When asked the question, "What would you say is your biggest problem that you currently face, whether it be a problem with people, resources, facilities, etc.?" Karen said:

I could have the students do more writing outside, because I could have them bring these sit-upons that we had in girl scouts. I want to make them, but I don't

know who I would ask to pay for them. I hate to ask the parents, because I used to teach at a title school that had no PTA budget. But here at this school, we have PTA has money for the school, but I don't feel comfortable asking them. What your PTA can do financially makes a huge difference. I have to get over asking because it is a public education, and we already ask the parents to give us school supplies, like crayons and folders. If I had the sit-upons, I could take the children outside more, and have them write on clipboards. They just love to write using clipboards. I asked my husband to make a canopy outside, so we can go outside when it's raining.

Karen also expanded on the reason it is so difficult to her to go to her PTA to ask for funding. When I asked her the question about what resources, such as grants or other professional development have you heard about that you want to try or explore further, I also asked a follow-up question "Do you feel like you have to do so much on your own to provide things that should be available for your outdoor classroom?" Karen said:

It's a catch 22. Because if I can be honest, I think outdoor classrooms should be provided as part of basic education. The school did not pay for our playground because it is not considered basic ed. The PTA provided the playground and fortunately we had a wealthy PTA that at the time and were able to afford it. But I think outdoor classrooms are essential to basic ed. But I also think that the students at our school have a lot of things they have to overcome. Our social worker is over-worked. If we could have the PTA fund another ½ time social worker and a full-time nurse because we now have 777 kids. There are greater

needs unfortunately. So, if all of those social and health needs of our students were met, then perhaps I could say that the outdoor classroom is essential.

Teachers having to re-justify the existence of their outdoor classrooms every year. The participants who discussed annual district budget cuts for their programs were all from urban and suburban districts. The only two participants from rural schools, Lola and Thomas, pointed out their districts' full support of their outdoor classrooms and expansion of their environmental programs beyond their outdoor classrooms to include their entire communities. For the other 7 participants, there was an overall theme that school districts budgets were renewed each year, and every year they experienced having to justify the importance of their outdoor classrooms, even in cases where their students were showing academic performance improvements. This barrier was perhaps the largest barrier for most the participants. When asked the question, "What would you say is your biggest problem that you currently face, whether it be a problem with people, resources, facilities, etc.?" Dana said:

The biggest problem is trying to convince the district every year by having some kind of compelling way to show them that students who have access to the outdoors and have access to nature-based and environmental programs statistically shows, in the research that I have seen, that students have better test scores, better overall academic standing than those who do not have access to outdoor learning. So, I trying to convince them that, yes there really is a way for us to have high academic standards, which is what the district is all about, and have progress and growth and still go outside and do learning outside. They're not

losing, the district can actually gain. Instead they try all these multibillion-dollar academic programs that they have invested additional millions in the training and resource after resource, but our kids still aren't making enough gains. What I would like to see go away is the obstacle to letting them see that there is success and greater benefits for students' academic achievement, and the overall wellness of our students by having access to outdoor environmental education. Today they don't see the value. Some of them at the district have the attitude of don't bother me with that, because we're doing academic program right now. They've got their blinders on and they've been charged with a mission. And their mission is: We are going to show growth no matter how we do it, by going to get growth with this program that we've invested millions of dollars into. And then the teacher training is all about the new curriculum, and that is all they focus on instead of there being supports for our outdoor classrooms.

Theme 3: Demographic Differences Regarding Barriers and Supports

Teachers at rural schools with outdoor classroom features beyond garden-only get ongoing support at the school, district, and community level. The two participants from rural schools have had well-established outdoor classrooms that were developed long before they were teaching there. In these rural examples, the participants discussed how their school districts have long supported outdoor classrooms and programs because nature and environmental learning is deeply embedded in the communities in which they live. When asking participants to talk a little about how they created their outdoor classroom, Lola said:

I'm fortunate that we have designated spaces at our school. The adjunct property has woods that contains trails. And there is a water reservoir and outdoor spaces with circular benches made of logs. And the outdoor classroom was ready for me. I didn't need to try to create it, but I do need to try to use it.

When I asked Lola a follow-up probing question about how the parents in her community feel about the outdoor classroom, she said:

Being an island resident, there's a large emphasis and awareness on nature. I have this advantage because we're in a rural place. We have lots of farms and animals, and parents know that we are a green school. We have lots of science teachers and support staff who help the parents understand the benefits of being more open and happy that their children are having these experiences beyond the four walls of a traditional classroom.

When asked the two participants from rural schools the question, "What are some things that make it difficult to carry out your design ideas/plans of what you want your outdoor classroom to become?", they both responded that they could not think of anything. Lola responded:

Not at this time. I am very lucky to be in a school district that values outdoor learning. I think this is characteristic of our rural school because this is a way of life here. People are more open-minded and more acquainted with nature. It's very natural for them. When students see a deer sitting on our back lawn, the kids don't get as excited as perhaps urban students would, because they understand that it's a normal thing.

In response to that same question, Thomas said:

The valley is generally pretty liberal and all, so you know there's a lot of support for education here as compared with some nearby districts. We pass our education levies by 60% votes for yes every time. We have a tremendous community of support and that allows for a lot of opportunities that I don't think would be available at certain other districts east of the mountains.

One other aspect of the overall embedded community support found in the rural schools of the participants I interviewed was the sense that all the teachers in their schools and even throughout the district participate in and fully utilize the outdoor classroom. When asked the question, "How do you differ in how you use outdoor classroom compared to your colleagues?" Arthur said:

We're all pretty similar at the elementary level. Every teacher works really hard with other teachers to integrate it. I believe that all the classrooms go to the outdoor classroom. When I was teaching at the high school I would bring out my students because I feel like it was pretty easy to connect science with the garden activities. But I didn't bring out my physics class to the garden because it didn't really connect with what we were working on in class.

And in response to that same question, Lola said:

We have a nature coach on our staff at the school. I'm so fortunate to be part of a school that has the scope to have this resource. She takes all 160 students from the K-6 classes out into the school garden. They grow vegetables and they have an ecology team in charge of recycling. They take the trash and keep the scraps from

all of the school meals into the garden to use as fertilizer. We grow salad greens and for an entire week the vegetables supply the entire three schools in the district for salads at lunch. We have apple trees and we teach the students the life of the apple cycle. We go to the garden, and since I have the students for two years, they get to see the apple blossom in the spring, and in the fall when we harvest the apples and make apple sauce and apple cider out of it. They get excited about it.

Teachers with less school- and district-wide support act as a “lone wolf” and therefore struggle to gain support. In contrast, the three teachers I interviewed from suburban districts seemed to have the least amount of ongoing support at the school, district, and community level. They mostly seemed to operate in their schools as what I call a “lone wolf” or maverick level, mostly acting alone in their implementation of their outdoor classroom. These three participants discussed how many of the school’s parents and even other teachers just didn’t “get it” when it comes to outdoor classrooms. Other teachers had a general attitude that learning happens inside, not outside. At far as a lack of understanding of the value of outdoor classrooms at the suburban school level, these participants discussed how their classrooms eventually became the “catch all” for students with behavior problems. When asked the question, “What types of barriers have you experienced when implementing an outdoor classroom?” Lucia said:

Yes, there are a few. Some came from parents that felt as though their students, if they weren’t sitting in a classroom, they weren’t learning. So, for our environmental program, the parents attitude was that they didn't want them anywhere but in at a desk because that's how they learn. The only barrier students

demonstrated was related to the subject matter. They couldn't differentiate as to whether they were in science or language arts because we chose to integrate the lessons so well. Some projects involved them writing a short story, and yet they were talking and writing about science. Eventually that was actually beneficial for them, but some kids who needed to compartmentalize their learning instead of integrating it all, had some challenges. School-wide barriers were the acceptance of the program. When we started off it was okay, then all of a sudden during the second year into it, it was discovered that it was a wonderful place to be. So, the school began to put difficult students with behavioral issues into our outdoor program. They started looking at it as a resource room, because in the special education room, there was only one teacher who was dealing with the student.

Similarly, Karen has high aspirations for her outdoor classroom at a suburban school that are not likely to get as fulfilled to the degree of the other participants. When asked the question, "How do you feel about the amount of time you and your students are spending outdoors?" Karen said:

I told my principal that I would love to take my kids outside every day. My principal was joking as he said that the poor maintenance person would be overloaded by the amount of planted areas that I would create. I would love to think we could go outside every day, but the curriculum I'd have to figure out how to do it all outside. I've asked my principal in the best possible world I would want to have a door that opens the classroom to the outside, and if I had it open

right there I can be outside in a matter of minutes. I've joked about that several times, but I am very serious about it. But it is not likely to happen.

In schools, regardless whether urban, suburban, and rural, weather is a barrier that is specific to the Pacific Northwest region. Eight of the nine participants mentioned that Pacific Northwest weather can alter their plans to use the outdoor plans leading to time as a barrier to using their outdoor classroom. In this region, there is an average of 35 inches of rain each year. In the eastern part of the state, it regularly snows in the winter, and in some areas covers the ground until the start of spring. Karen mentioned that she asked her husband to build a canopy for her outdoor classroom so that they can go outside when it's raining, so there is a cover and they could stay outdoors longer. When asked the question, "What is your ideal use of an outdoor classroom for your students?" Pablo said:

Being able to stay outdoors all the time. It would be nice to have more covered outdoor spaces, so we could be outdoors longer. Living in our state, sometimes the weather is difficult. Weather dictates a lot of what we do here in the Pacific Northwest.

Three of the nine participants responded that the weather can have an indirect impact on their outdoor program, due to the increased need to keep the maintenance employees happy. Two of the three participants referenced their desire to keep the carpets clean, so that they can stay in good standing with the maintenance employees. Both Karen and Pablo have canceled plans to go outside because they didn't want the children to bring their muddy, wet shoes indoors, in order to avoid soiling the carpets. Although I

didn't ask him a follow-up question, it did give me an opportunity to later ask the question about what barriers Pablo faced by asking the question, "What are some things that make it difficult to carry out your design ideas/plans of what you want your outdoor classroom to become?" Pablo said:

I need more money. I would like to add an indoor math gymnasium, so that even it's a rainy day I could take the kids there, so they could work on all on different kinds of math puzzles, number lines, numbers and different ways for kids to come in and move. If it's a nice day, I'd have my kids outside all day long. Kids learn indoors, but they learn differently outdoors. I'm not saying that one is better than the other.

So, what was interesting to hear from Pablo is that he placed value upon the ability for children to be outdoors, so they could move and engage in kinesthetic activities. For Pablo, his approach to teaching goes beyond the outdoor classroom. He wants his students to be out from behind their desks. Mary on the other hand, had many ideas about how to address the issue of bringing muddy and wet shoes into the classroom.

When I asked the question, "What is your ideal use of an outdoor classroom for your students?" Mary said:

I have this mom who spent around a thousand dollars to get us gloves, trowels, shovels and boot brushes for my kids. That way, before they come back in they won't track mud on the carpets. I've learned that one of the quickest ways to get your garden taken from you is to upset the custodian. So, we went out at any cost, so we have these brushes for them to use. They also wash their hands and I

bought a plastic utility sink. That way they can clean their shoes and wash their hands before they come back into the classroom.

Theme 4: Passion for Teaching Ecoliteracy

Teachers level of motivation is reflected in their passion about teaching ecoliteracy using outdoor classrooms. At the start of the interview I asked the question “How did you first learn about outdoor classrooms?” The idea was to gain an understanding of what life experiences brought the participant to their current role as an environmental educator. Their responses were consistent in that every teacher had a story that involved an experience from their past that involved the outdoors. Some were career-related experiences, while others were personal stories about nature-based experiences from when they were growing up.

Two of the nine participants gained environmental educator experience through AmeriCorps teacher positions directly following graduation from college. Thomas discussed his AmeriCorps experience, during which time he designed programs aimed at increasing student participation. There is a possible correlation with his AmeriCorps experience and his current position, as one of his main goals is to motivate students to participate in science by engaging them in outdoor learning opportunities. As an example of career-related experiences, the response from Thomas was:

My first exposure would have been post undergrad. I worked at a high school as an AmeriCorps member. We taught a bunch of different programs, but their outdoor classroom was memorable because it was pretty amazing. We worked with science-based environmental education programs that they ran. There were

eight or ten members on my team, and they had everyone stationed at a different school. I was at the high school with one other person, and we were designing programs and trying to increase participation in their outdoor education programs.

The next questions I asked him was, “What motivated you to get interested in using an outdoor classroom to teach?” and Thomas replied:

It’s complicated only because we were supported a lot by the administration at the school where I teach now. We’re in an International Baccalaureate district, and so we have a lot of support from the administration to take our students beyond the classroom walls. To me, that's where a lot of like real relevant learning happens for students. So, they can see what we’re doing and how it impacts decisions. For example, one of the units that we do about salmon. We go out and collect data in the natural habitat, and then use that data to determine whether and then we will raise the salmon in our classrooms and use the data. And that eventually gets them excited to learn more about science.

At the point when I asked Thomas to describe his outdoor classroom, he alluded to the fact that his entire community is the outdoor classroom. Thomas said:

Throughout the community the outdoor classroom is the public spaces in our community. Outdoor education is highly valued here. This is really such a special place. We feel incredibly lucky to live here.

When I asked Lola, “What motivated you to get interested in using outdoor classrooms to teach?” she responded:

On a personal level, I was always a visual and kinesthetic learner, and being able to do things and have students move their bodies outside of the classroom made it a personal goal. I wanted to broaden the modalities that students could access to learning. School is great, but it doesn't fit everyone to be inside. Students are changing and the way we access information is changing. It used to be that students would learn from books and it made more sense to be inside. But now with more access to the internet and they learn from electronics, kids are learning differently as well.

All participants demonstrated self-efficacy, more specifically a confidence in teaching, using outdoor classrooms by giving examples of how they have impacted students' lives. To elicit responses that were more emotional in nature, I asked the question, "Please share any special memories, thoughts or feelings about teaching using outdoor classrooms?" A few of the responses included passionate stories about incidents that the teachers hold close to their heart. For example, Dana responded:

A woman came up to me that I recognized as a former student of mine. She said she currently lives in Washington, DC and came out to visit her family. And she was so see me after all these years. She said, "I have to tell you I'm so glad I could see you in person to tell you how camp Thunderbird changed my life". Her family couldn't afford for her to go and I paid for her to go. I remember her. Emotionally she was like just a sponge taking it all the stuff that we learned. That plant identification, the water quality testing, going out to do this four-mile hike and she remembered a waterfall. On the way back to the van to pick us up she was the

only one who walked back with me. She told me that she has two young kids of her own. She said that all the things she learned at camp and experiences she is incorporating with her own family. She takes her family on hikes and vacations just to be near water and trees. It was so beautiful what she shared. She said, “You saved my life!” I had no idea that I had that much of an impact on her all the way through high school and into adulthood.

Teachers make little distinction between their passion for and educational value of their outdoor classroom, regardless of size, type of features, or location.

Because I interviewed all participants in indoor settings, I didn’t have any opportunities to see their outdoor classrooms. Even so, each participant described their outdoor classroom in such great detail that I imagined what each one looks like based on their descriptions. No two outdoor classrooms that the participants described were alike. Participants described them as varying sizes, each with a different set of unique features, including at least one of the following: sheds, green houses, green belts, woods, trails, ponds, streams, rivers, forested trails, meandering paths, arbors, gardens, raised beds, benches, covered areas, rain gardens, wetlands, sidewalks and wildlife crossings, and worm bins.

All the participants demonstrated passion and pride in their outdoor classrooms, as well as a commitment to education in the settings they teach in. All participants were resourceful, citing a broad range of both barriers and supports for their outdoor classrooms. Each teacher cited one or more of the following barriers: administration, district policies, superintendents, academic standards, standardized testing, curriculum,

money, time, weather, parent support, teacher colleague support, and maintenance and custodial support. Each teacher cited one or more of the following supports: grants, professional development, families, parents, districts, principals, district, garden resource teachers, PTAs, PTSAs, corporations, AmeriCorps, environmental-based camps, teacher retreats, curriculum, websites, communities, donations, fundraisers, students and teachers. All nine participants appeared to be extremely passionate about their outdoor classroom, despite current challenges and consistent ongoing changes in district policy and leadership.

Integrated learning experiences relate to students' ability to develop ecoliteracy, environmental awareness, and an increased sense of community and overall well-being. The participants were asked to describe what they noticed about how outdoor experiences have influenced their students' behaviors and attitudes about the outdoors and the natural world. This question was aimed at learning ways in which outdoor learning programs connected with ecoliteracy and social-emotional learning (SEL). In describing their current and past outdoor classroom experiences and relating their success stories, the participants offered examples of the positive effects that these programs had on students. They include possible impacts on students' development of problem-solving, self-regulating emotions, empathy, respect, listening skills, social skills, self-awareness, attentiveness, self-reflection, nature awareness, curiosity, personal responsibility, optimism, focusing, environmental stewardship, nature appreciation, scientific inquiry, ecoliteracy, large- and small- motor skill development, sense of well-being, and confidence. There were numerous implications that these impacts on student's

behavior and attitudes could promote the human development characteristics listed above. In one instance, a participant responded that it was a goal of her outdoor classroom design to promote these attributes.

When asked the question, “What have you noticed about how outdoor experiences have influenced your students' behaviors and attitudes about the outdoors and the natural world?” Mary responded:

I designed an arbor for them to funnel through, because it brings their energy down and makes them more reflective. The students are more able to look at the things around them, as they walk through the meandering path. So, they can't just fly through it. If I did not make the arbor and path, it would be a runway and they would run through it. So, I'm encouraging behavior that I expect outside. It is by design, and so it helps to be thoughtful and clear about your expectations.

In terms of SEL, Tessa was the participant who had the most compelling response in regard to how her outdoor classroom impacts her students, particularly ELL students and students with emotional and behavior related problems. When I asked the question, “Please share any special memories, thoughts or feelings about teaching using outdoor classrooms?” Tessa said:

I had this little girl who was visiting the garden. She has some social emotional challenges. She was having an anxiety attack in the garden, and her teacher was across the garden. I came up to her and I just held her hand and asked her to come walk in the garden with me. She put down her shovel and we had a peaceful walk. It was so wonderful to not have to go get an administrator, and not to push her out

of her learning space. The outdoors helped her access the appropriate self-regulation tool for what she needed to calm down. Then there was this time towards the end of the school year that we were walking towards the greenbelt, which is across the street from the school. I was outside walking with my 4th and 5th graders. We heard an owl calling from the greenbelt. The students all stopped and started signaling each other to be quiet because there was something cool happening. All the active kids, even the boys who are usually being loud, stopped talking. They all just quietly listened while the owl was hooting. When the owl stopped calling, at one point one of the 5th grade boys, who can normally not sit still or be quiet, started calling back to the owl, whooo. All the kids started laughing together. It was a special moment of the students knowing what to do all on their own as stewards of the outdoors. I particularly remember this because none of the teachers had to tell them to be quiet.

When I asked the question, “Please share any special memories, thoughts or feelings about teaching using outdoor classrooms?” Mary said:

One year I had a mom from Somalia come into the classroom with a potato. She showed up and she had a huge yam in her kitchen cabinet, and it had sprouted. She asked if we could plant it in the ground, but we had no idea what would happen if we’d planted it. There are things going on under the ground that you and I assume because it was potato. But we actually did get some yams to harvest from it. It was quite experiment and the kids got so excited about it. This kind of cultural connections that this mom had that courage to bring in. We had so many

students who speak different languages at home, so we had these signs everywhere in different languages. I would go home and write all these different languages that we had to put signs on a bed of squash. The idea was that signage is huge for the garden because you want people to walk in and feel like they're personally invited to do something in the garden. We are open to involving the families, and that is huge for them. I think that this cultural connection and community connections make learning in the outdoor classrooms meaningful for all students and their families, and it should be that way.

All participants responded with multiple examples of how outdoor classrooms had a positive impact on student behaviors. When I asked the question, "What have you noticed about how outdoor experiences have influenced your students' behaviors and attitudes about the outdoors and the natural world?" Pablo responded:

Students are more confident, more engaged. When they're outside moving around, moving their muscles, and near nature, they are free to take more risks. Kids when they're outdoors are more willing to take a risk. They're more willing to engage. When inside they might be quiet and not engaged. And we don't ask them to be quiet outdoors. In traditional classroom kids are encouraged to be quiet. I was told when I first started teaching, that I have the noisiest classroom. There is value when children are talking and amongst themselves, in discourse they learn from each other. That is an education philosophy that is evolving. There are teachers here that still teach from their desks, lecturing, not much student discourse. Being outside, whether you're reading, doing math, social

studies or whatever is better. Teachers benefit from being outdoors too. More apt to be excited and energized. We have a lot of students with different learning styles. Traditional classrooms focus on a limited types of learning style only. If you learn that way, you'll do well, if not, then you're not likely to do as well.

Evidence of Trustworthiness

Credibility is measured by how much a study approaches reality (Merriam & Tisdell, 2016). To approach the reality that teachers who use outdoor classrooms face, I interviewed actual teachers who have had at least two years' experience creating and maintaining outdoor classrooms. My goal in the process was to thoroughly examine the interview responses of each participant. I performed member checking to provide further validation for each participants' responses. Each participant contributed to the emergent themes that I summarized and compiled. Responses came back within two weeks from each of the participants and they were all unconditionally in agreement with their responses as compared to the transcripts.

Transferability is the measure of how study findings can be transferred to other environments (Merriam & Tisdell, 2016). I used a representative sample of nine participants and integrated emerging ideas from teachers to be used as recommendations for further research. The teachers were from public school districts: four urban, three suburban, and two rural. I attempted to analyze the data using specific details from the responses of the participants, so that transferability for each participant's unique background would be provided, as described by Merriam and Tisdell (2016).

Dependability is about the researcher having adequate tracking procedures to examine how the data were collected and interpreted (Lodico, Spaulding, & Voegtle, 2010). I gave detailed explanations of how all data were collected, transcribed, member checked, and analyzed. This completed study and final dissertation were reviewed by my faculty committee members, the IRB, and the Walden University Research Review board.

Confirmability is the ability to have a study reproduced (Miles & Huberman, 1994). This is regarding the handling of researcher biases. I took measures to reduce the risks of my biases affecting this study. Before each interview, I reviewed the list of my possible biases and utilized analysis processes to help maintain my self-awareness during the study. The participants were given ample time and opportunities to reflect upon the interview and member checking processes. Participants offered no additional statements or contradictions. Not one participant contacted me, and none sent me any narratives or questions. The member checking procedure included asking each participant to confirm my initial interpretations of their responses. This was completed after the interviews, and while I was completing the data analyses. Because there were no criticism or comments concerning any portion of the initial categories or codes, I did not find any evidence of researcher bias. I used both inductive and deductive processes to form my interview questions. By remaining aware of my biases throughout the study and having no apparent biases surface between interviews and member checking, I have confirmed a degree of objectivity in the findings.

Summary

This was a qualitative study using interviews and interpretive phenomenological analysis techniques, as guided by Smith (2011) and Smith et al. (2009), to gain information from public elementary school teachers with at least 2 years' recent experience teaching in an outdoor classroom who had recent access to an outdoor classroom and had either contributed to creating or improving an outdoor classroom at some point in their career. The conceptual framework was informed by SEL, ecoliteracy, and teacher self-efficacy based upon participants' practice and experience.

I interviewed nine participants in one-hour interview sessions at quiet locations at public spaces. The interview questions were aimed at gathering data specific to barriers and supports for outdoor classrooms, as well as identify ways in which outdoor classrooms contribute to teaching ecoliteracy and SEL in students. I enhanced the overall quality of this study by using multiple measures: a research log, triangulation of data, transcript review, and member checking were all techniques used in this study to ensure the quality of the data collection and analysis processes. I implemented these techniques appropriately throughout the study. Each measure was specifically chosen to improve the overall general quality of the study.

Research logs served as a bias management tool to record any personal perceptions after each interview throughout the study. Given the nature of my experience and my detailed understanding of the environmental education programs in nearby school districts, combined with my familiarity with the region in which the study was conducted, controlling for personal perception and bias was appropriate. The identification of

personal biases, combined with perceptions of supports or barriers that I personally anticipated, were recorded. Throughout the data analysis process, I referenced a research journal. The reflections in this log served the purpose of preventing personal bias and perception from influencing the study findings.

Levels of data triangulation occurred throughout the study. I used data collection measures from qualified sources. The qualitative nature of the study included journal entries and audio-recorded and transcribed interviews. Throughout the interviews, I aimed to uncover a profound level of understanding in relation to each of the research questions. All data collection methods served to validate the integrity of interview responses. Throughout the data collection process, I used both member-checking and transcript review to influence quality. Member checking was conducted throughout the interview to validate my understanding of the participants' responses and to validate my interpretations of the data.

In Chapter 5 the implications of the findings are organized in the conceptual framework. Interpretations of the finding are accomplished using the interpretive phenomenological analysis format for study. A discussion follows with recommendations for further research on the topic of barriers and supports for participants who teach using outdoor classrooms. Implications for positive social change are summarized in the conclusions.

Chapter 5: Discussion, Conclusions, and Recommendations

The purpose of this qualitative study was to understand public elementary school teachers' experiences by examining the barriers and supports that teachers in the Pacific Northwest encounter when creating and improving outdoor classrooms. By interviewing teachers at nine public school elementary schools (one teacher per school), I aimed to identify the barriers that teachers face and supports that teachers may need during the process of creating and improving outdoor classrooms. Recent research identifies lack of time and resources as the most common barriers to improving environmental literacy in classrooms (Stevenson et al., 2014). I also aimed to identify additional supports and barriers that may have been overlooked in prior research.

The nature of this study related to the qualitative design using in-depth interview questions with interpretive phenomenological analysis techniques, as guided by Smith (2011) and Smith et al. (2009), to gain information from teachers who have expertise in using outdoor classrooms. I specifically aimed to recruit teacher participants with at least 2 years' recent experience teaching using an outdoor classroom, who had recent access to an outdoor classroom and had either contributed to creating or improving an outdoor classroom at some point in their career. By asking in-depth questions and carefully listening to teachers' responses, I sought to establish a partnership that enabled me to extend an objective level of thoroughness to the nature of my study. The qualitative research method that I used in this study provided valuable descriptions of interrelated phenomena and documenting the interpretations of participants' personal experiences, who often have different roles and professional stakes within the setting being studied.

By choosing an interview-based design, I aimed to provide a voice to a diverse range of viewpoints, some of whose views are rarely heard (Rubin & Rubin, 2012).

Considering the participants' responses to the interview questions, the key findings from the nine interviews were:

- The outdoor classrooms discussed in this study vary in size, usage, structure, and number and types of environmental features. The most common feature shared amongst the participants' schools was an outdoor garden.
- Sustainability of outdoor classrooms from year to year relies heavily upon changes to school district policies and budgets.
- There is a need for more supports for outdoor classrooms, such as funding, environmental curriculum, professional development, grant opportunities and adult and staff supervision to ensure safety of students.
- Severe weather is a barrier that heavily impacts outdoor classrooms in the Pacific Northwest region of the United States.
- Teachers of outdoor classrooms experience an increasing pressure on their time and self-efficacy due to increase to standardized testing and district mandated curriculum.
- Teachers who have acted as change agents by developing and practicing improved leadership skills to institute a school-climate shift have demonstrated burn-out at a faster rate than other teachers interviewed.

I analyzed all data from the interviews to develop my overall interpretation of the findings.

Interpretation of the Findings

The conceptual framework for this study was informed by literature around SEL, a benefit of ecoliteracy (Gardener, 2006; Goleman, 1996; Orr, 2004). I aimed to understand how teachers who provide nature-based experiences for their students integrate ecoliteracy principles into their outdoor classrooms. I chose to examine the research problem through the conceptual lens of SEL and ecoliteracy because research shows that teachers who teach using outdoor learning environments, such as outdoor classrooms, are more effective at facilitating a shift from learning that typically occurs indoors to a dedicated portion of each day that is spent outdoors in nature (DiPaola & Tschannen-Moran, 2014).

Recent research shows that nature-based experiences are essential to children's emotional and physical development and contribute to reducing occurrences of attention-based disorders, childhood obesity, and childhood depression (Driessnack, 2009; Ferreira et al., 2012). According to several theorists and researchers, schools and other social institutions should include outdoor learning experiences that allow children to develop strong emotional, social, and ecological intelligences (Burdette & Whitaker, 2005; Gedzune, 2015; Orr, 1992/2004). For this study, the most important aspect for me to focus on was to determine what the barriers and supports are that teachers experience when creating and improving outdoor classrooms in the first place. I surmised that asking questions about motivation would help answer the "why" outdoor classrooms.

Rubin and Rubin (2012) examined the idea of using a conceptual framework for qualitative studies. They stated that researchers must aim to sift through participants'

prior experiences to “build or construct their understanding of the external world” (p. 16) so that they can discover new themes and explanations. My conceptual framework sought to further the understanding of how outdoor education is important for ecoliteracy development. By asking targeted questions to further construct knowledge in this area, I aimed to be more effective at answering this study’s key research questions.

In this section, I present the research findings with comparisons to what I found in the peer-reviewed literature that I discussed in Chapter 2 and additional peer-reviewed literature that I located during the data analysis phase. The four original research questions are used as headings for an interpretative format.

Research Question 1: What barriers do Pacific Northwest public elementary school teachers face when creating and improving outdoor classrooms?

The participants described a wide variety of barriers that they face when creating and improving their outdoor classrooms. Many of the barriers discussed had to do with a lack of time and money needed to effectively teach using outdoor classrooms. According to recent research, major barriers include a lack of: funding (Bohling et al., 2015), instructional time (Carrier et al., 2014; Stevenson et al., 2014), teacher self-efficacy (Moseley et al., 2002), and professional development (Gedzune, 2015). When I analyzed the data from the interviews, I noticed that many participants referred to maintaining their outdoor classrooms, more often than they discussed improving them. The reoccurring theme around maintaining their outdoor classroom had to do with bringing in dirt and compost annually, as well as repairing weathered features, such as benches, and providing new vegetables and flowering plants each spring for the garden beds. The term

improvements used throughout this study ended up being much less used by participants than I originally thought. Arthur summed this up most succinctly when he said, “Over the years we would get a Green Schools grant, but they no longer have that program unfortunately. We would use that money for garden maintenance mostly, for seeds, compost, wood chips, etc. But now I keep the maintenance budget to a minimum, so I don’t over expand over what we can actually accomplish.”

Eight of the nine teachers interviewed had inherited their outdoor classroom because it existed prior to them getting hired at their current school. All participants discussed a wide range of barriers, most of which were in line with the research specific to changes to public school policies related to increased academic rigor in the United States. All participants discussed how these policy changes have contributed to the barrier of a lack of time and money allocated for outdoor classrooms. Stevenson et al. (2014) identified a lack of instructional time as the largest barrier to environment-based instruction (76.7%), followed by a lack of instructional resources (53.4%).

The teachers’ barriers. Collectively, the participants mentioned the following barriers to decrease their ability to effectively teach using their outdoor classroom:

- More pressure from districts to teach and test to the three Rs.
- Having to re-justify the outdoor classroom annually due to ongoing changes at the district- and school-levels (e.g. changes in principal or enrollment).
- Environmental studies/science getting backloaded until fourth and fifth grade.
- Increased state academic testing of the three Rs.
- Lack of nature-based curriculum and professional development.

- District mandates for following pacing guides resulting in tight academic schedules.
- District mandated instructional blocks and ongoing changes to curriculum.
- Exclusive STEM activities that don't involve outdoor classrooms.
- Lack of money for nature-based field trips.
- Completely eliminated funding for overnight camps.
- Discomfort in asking PTA for funding.
- Lack of administrative support around expanding outdoor spaces.
- Lack of basic supplies (tools, safety equipment, weather appropriate gear).
- Lack of supervision to safely take children outside (paid staff and parent volunteers).
- Extreme weather conditions impact their ability to go outside at times.
- Notion from parents and other teachers that children aren't really learning unless they're inside a classroom and sitting at a desk.
- Lack of expansion of outdoor spaces due to need for adding portables or constraints due to administrative approval processes.
- Scheduling and logistics constraints in the higher grades, who need bring in scientists and other experts to teach advanced topics.
- Lack of ability to measure how outdoor experiences impacts students' overall academic performance (how to communicate the benefits to administrators).

The literature. I examined peer-reviewed literature that pertained to barriers for

outdoor educators. The literature for outdoor classrooms at the elementary school level is not as well-researched as other grade levels. An abundant amount of research has been presented regarding outdoor environmental programming for early childhood programs, such as nature-based preschools and forest kindergarten programs. Therefore, this study focused on teachers at public elementary schools because the literature search uncovered a need for more scholarly research specific to elementary school settings, particularly related to children learning in outdoor classrooms (Chawla, 2015). Also, recent research stated that what needs to be further examined is whether the barriers related to creating and improving outdoor classrooms are connected to a needed change in school climate, whereby teachers are adequately supported and empowered to overcome the barriers that they experience when creating and improving outdoor classrooms (DiPaola & Tschannen-Moran, 2014).

Recent research shows there is a need for increased teacher leadership practices to transform the school climate to one that encourages the development of outdoor classrooms (Ardoin, Clark, & Kelsey, 2013). For future studies, research is needed to help teachers gain an understanding of what steps they need to take to facilitate a school climate shift from learning that typically occurs indoors to a dedicated portion of each day that is spent outdoors in nature (Bohn-Gettler & Pellegrini, 2014). Perhaps the largest barrier in creating a sustainable outdoor learning model that would require this transformational shift to occur at the school level is that it adds to the already heavily-taxed school day for teachers in terms of their time.

Suggesting that teachers should have one more thing they need to act on could be adding to the long list of barriers listed in this section. According to (DiPaola & Tschannen-Moran, 2014), a solution for such a transformational shift may include supports that teachers need to improve self-efficacy and teacher leadership skills. Acquiring these skills could help teachers overcome the barriers related to funding, instructional time, and pedagogy in ways that promote more support for their outdoor learning model at the school climate level. Although outside the scope of this study, a shift such as this could possibly redefine the notion that some teachers lack the leadership skills necessary to further the development of their outdoor classrooms.

Research Question 2: What supports, including resources, do Pacific Northwest public elementary school teachers need in the implementation of outdoor classrooms?

The participants described a wide variety of supports that they experienced when creating and improving their outdoor classrooms. Many of the supports that participants discussed had to do with finding creative and unique ways to maintain their outdoor classrooms, due to the challenge of ongoing time, funding, and weather constraints. The two participants I interviewed from rural districts had full district support in terms of gaining access to funding for any project that they submitted for approval. PTAs supported outdoor classrooms more readily in districts that had an overall commitment for environmental programs, although accessing those funds involved a lot of bureaucratic red tape. All participants who discussed improvements to their outdoor classrooms mentioned expansion of trails and making modifications to their existing

outdoor spaces to improve accessibility and safety for students. According to recent research, supports that this study would have likely revealed include designated outdoor classroom time (Louv, 2016), professional development (Bentsen et al., 2013) environmental school climate (DiPaola & Tschannen-Moran, 2014), and a holistic education approach (Lewallen et al., 2015). I think it's important to emphasize that funding is not one of the supports listed above. Further research could seek to identify whether there is a direct relationship between the supports identified above and funding as an interconnected secondary support that happens more readily when one or more of those supports are present.

The participants emphasized the importance of connecting science education in their outdoor classroom curriculum. Four out of nine participants mentioned the Next Generation Science Standards (NGSS) with a tone of excitement in their voices, which could have been an expression of the standards themselves or about the fact that they also mentioned the availability of grant money specific to incorporating the standards. I did not explore this distinction in the interviews, as it was something I noted in my observation logs and didn't make a connection until the data analysis phase.

The teachers' supports. Collectively, the participants mentioned the following supports to increase their ability to effectively teach using their outdoor classroom:

- Garden school network (a regional resource open to the public)
- Local and regional gardening clubs
- Parents and other community members
- Corporations with commitment to sustainability and the environment

- School PTAs
- Green schools and other non-profit organizations
- Principals with commitment to outdoor learning and environmental programming
- Expanded support for science and STEM
- Next Generation Science Standards (NGSS)
- Grants, specifically to help with funding for overnight camping trips
- City and county municipalities
- National associations, such as the National Gardening Association and the National Science Foundation, AmeriCorps
- Teachers' individual experiences in nature growing up
- Local and regional environmental center
- Water and sustainable energy-related utility companies
- District policies and budgets that support outdoor learning programs
- Local universities and colleges
- Native American tribes, especially ones local to the Pacific Northwest
- Curriculum, such as Project Wet, Project Wild, and Project Learning Tree

The literature. I examined peer-reviewed literature that pertained to supports for outdoor educators. Stevenson et al. (2014) stated that the supports that teachers need to overcome those barriers have been studied by researchers with less frequency than the actual barriers have been studied. Specifically, there has been little research conducted

about supports for environmental educators and teachers who are creating and maintaining outdoor classrooms. According to Bybee (2014), the NGSS provide opportunities for teachers to improve environmental science curriculum, teacher development, science assessment tools, accountability measures, and student achievement. Participants who discussed academic standards in general agreed that they are especially critical to increase student achievement. Therefore, it is possible that that new NGSS may have a positive impact on outdoor classrooms and become a significant support in the future. This could particularly become relevant in expanding support for outdoor classrooms because the NGSS call for a moving away from teaching facts to an inquiry-based model where students construct explanations of scientific phenomena using real-world exploratory methods. (Krajcik et al., 2017).

Stevenson et al. (2014) recommended that further research is needed to better identify and understand how teachers might reduce the barriers to creating outdoor classrooms. Upon further review of recent literature, I found that the gap that Stevenson et al. (2014) identified has still yet to be fully addressed. There has been little research conducted about supports that teachers need for creating outdoor classrooms. The implementation of NGSS could potentially fill this gap in the literature.

Research Question 3: What do Pacific Northwest public elementary school teachers identify as their motivations for creating outdoor classrooms?

The aim of the third interview question was to get at the center of why the participants decided to teach using outdoor classrooms in the first place. To gain an understanding of why outdoor and nature-based education is important to this

representative sample, I sought out to add to the literature specific to improving teacher education programs. Therefore, this study could potentially assist in better preparing future teachers who will eventually develop their own outdoor classrooms. Research cited in the literature search exists regarding outdoor classrooms that is specific to environmental programs in elementary schools and outdoor classrooms as they relate to teachers' abilities to teach various subjects, mainly science and ecological literacy (Carrier, et al, 2013). All participants expressed importance in teaching science as an integral part of their outdoor classroom curriculum. Thomas expressed his motivation to teach using outdoor classroom was heavily influenced on his science background. He said, "We take on the role of biologist basically. I believe my background in science allows for a lot of collaboration between professional biologists and wildlife biologists who work for the forest service and fisheries. In the valley you have a lot of their students in our classes. So, we have fairly close contact with them."

All participants stressed the importance of helping students understand how to connect outdoor experiences with improving their ecological literacy, which in turn helps students develop strong emotional, social, and ecological intelligences (Gardner, 2006; Goleman 1996; Orr, 2004). Most participants discussed how they were motivated to get children outside because like Arthur responded, "We're in an urban area, where a lot of these kids don't get to spend much time outside other than during the school day". The teachers interviewed generally responded that they are motivated by their ability to make a positive impact on their students, but not necessary to society as a whole. More research

is needed to determine whether the motivation for teachers who use outdoor classrooms is deeply connected with a desire for making a positive social change.

The teachers. The responses of the teachers about what motivated them to teach using outdoor classrooms were (a) the teachers' administration and/or principal encouraged them because they recognized that the teacher had a passion for outdoor education and an opening became available at the school or district that the teachers were determined to be a good fit for, (b) the teacher was inspired by either an outdoor environmental program that they experienced or discovered outdoor learning by way of news media, educational pedagogy, or environmental education research that led them to become interested in outdoor classrooms, and (c) they themselves have a personal passion for the outdoors, some of whom this enjoyment of the outdoors and spending time nature began during childhood.

The teachers interviewed in this study, regardless of where they got their motivation have what Howard Gardner (2006) classified as a "naturalist" intelligence. Gardner (2006) published the 10-anniversary edition of his ground-breaking Multiple Intelligences (MI) theory, adding the "naturalist intelligence" as the eighth intelligence that all humans possess. Gardner (2006) stated, "Persons with a high degree of naturalist intelligence are keenly aware of how to distinguish the diverse plants, animals, mountains, or cloud configurations in their ecological niche" (p. 19). Karen summarized this intelligence most succinctly when she said "What motivated me is that one of my happiest places is being outside, like when I'm at school just relaxing in the kids. They spend so much time inside on computers, and never outside relaxing and enjoying the

sun. There's too much time inside, and they need to understand that life is more than computers. They need to learn how to garden and weed, and how to understand what different plants are called.”

The participants discussed their motivation to teach using outdoor classrooms in terms of how it impacts their students, as shown through the children's delight and excitement that the teachers witness from day to day, as well as the positive impact on student behavior. The participants shared example upon example regarding the impact of outdoor learning on their students, resulting from them using outdoor classrooms:

- Belief in the importance of getting kids outside daily, rain or shine
- Spend as much time outside with students as possible every day
- Teach students the connection of growing food with healthy nutrition
- Provide outdoor experiences to enable those students who don't learn as well indoors an opportunity to feel successful
- Place value on hands-on learning and the kinesthetic learning style
- Promote self-regulation of emotions that comes from being outdoors
- Witness children getting excited and engaged in learning when they are outside
- Witness children enjoying digging in the dirt and harvesting vegetables
- Teaching them about different plant identification and animal species
- Teaching observation and scientific inquiry as a method of higher learning
- Observe students develop a love of science and ecoliteracy

- Integrate subjects such as reading, writing, math, and social studies
- Gain academic performance and overall academic standing due to environmental programs
- Develop stewardship skills, such as in taking ownership of recycling programs
- Develop outdoor survival skills and independent life skills
- Observe reduced behavior issues and fewer school suspensions
- Observe increased sense of well-being and appreciation for nature
- Prepare children for 21st-century green jobs and jobs that don't exist yet
- Observe children taking increasing risks to develop resilience
- Provide an outlet for them to destress from high-stakes testing as being outside has a calming effect
- Involving students' parents and families, particularly making the non-English speaking parents feel comfortable
- Observe children taking pride in the outdoor activities they're engaged in
- Teaching them how to use shovels, trowels, and other gardening tools

The literature. I examined peer-reviewed literature that pertained to motivation for teachers to use outdoor classrooms. Orr (2004) and Goleman (1996) found that for ecoliteracy to be well integrated into general classrooms, teachers need to be motivated to become adequately trained creating outdoor classrooms for teaching students about nature, sustainability and ecoliteracy. I identified participants who were well trained in creating outdoor programs with the goal of identifying their motivation factors that could

be potentially linked to teaching students about nature, sustainability, and ecoliteracy.

Gedzune (2015) indicated that teacher education should emphasize the necessity of placing respect, responsibility and care at the forefront of human understanding of nature and sustainability. The participants overwhelmingly demonstrated a connection with their motivation to teach using outdoor classrooms with their desire to foster stewardship and an appreciation of nature and ownership in caring for the environment.

During the data analysis phase, there was an indication that teachers' motivation for teaching using outdoor classrooms could be stifled or negatively impacted by situations where barriers far outweighed the supports. The question I produced that requires further research can be related to what point can a teacher, once highly motivated, lose their spark so to speak and develop negativity towards the current education system or worse yet decreased self-efficacy that could eventually lead to burnout. How teachers perceive their own ability to succeed at a specific task is categorized as self-efficacy. All too often, teachers with high environmental knowledge have low outcome expectancy because of the barriers to teaching in outdoor classrooms. Moseley et al. (2002). In the case of teachers who experience an ongoing lack of supports, research indicates that many of these teachers can persist by drawing on personal affect, teacher leadership skills, and motivation to help students develop ecological literacy (Gardener, 2006; Goleman, 1996; Orr, 2004).

Research Question 4: In what ways do Pacific Northwest public elementary school teachers use outdoor classrooms to develop ecoliteracy in their students?

Examining the research problem through the conceptual lens of ecoliteracy is at the foundation of this study. Therefore, this last research question encapsulated all four sub-level questions by addressing the overarching research question: What are Pacific Northwest elementary teachers' perspectives about the barriers that they face and the supports they need when creating and improving outdoor classrooms. DiPaola and Tschannen-Moran, (2014) stated ecoliteracy highly impacts teachers' perspectives of the school environment. Upon analyzing the data, I noticed that overall the participants' interpretations from their experiences were that they viewed their outdoor programs mainly as classrooms where the focus of students' learning comes from science and environmental programming. Although they collectively understood that the outdoor classrooms from which they were involved had positive influences on their children's lives, now and into the future, the participants' responses did not include any mentions of receiving support for their outdoor classrooms in the form of career recognition or compensation for teaching ecoliteracy to their students.

Ecoliteracy, as I defined it in the literature review, is a person who understands ecology, has concerns related to environmental impacts, and has the necessary skills to think about and work toward developing solutions for addressing societal problems (Hollweg et al., 2011). I intentionally left the word 'ecoliteracy' out of my interview questions to extend the participant's interpretation of what happens during learning using outdoor classrooms as broadly as possible. This I felt would give me a deep level of

insight into their perspectives around pedagogy as it applies to outdoor learning. I interpreted the data as words used and body language expressed as an indication of the teachers' level of commitment to their outdoor classrooms. I did this intentionally to gain insight into the connection between the learning that happened using their outdoor classroom and actual ecoliteracy development. But I was surprised to find that none of the teachers ever used the term ecoliteracy when describing their outdoor classrooms nor their curriculum. Only one of the nine participants mentioned the word ecoliteracy, and she only used it while describing a university training that she'd attended. Another participant wasn't completely sure upon its meaning, as he thought it had something to do with literacy in terms of reading and writing. It could be that his teacher training was mainly in science, not environmental studies. This distinction could indicate a potential gap in professional development, which would be a worthy topic for future research.

The teachers' challenges. The participants offered concerns and challenges when working with children to develop ecoliteracy:

- Newer teachers who don't go outside say they don't see how they can find time, because they're over-burdened with all the mandated curriculum
- Not every teacher wants to push the principal or the district to get their classrooms outside
- There's not enough time, so our garden gets super neglected
- Behaviors have escalated and are just horrible right now, because it's winter and we can't get outside as much

- We don't go outside when the kids who have IEPs must get pulled out to go to the resource room; it wouldn't be fair or legal for us to go without them
- There's a sense from some of my colleagues that they think all the kids do is play
- Right now, at our school it's all about the finances, and that's not going to go away
- All the district cares about is whether the test scores go up this year; they need to understand how outdoor learning helps students cement everything that they're learning together so they can remember it for years to come
- It's the district driving decisions about what we do with our outdoor classroom, and it comes from the top down

The teachers' successes. The participants had example after example of how their students successfully demonstrated ecoliteracy as a result of the students' experience in outdoor classrooms. Even though they didn't describe their outdoor classrooms in ways that included the word ecoliteracy, the participants described their intentions of bringing as much of the academics as they can to the outdoors. By creating outdoor classrooms that focus on teaching ecoliteracy, elementary teachers can bring more academics to the outdoors (Carrier et al., 2013).

The participants offered successes when working with children to develop ecoliteracy:

- Provide opportunities to enable those kids who don't learn particularly well indoors

- Having local tribes come and show us how to make twine for baskets
- Children who have behavior problems don't have them when we go outside
- ELL learners can shine outside because they understand natural phenomenon without having to understand the language
- Students get excited and engaged because they can dig in the dirt. They like working with their hands and therefore they learn easier.
- Having a student come back after they became an adult and saying, "you saved my life!" because of the overnight camping trips
- When a slope outside had a runoff problem, the students decided all on their own that they wanted to figure out a way to solve the problem themselves
- The kids are outside everyday working and now it's absolutely beautiful
- The district continues to fund the overnight camps, because they fully believe we can implement the standards when we go to the camps
- Entire districts are getting awarded as Green School districts
- Discovering things that they've never seen before; they now know that lice does not come from the ground
- When we're outside and they find things and they want to know what it is; so, when we go back inside we look it up on the computer
- When they're outside, they're happier content, because there are less restrictions; they have few arguments and no fighting

- When they first dig up potatoes, they have no idea where they came from or how they got there
- There's no other place than outside for that type of conversation
- The conversations kids have while moving wood chips is just priceless
- Some of the kids who live in apartment complexes never have opportunities to be outside except for while they're at school
- We often donate the food we grow to school fundraisers or to the local food bank; children will never forget those experiences
- They're more respectful because they know their place in the environment
- Some new kids were smashing bugs, then after we had a unit on the bug cycle, they learned how hard it is for them to survive; now they are role models to the other children by saying be careful and walking around the bugs
- Nature calms them, and they prefer the large space outside because they need to move around; and they move their bodies to help regulate their emotions
- We have a boy who is severely autistic, and he loves the garden; any time he's starting to spiral downwards, his aide takes him outside and it calms him
- Kids learn to be stewards for the worms and they now pay attention to where they're walking, and the arbor helps them slow down and be more mindful
- A teacher brought her student who was having an anxiety attack to the garden, and she began to walk around while I held her hand; it was wonderful to see her calm down on her own and not have to go to get an administrator

- Local native tribal member comes and show students how he carves canoes and paddles; he teachers the children how to make nets for fishing

Connecting with children in their outdoor classroom on an emotional level was a common thread throughout the interviews. Arthur summed it up perfectly when he said, “It’s their excitement about going outdoors that I will always remember the most”.

The literature. In many cases, teachers’ overall performance in the United States is solely based on students’ academic achievement (Macklem, 2014). Although important, by only focusing on academic achievement to measure students’ success, our society is short-changing students by not considering the importance of ecoliteracy in their overall school experiences (Chawla, 2015; Sadlowski, 2011). Especially as children move toward adulthood, they should have already developed intellectual skills for making complex decisions, such as those necessary for developing ecological literacy (Carrier et al., 2014). It is not only intellectual skills that are important for developing ecoliteracy, but it is also extremely important to enable in children the capability to develop socio-emotional skills, as has been indicated by the participants’ responses in this study. Malone (2008) showed that a lack of exposure to outdoor environments has “long-term implications for children’s future development, health, and well-being” (p. 5). As study participant Karen summed up, “Perhaps it’s smarter to get kids outdoors, as it is what kids need to counterbalance all the stress and anxiety they’re having with the state testing right now. Which you don’t have to do much to convince the parents, as they don’t pay attention to test scores in kindergarten anyway. Even during testing, I still have my kids go outside to destress. Maybe going outdoors is necessary and goes hand-

in-hand with what is part of providing children a basic education. Oh my gosh, that is powerful!”

Limitations of the Study

The nine participants for this study met the original criteria for participation, and were a representative sample rather than a random sample. Therefore, the results of my study cannot be applied to the national population. Each participant was employed at a public elementary school at the time of the study. Each had at least 2 years' recent experience teaching in an outdoor classroom, had recent access to an outdoor classroom, and had contributed to either creating or improving an outdoor classroom at some point in his or her career. Each participant worked for a different school, and together represented four urban, three suburban, and two rural schools. This homogeneous group of nine participants was acceptable for an interpretive phenomenological analysis because it allowed for a larger depth of study (Smith et al., 2009). However, the small number of participants limited the transferability to other contexts outside the bounds of this study.

The member checking process completed after the interviews offered no additional data, but did provide confirmation that the participants agreed with the summaries of their responses, which I sent to them via email.

I conducted this study in the Pacific Northwest region of the United States; Therefore, the results of my study cannot be generally applied to other parts of the United States, only suggested.

I listed time as a limitation, as the data collection needed to happen before the end of the 2018, which it did. This interval was time dependent, based on the circumstances that occurred in this timeframe.

I included in this study only participants who were teachers at public elementary schools; therefore, the results of my study may or may not have applied to other age groups or elementary educators who taught at private schools.

I obtained the data for this study through participant interviews. Interview studies can be limited, in that they may not provide the data researchers need to fully answer their research questions (Maxwell, 2013). I helped alleviate this risk by field testing my questions before conducting this study, and by including several probing questions for each interview question.

I interviewed teachers who already had experience with outdoor classrooms. Therefore, the perceptions of these teachers in these types of schools may likely be different from those teachers in other types of schools without this designation. Although this designation was intentional so that I could collect the data that I needed to complete this study, I remained aware of this bias in terms of the study findings and recommendations.

This study involved interviewing teachers who if I professionally knew them would be considered my peers. Because I am an experienced environmental educator, I have profound direct experience teaching in environments like those that my participants teach in. My experiences in coaching and teaching enabled me to gain quick rapport with the teachers and obtain quality responses about their lived experiences through active

listening. My enthusiasm toward nature-based outdoor learning and on the development of outdoor classrooms could have transitioned to the teachers and affected their responses. However, I remained aware of these potential sources of bias and made sure that I came to each interview with an open mind that was free of judgement of the opinions expressed by the participants.

Recommendations

The participants' responses were illuminating, and appeared honest and heartfelt. Participants' capacity and passion for teaching ecoliteracy to students was clear, though in most cases there was little recognition or appreciation for their hard work. By listening to their perspectives on outdoor classrooms, I was able to get a clearer picture of what is missing in environmental education.

The notion of teaching the whole child is commonplace at the preschool level, but I recommend research about holistic education, also referred to as "teaching the whole child," be included specific to curriculum assessment at the elementary school level in addition to academic assessment. This recommendation goes along with the most significant gap that I identified in the literature review, which is most recent research regarding nature-based environmental curriculum at the public school elementary school level mainly exists for early childhood programs, such as preschool- and kindergarten-age students (Chawla, 2015). When asked what subjects they teach in outdoor classrooms, participants responded with answers one might expect from indoor-only teachers – subjects including science, math, social studies, reading, writing, and environmental education. SEL was also emphasized by all participants as a benefit of

teaching using outdoor classrooms. Although it is not included by U.S. school districts in academic standards and is thus not regarded as a subject, its importance was highlighted in the findings.

The next recommendation that came out of findings is related to professional development for teachers of outdoor classrooms around the topic of ecoliteracy, including Next Generation Science Standards (NGSS). Bybee (2014) believed that NGSS represent an important opportunity for developing ecoliterate students, as they include a focus on saving people, the planet, and developing a sustainable economy. It was indicated by the participants' responses that there continues to be growing attention given to the topic of STEM and e-STEM at the level of outdoor classroom programming, but there is not much support available for teachers specific to integrating ecoliteracy into their e-STEM curriculum. It was evident from the interviews that teachers are not always sure what ecoliteracy is, or how to incorporate it into their outdoor classrooms. Particular responses from the participants in terms of ecoliteracy were anecdotal in nature at best. Yet, ecoliteracy embodies the best of environmental education combined with SEL, helping students develop the necessary capabilities that Nussbaum (2013) described in her social justice in education approach. The capabilities approach encourages human development of certain capacities that are essential to what it means for children to develop a healthy well-being. This also fits well with Howard Gardner's Multiple Intelligence theory, specific to the naturalist intelligence (Gardner, 2006).

The findings of this study concurred with (Bentsen et al., 2013) who recommended that more research is needed for professional development aimed at

teachers to help them to make better informed decisions, plan more consistently, and manage outdoor learning more effectively. This seems especially apparent in light of the unexpected finding of the high variation in how teachers used their outdoor classrooms, in terms of natural spaces, length of visits, accessibility issues, and integration with academic subjects.

With a solid deductive framework in place concerning the importance of outdoor education, more research is needed regarding the necessity and value of high-stakes testing. Participants in this study indicated that they are experiencing an increasing pressure to focus more on academic rigor, which according to the data collected shows that it negatively impacts the time teachers have to take their children outdoors. Research identified in the literature review identified how this also affects teacher self-efficacy. Moseley et al. (2002) recommended that teacher self-efficacy become a major focus of future research about teacher preparation program specific to outdoor education. More research is needed to better understand the perspectives of elementary school teachers who have established outdoor classrooms, and the extent to which they have encountered barriers specific to time lost teaching ecoliteracy due to the increasing demands of standardized testing.

School climate is a topic that relates well to this study because the participants who demonstrated the most success with their outdoor classrooms had access to administrative support for their outdoor classrooms by both their school communities and districts at large. This overwhelming support demonstrated a school climate that values outdoor education and the teachers who have outdoor classrooms. Recent research shows

that despite the growing awareness of how environmental challenges have affected humans in the 21st century, the majority of science learning still takes place inside the classroom, and is mostly disconnected from the natural world. During the literature review process, I cited research that stated what needs to be further examined is whether the barriers related to creating and improving outdoor classrooms are connected to a needed change in school climate, whereby teachers are adequately supported and empowered to overcome the barriers that they experience when creating and improving outdoor classrooms (DiPaola & Tschannen-Moran, 2014). Based on my experience and the findings, I recommend a study specific to school district and community-wide efforts that will ultimately provide additional support for teachers who use outdoor classrooms. During the data collection process, I became aware of a longitudinal study administered by researchers at the University of Washington's School of Education, who are partnering with a local gardening organization and neighboring school district, to create more culturally- and community-relevant, field-based learning opportunities for students. According to the University of Washington (2017), research is being funded by a \$2.9 million grant from the National Science Foundation will build outdoor learning gardens, draw upon local communities, and green spaces at several local elementary schools while developing a robust curriculum for K-3 educators to engage students in complex ecological reasoning and decision-making. I recommend that future studies keep abreast of this research once it is completed and published in peer-reviewed journals.

Implications for Social Change

I focused the interview questions on asking what the barriers and supports are that teachers experience when creating outdoor classrooms in the first place. I planned that asking questions about motivation would help answer “why” outdoor classrooms. Asking targeted questions about the supports and resources for which teachers have used to overcome barriers to creating outdoor classrooms might have best revealed the “how” of the findings. By getting at what motivates teachers in the first place when creating outdoor classrooms, I aimed to add to the body of research that promotes the expansion of ecoliteracy into the public schools’ elementary curriculum, and further the justification for inclusion of ecoliteracy in NGSS and my state’s common core standards.

In this study, I focused on the experiences of public school elementary teachers in a state in the Pacific Northwest region of the United States who had created and/or who recently used outdoor classrooms. The results of this study represent a potential contribution to the existing literature that discusses teachers’ perspectives about barriers and supports when creating and improving outdoor classrooms. Teachers who can overcome barriers to creating outdoor classrooms can increase children’s exposure to outdoor learning environments, and therefore increases the impact on student’s ecological literacy (Gardener, 2006; Goleman, 1996; Orr, 2004).

The results of this study may be of interest to audiences who aspire to gain a better understanding of how outdoor classrooms are created and improved upon. The results of this study may also assist in the overall understanding of the barriers and supports that elementary teachers in the Pacific Northwest encounter when creating and

improving outdoor classrooms. The study findings have the potential to inform best practices and to enhance the ways in which teachers can create and improve outdoor classrooms. The potential positive impact to social change may include more awareness about the importance of outdoor learning and integration of ecoliteracy in the pedagogy of K-6 curriculum and educational programs. This information is important for teacher preparation programs and those providing ongoing professional development for teachers looking to implement outdoor classroom and ecoliteracy programs.

Conclusion

My goals for this study included obtaining participants' interpretations of the barriers and supports related to creating and improving outdoor classrooms and exploring their professional opinions about ecoliteracy and the impact that outdoor learning has on their students. I collected data using one-on-one interviews. I audio recorded the interviews and personally transcribed them; each interview lasted approximately sixty minutes. The data collected provided a foundation for examining barriers and supports related to creating and improving outdoor classrooms in public elementary schools in the Pacific Northwest. The potential impact of the results of this study may lay a groundwork for future research on teacher leadership for school change in terms of environment outdoor programming as it pertains to outdoor classrooms.

As mentioned in the Recommendations section above, the idea of holistic education, or teaching the whole child, is commonplace in preschools around the world. But education research that is specific to academic instruction in the U.S does not adequately include holistic education that is specific to academic progress at the

elementary school level. With the growing popularity of NGSS, elementary school teachers, particularly those with outdoor classrooms, have an opportunity to change that. The growth of outdoor classrooms is significant and demonstrates an increasing interest in developing outdoor learning programs (Chawla, 2015).

To promote ecoliteracy in elementary students, a stronger connection between SEL, environmental education, STEM, e-STEM, and NGSS is recommended. This connection best includes a consistent thread between teacher preparation programs, curriculum, academic standards, assessment and standardized testing, and overall pedagogy. It would be especially helpful if school and district administrators would stop requiring teachers of outdoor classrooms to re-justify their programs' existence before the start of each school year, especially when the previous school year has shown significant academic progress in their students. Grants and other funding sources, particularly those with ties to NGSS, could focus on holistic programs and consider SEL aspects of environmental program. Given the state of increasing emotional stress-related and mental health issues affecting children at a younger and younger age, there are increasing calls to integrate SEL into all school subjects, not only in science and environmental education. The findings of this study would align with Nussbaum (2013), in suggesting that schools and districts around the country, especially those with outdoor classrooms, play a role in expanding elementary teachers' ability to pay attention to the inclusion of nature and human impact in the Earth's community of life

Humans are only one the 8.7 million species living on planet Earth. Yet we are at the center of all the socio-economic and environmental crises, most of which have never

been seen before in human history. This means it is vital, in fact extremely urgent, that our society find solutions that require a shift in our thinking and our actions. The United Nations Educational, Scientific and Cultural Organization (UNESCO) published a document in 1997 titled *Educating for a Sustainable Future*, that stated “Moving towards the goal of sustainability requires fundamental changes in human attitudes and behaviours. progress in this direction is thus critically dependent on education and public awareness” (UNESCO, 1997, p. 1). Lester Brown, president of the Earth Policy Institute, reiterated this sentiment when he stated “The thinking that got us into this mess is not likely to get us out. We need a new mindset” (Brown, 2009, p. xiv). Now is the time for this new mindset. With the right support, outdoor classrooms, with their cadre of dedicated teachers like those in this study, could be poised to make a difference.

References

- 114th Congress. (2016). *Every Student Succeeds Act (ESSA)*, Public Law No. Stat. 1177. Retrieved from <https://www.congress.gov/bill/114th-congress/senate-bill/1177>
- Ahlquist, R., Gorski, P. C., & Montaña, T. (2011). *Assault on kids: How hyper-accountability, corporatization, deficit ideologies, and Ruby Payne are destroying our schools*. New York, NY: Peter Lang Publishing, Inc.
- Allen, N., Grigsby, B., & Peters, M. L. (2015). Does leadership matter? Examining the relationship among transformational leadership, school climate, and student achievement. *International Journal of Educational Leadership Preparation*, *10*(2), 1-22. Retrieved from <https://eric.ed.gov/?id=EJ1083099>
- Ardoin, N. M., Clark, C., & Kelsey, E. (2013). An exploration of future trends in environmental education research. *Environmental Education Research*, *19*(4), 499-520. Retrieved from <https://doi.org/10.1080/13504622.2012.709823>
- Asah, S. T., Bengston, D. N., & Westphal, L. M. (2012). The influence of childhood: Operational pathways to adulthood participation in nature-based activities. *Environment and Behavior*, *44*(4), 545–69. Retrieved from <http://dx.doi.org/10.1177/0013916510397757f>
- Barlow, Z. (2007). *Getting started: A guide for creating school gardens and outdoor classrooms*. Berkeley, CA: Center for Ecoliteracy. Retrieved from <https://www.ecoliteracy.org/download/getting-started-school-gardens>
- Barry, L., & Celiberti, D. (2001). Child choice between competing recreational environments: Support for multi-sensory environments for children with

- disabilities. In P. Pagliano (Ed.), *Using a multisensory environment: A practical guide for teachers* (pp. 67-76). New York, NY: Routledge.
- Beattie, A. E. (2015). A young child's perspectives on outdoor play: A case study from Vancouver, British Columbia. *International Journal of Early Childhood Environmental Education*, 3(1), 38-53. Retrieved from <http://files.eric.ed.gov/fulltext/EJ1108378.pdf>
- Bentsen, P. Schipperijn, J., & Jensen, F. S. (2013). Green space as classroom: Outdoor school teachers' use, preferences and ecostrategies. *Landscape Research*, 38(5), 561-575. Retrieved from <https://doi.org/10.1080/01426397.2012.690860>
- Berkowitz, A. R., Ford, M. E., & Brewer, C. A. (2005). A framework for integrating ecological literacy, civics literacy, and environmental citizenship in environmental education. In Johnson, E. Z. & Mappin, M. J. (Eds.), *Environmental education and advocacy: Changing perspectives of ecology and education* (pp. 227-266). New York, NY: Cambridge University Press.
- Bohling, V., Saarela, C., & Miller, D. L. (2015). *Teacher perceptions of a sustained nature focus in a Minnesota early education program: A single case study*. Dimensions Educational Research Foundation. Retrieved from http://www.dimensionsfoundation.org/assets/forest_lake_paper_final.pdf
- Bogotch, I., & Shields, C. M. (2014). *International handbook of educational leadership and social (in)justice*. London, United Kingdom: Springer. Retrieved from <https://doi.org/10.1007/978-94-007-6555-9>

- Bohn-Gettler, C. M., & Pellegrini, A. D. (2014). Recess in primary school: The disjuncture between educational policy and scientific research. In Bornstein, B. H., & Wiener, R. L. (Eds.). *Justice, conflict and wellbeing: Multidisciplinary perspectives* (pp. 313-336). New York, NY: Springer. Retrieved from https://doi.org/10.1007/978-1-4939-0623-9_12
- Broda, H. W. (2007). *Schoolyard-enhanced learning: Using the outdoors as an instructional tool, K-8*. Portland, ME: Stenhouse Publishers.
- Brown, L. R. (2009). *Plan B 4.0: Mobilizing to save civilization*. New York: NY W. W. Norton.
- Burdette, H. L., & Whitaker, R. L. (2005). *Resurrecting free play in young children: Looking beyond fitness and fatness to attention, affiliation and affect*. Chicago, IL: American Medical Association.
- Bybee, R. W. (2014). NGSS and the next generation of science teachers. *Journal of science teacher education*, 25(2), 211-221. Retrieved from <https://doi.org/10.1007/s10972-014-9381-4>
- Carrier, S. J., Thomson, M.M., Tugurian, L.P., & Tate-Stevenson, K. (2014). Elementary science education in classrooms and outdoors: Stakeholder views, gender, ethnicity, and testing. *International Journal of Science Education*, 36(13), 2195-2220. Retrieved from <http://dx.doi.org/10.1080/09500693.2014.917342>
- Carrier, S. J., Tugurian, L. P., & Thomson, M. M. (2013). Elementary science indoors and out: Teachers, time, and testing. *Research in Science Education*, 43, 2059-2083. Retrieved from <http://dx.doi.org/10.1007/s11165-012-9347-5>

- Castelli, D. M., Centeio, E. E., Hwang, J., Barcelona, J. M., Glowacki, E. M., Calvert, H. G., & Nicksic, H. M. (2014). The history of physical activity and academic performance research: informing the future. *Monographs of the Society for Research in Child Development, 79*(4), 119-148. Retrieved from <https://doi.org/10.1111/mono.12133>
- Chawla, L. (2015). Benefits of nature contact for children. *Journal of Planning Literature, 30*(4) 433-452. Retrieved from <http://dx.doi.org/10.1177/0885412215595441>
- Children and Nature Network. (2015, April 10). [website]. Retrieved from <http://www.childrenandnature.org>
- Cleland, V., Crawford, D., Baur, L. A., Hume, C., Timperio, A., Salmon, J. (2008). A prospective examination of children's time spent outdoors, objectively measured physical activity and overweight. *International Journal of Obesity, 32*(11), 1685-1693. Retrieved from <https://doi.org/10.1038/ijo.2008.171>
- Collado, S., & Corraliza, J. A. (2015). Children's restorative experiences and self-reported environmental behaviors. *Environment and Behavior, 47*(1), 38-56. Retrieved from <http://dx.doi.org/10.1177/0013916513492417>
- Creswell, J.W. (2013). *Qualitative inquiry and research design: Choosing among five approaches* (3rd ed.). New York, NY: SAGE Publications.
- Dennis, S.F., Wells, A., & Bishop, C. (2014) A post-occupancy study of nature-based outdoor classrooms in early childhood settings. *Children, Youth and*

- Environments*, 24(2), 35-52. Retrieved from
<http://dx.doi.org/10.7721/chilyoutenvi.24.2.0035>
- Dilley, P. (2004). Interviews and the Philosophy of Qualitative Research. *The Journal of Higher Education*, 75(1), 127-132. Retrieved from
<https://doi.org/10.1353/jhe.2003.0049>
- Dhanapal, S. & Lim, C.C. (2013). A comparative study of the impacts and students' perceptions of indoor and outdoor learning in the science classroom. *Asia-Pacific Forum on Science Learning and Teaching*, 14(2), 1-23. Retrieved from
https://www.ied.edu.hk/apfslt/download/v14_issue2_files/dhanapal.pdf
- DiPaola, M., & Tschannen-Moran, M. (2014). Organizational citizenship behavior in schools and its relationship to school climate. *Journal of School Leadership*, 11(5), 424-447. Retrieved from
https://www.researchgate.net/profile/Michael_Dipaola/publication/234682402_Organizational_Citizenship_Behavior_in_Schools_and_Its_Relationship_to_School_Climate/links/546652680cf2f5eb18016cdb.pdf
- Driessnack, M. (2009), Children and nature-deficit disorder. *Journal for Specialists in Pediatric Nursing*, 14, 73-75. Retrieved from <https://doi.org/10.1111/j.1744-6155.2009.00180.x>
- Eick, C. J. (2011). Use of the outdoor classroom and nature-study to support science and literacy learning: A Narrative Case Study of a Third-Grade Classroom. *Journal of Science Teacher Education*, 23, 789-803. Retrieved from
<https://doi.org/10.1007/s10972-011-9236-1>

- Ernst, J. (2014). Early childhood educators' use of natural outdoor settings as learning environments: An exploratory study of beliefs, practices, and barriers. *Environmental Education Research*, 20(6), 735-752. Retrieved from <https://doi.org/10.1080/13504622.2013.833596>
- Evans, N., Whitehouse, H., & Gooch, M. (2012). Barriers, successes and enabling practices of education for sustainability in far North Queensland schools: A case study. *The Journal of Environmental Education*, 43(2), 121-138. Retrieved from <https://doi.org/10.1080/00958964.2011.621995>
- Faber Taylor, A., Kuo, F. E. M., (2011). Could exposure to everyday green spaces help treat ADHD? Evidence from children's play settings. *Applied Psychology: Health and Well-Being*, 3(3), 281-303. Retrieved from <https://doi.org/10.1111/j.1758-0854.2011.01052.x>
- Ferreira, M. M., Grueber, D., & Yarema, S. (2012). A community partnership to facilitate urban elementary students' access to the outdoors. *School Community Journal*, 22(1), 49-64. Retrieved from <http://www.schoolcommunitynetwork.org/SCJ.aspx>
- Forbes, C. T., & Zint, M. (2010). Elementary teachers' beliefs about perceived competencies for and reported use of scientific inquiry to promote student learning about and for the environment. *The Journal of Environmental Education*, 42(1), 30-4. Retrieved from <https://doi.org/10.1080/00958961003674673>
- Fraser, J., Heimlich, J. E., & Yocco, V. (2010). *Report Number 20100226: American beliefs associated with increasing children's opportunities for experiences in nature*. Edgewater, MD: Institute for Learning Innovation. Retrieved from

http://www.childrenandnature.org/downloads/EC-NES_Final_Report_2010.pdf

- Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences*. Basic Books: New York, NY.
- Gardner, H. (2006). *Multiple intelligences: New horizons*. Basic Books: New York, NY.
- Gedzune, I. (2015) Identification as incentive to care: Pre-service teachers' orientation towards inclusion in nature. *Discourse and Communication for Sustainable Education*, 6, 110-126. Retrieved from <http://dx.doi.org/10.1515/dcse-2015-0008>
- Gilboy, E. T., Browning, L., Jessup, J., Wu, S., & Browning, M. (2014). *Greendale elementary school outdoor classroom & educational trail*. Abingdon, VA: Community Design Assistance Center. Retrieved from <https://vtechworks.lib.vt.edu/handle/10919/71834>
- Gill, T. (2014). The benefits of children's engagement with nature: A systematic literature review. *Children, Youth and Environments*, 24(2), 10–34. Retrieved from <https://doi.org/10.7721/chilyoutenvi.24.2.0010>
- Goleman, D. (1996). Emotional intelligence. Why it can matter more than IQ. *Learning*, 24(6), 49-50. Retrieved from <https://eric.ed.gov/?id=EJ530121>
- Goleman, D., Bennett, L., & Barlow, Z. (2012). *Ecoliterate: How educators are cultivating emotional, social, and ecological intelligence*. San Francisco, CA: Jossey-Bass.
- Goodman, L. A. (1961). Snowball sampling. *The annals of mathematical statistics*, 3(1), 148-170. Retrieved from <https://doi.org/10.1214/aoms/1177705148>

- Graven, S.N., & Browne, J.V. (2008). Auditory development in the fetus and infant. *Newborn and Infant Nursing Reviews*, 8(4), 187-193. Retrieved from <https://doi.org/10.1053/j.nainr.2008.10.010>
- Green Schools. (2017, December 3). [website]. Retrieved from <http://www.wagreenschools.org>
- Hayashi, A. & Ewert, A. (2013). Development of emotional intelligence through an outdoor leadership program. *Journal of Outdoor Recreation, Education, and Leadership*. 5(1), 3-17. Retrieved from <https://doi.org/10.7768/1948-5123.1139>
- Hofferth, S. L., & Sandberg, J. F. (2005). Changes in children's time with parents: A correction. *Demography*, 42(2), 391-395. Retrieved from <https://doi.org/10.1353/dem.2005.0017>
- Hollweg, K. S., Taylor, J., Bybee, R. W., Marcinkowski, T. J., McBeth, W. C., & Zoido, P. (2011). Developing a framework for assessing environmental literacy. Environmental Education. Washington, DC: NAAEE. Retrieved from <https://naaee.org/our-work/programs/environmental-literacy-framework>
- Jacob, S.A., & Furgerson, S. P. (2012). Writing interview protocols and conducting interviews: Tips for students new to the field of qualitative research. *The Qualitative Report*, 17(6), 1-10. Retrieved from <http://www.nova.edu/ssss/QR/QR17/jacob.pdf>
- Jordet, A. (2007) *The nearby environment as classroom* [in Norwegian with English summary]. Doctoral dissertation, No. 80, University of Oslo, Norway. Retrieved from <https://brage.bibsys.no/xmlui/handle/11250/132008>

- Kolb, D.A. (1984). *Experiential learning: experience as the source of learning and development*. Englewood Cliffs, NJ: Prentice Hall.
- Krajcik, J., Codere, S., Dahsah, C., Bayer, R. & Mun, K. (2017). Planning instruction to meet the intent of the next generation science standards. *Journal of Science Teacher Education*, 25(2), 157-175. Retrieved from <https://doi.org/10.1007/s10972-014-9383-2>
- Larimore, R.A. (2014). Forest kindergartens: The Cedarsong way. *Children, Youth and Environments*, 24(2), 239-241. Retrieved from <https://doi.org/10.7721/chilyoutenvi.24.2.0239>
- Laureate Education, Inc. (Executive Producer). (2012). *Educational change: Leadership lessons* [Video]. Baltimore, MD: Walden University.
- Lewallen, T.C., Hunt, H., Potts-Datema, W., Zaza, S., & Giles, W. (2015). The whole school, whole community, whole child model: A new approach for improving educational attainment and healthy development for students. *Journal of School Health*, 85(11), 729-739. Retrieved from <https://doi.org/10.1111/josh.12310>
- Lichtman, M. (2013). Making meaning from your data. In Atkins, L., & Wallace, S. (Eds.), *Qualitative research in education* (pp. 241-268). London, United Kingdom: Sage.
- Lodico, M., Spaulding, D. T., & Voegtler, K. H. (2010). *Methods in educational research: From theory to practice*. San Francisco, CA: John Wiley & Sons, Inc.
- Louv, R. (2008). *Last Child in the Woods: Saving our children from nature-deficit disorder*. New York, NY: Workman Publishing.

- Louv, R. (2016). *Vitamin N: The essential guide to a nature-rich life*. New York, NY: Algonquin Books.
- Lynch, S. J. (2011). Equity and U.S. science education policy from the GI bill to NCLB. In G. DeBoer (Ed.), *The role of public policy in K-12 science education* (pp. 305-354). Charlotte, NC: Information Age Publishing.
- Mackenzie, S.H., Son, J.S. & Hollenhorst, S. (2014). Unifying psychology and experiential education: Toward an integrated understanding of why it works. *Journal of Experiential Education*, 37(1), 75-88. Retrieved from <https://doi.org/10.1177/1053825913518894>
- Macklem, G. L. (2014). Social–emotional learning. In *Preventive mental health at school: Evidence-based services for students* (pp. 153-172). New York, NY: Springer.
- Malone, K. (2008). *Every experience matters: An evidence based review of the role of learning outside the classroom on the development of the whole young person*. Stoneleigh, Australia: Farming and Countryside Education.
- Malterud, K. (2001). Qualitative research: Standards, challenges and guidelines. *The Lancet*, 358, 483-488. Retrieved from [https://doi.org/10.1016/S0140-6736\(01\)05627-6](https://doi.org/10.1016/S0140-6736(01)05627-6)
- Mannion, G., & Lynch, J. (2015). The primacy of place in education in outdoor settings. In Humberstone, B., Prince, H., & Henderson, K.A. (Eds.) *Routledge International Handbook of Outdoor Studies* (pp. 85-94). London: Routledge.

- Marx, R. W., & Harris, C. J. (2006). No Child Left Behind and science education: Opportunities, challenges, and risks. *The Elementary School Journal*, 106(5), 467-478. Retrieved from <https://doi.org/10.1086/505441>
- Maxwell, J. A. (2013). *Qualitative research design: An interactive approach* (3rd ed.). Thousand Oaks, CA: Sage Publications.
- McComas, W.F. (2008). Back to the future? Reconsidering the role of 19th century nature-study in 21st century science teaching. *The Science Teacher*, 75(2), 24-28. Retrieved from <https://search.proquest.com/openview/f6d6bed2d5f2f58da512f196a0e17c66/1?pq-origsite=gscholar&cbl=40590>
- Merriam, S. B. (2009). *Qualitative research: A guide to design and implementation*. San Francisco, CA: Jossey-Bass.
- Miles, M. B., Huberman, A. M., & Saldaña, J. (2014). *Qualitative data analysis: A Methods sourcebook* (3rd ed.). Thousand Oaks, CA: Sage Publications.
- Milteer, R. M., & Ginsburg, K.R. (2012). The importance of play in promoting healthy child development and maintaining strong parent-child bond: Focus on children in poverty. *Pediatrics*, 129(1), 204-213. Retrieved from <https://doi.org/10.1542/peds.2011-2953>
- Moolenaar, N., Daly, A., & Slegers, P. (2010). Occupying the principal position: examining relationships between transformational leadership, social network position, and schools' innovative climate. *Educational Administration Quarterly*, 46(5), 623-670. Retrieved from <https://doi.org/10.1177/0013161X10378689>

- Nussbaum, M. C. (2013). *Creating Capabilities*. Cambridge, MA: Harvard University Press.
- Merriam, S. B., & Tisdell, E. J. (2016). *Qualitative research: A guide to design and implementation*. San Francisco, CA: Jossey-Bass.
- Moore, R. C. (1980). Collaborating with young people to assess their landscape values. *Ekistics*, 47(281): 128–135. Retrieved from <http://www.jstor.org/stable/43620508>
- Moseley, C., Reinke, K., & Bookout, V. (2002). The effect of teaching outdoor environmental education on preservice teachers' attitudes towards self-efficacy and outcome expectancy. *The Journal of Environmental Education*, 34(1), 9-15. Retrieved from <https://doi.org/10.1080/00958960209603476>
- National Environmental Education Foundation, (2015). Next Generation Science Standards: The Environment as a Laboratory for Developing Skills in Science and Engineering Practices. Retrieved from <https://www.neefusa.org/ee-and-next-generation-science-standards>
- National Governors Association (NGA). (2010). *Common Core state standards*. Washington, DC: National Governor's Association Center for Best Practices, Council of Chief State School Officers.
- Nelson, E. (2012). *Cultivating outdoor classrooms: Designing and implementing child-centered learning environments*. St. Paul, MN: Redleaf Press.
- Next Generation Science Standards (NGSS). (2013). Retrieved from <https://www.nextgenscience.org>

- No Child Left Behind Act of 2001, Pub. L. No. 107-110, 115 Stat. 1425 (2001). Retrieved from <http://www.ed.gov/policy/elsec/leg/esea02/107-110.pdf>
- Ozdemir, A., & Yilmaz, O. (2008). Assessment of outdoor school environments and physical activity in Ankara's primary schools. *Journal of Environmental Psychology*, 28(3), 287-300. Retrieved from <https://doi.org/10.1016/j.jenvp.2008.02.004>
- Office of Superintendent of Public Instruction (2016, May 14). *Education awards: Green ribbon schools* [Web post]. Retrieved from <http://www.k12.wa.us/EducationAwards/GreenRibbon/default.aspx>
- Orr, D.W. (1992). *Ecological literacy: Education and the transition to a postmodern world*. Albany, NY: State University of New York Press.
- Orr, D.W. (2004). *Earth in mind: On education, environment, and the human prospect*. Washington, DC: Island Press.
- Palmer, J. (2002). *Environmental education in the 21st century: Theory, practice, progress and promise*. New York, NY: Routledge.
- Patton, M. Q. (2015). *Qualitative research & evaluation methods* (4th ed.). Thousand Oaks, CA: Sage Publications.
- Pearson, P. D., & Dole, J. A. (1987). Explicit comprehension instruction: A review of research and a new conceptualization of instruction. *The Elementary School Journal*, 88(2), 151-165. Retrieved from <https://doi.org/10.1086/461530>
- Pesce, C., Masci, I., Marchetti, R., Vazou, S., Sääkslahti, A., & Tomporowski, P. D. (2016, March 11). Deliberate play and preparation jointly benefit motor and

cognitive development: Mediated and moderated effects. *Frontiers in Psychology*, 7, 349. Retrieved from <https://doi.org/10.3389/fpsyg.2016.00349>

Pellegrini, A.D., & Bohn, C.M. (2005). The role of recess in children's cognitive performance and school adjustment. *Educational Researcher*, 34(1), 13-19. Retrieved from <https://doi.org/10.3102/0013189X034001013>

Piaget, J. (1952). *The origins of intelligence in children* (New York: International University Press, 1952) [La naissance de l'intelligence chez l'enfant (1936), also translated as *The origin of intelligence in the child* (London: Routledge and Kegan Paul, 1953)].

Pillow, W. S. (2003). Confession, catharsis, or cure? Rethinking the uses of reflexivity as methodological power in qualitative research. *International Journal of Qualitative Studies in Education*, 16, 175-196. Retrieved from <https://doi.org/10.1080/0951839032000060635>

Quay, J. (2013). More than relations between self, others and nature: outdoor education and aesthetic experience. *Journal of Adventure Education and Outdoor Learning*, 13(2), 42-157. Retrieved from <https://doi.org/10.1080/14729679.2012.746846>

Rajbhandari, M. S. (2011). Strengthening the strength of public-private partnership model in education. *A Case Study of Durbar High School in Nepal. Research report*. University of Tampere Finland. Retrieved from <http://eric.ed.gov/PDFS/ED516967.pdf>

- Rios, J.M. & Brewer, J. (2014). Outdoor Education and Science Achievement. *Applied Environmental Education and Communication*, 13(4), 234-240.
<https://doi:10.1080/1533015X.2015.975084>
- Roulston, K., deMarras, K., & Lewis, J.B. (2003). Learning to interview in the social sciences. *Qualitative Inquiry*, 9(4), 643-668. Retrieved from
<https://doi.org/10.1177/1077800403252736>
- Rowe, K. J., & Rowe, K. S. (1992). The relationships between inattentiveness in the classroom and reading achievement (Part B): An exploratory study. *Journal of the American Academy of Child and Adolescent Psychiatry*, 31, 357-368. Retrieved from <https://doi.org/10.1097/00004583-199203000-00026>
- Rubin, H. J., & Rubin, I. (2012). *Qualitative Interviewing: The art of hearing data* (3rd ed.) Thousand Oaks, CA: Sage.
- Sadlowski, I. (2011). A capability approach fit for children. In Lessmann, O., Otto, H.U., and Zeigler, H. (Eds.), *Closing the capabilities gap* (pp. 215-232). Opladen, Germany: Barbara Budrich.
- Saldaña, J. (2013). *The coding manual for qualitative researchers* (2nd ed.). Thousand Oaks, CA: Sage Publications.
- Seidman, I. (2012). *Interviewing as qualitative research: A guide for researchers in education and the social sciences* (4th ed.). New York: Teachers College Press.
- Simon, M. (2011). *Dissertation and scholarly research: Recipes for success*. Seattle, WA: Dissertation Success, LLC.

- Slobodkin, L. B. (2003). *A citizen's guide to ecology*. New York, NY: Oxford University Press.
- Smith, J. A. (2011). Evaluating the contribution of interpretative phenomenological analysis. *Health Psychology Review*, 5(1), 9-27. Retrieved from doi:10.1080/17437199.2010.510659
- Sofaer, S. (1999). Qualitative methods: what are they and why use them. *Health Service Research*, 34(5), 1101-1118. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1089055/pdf/hsresearch00022-0025.pdf>
- Speth, J. G. (2004). *Red sky at morning: America and the crisis of the global environment*. New Haven, CT: Yale University Press.
- Spillett, M.A. (2003). Peer debriefing: Who, what, when, why, how. *Academic Exchange Quarterly*, 7(3), 36-40. Retrieved from <https://69.32.208.13/library/journal/1G1-111848817/peer-debriefing-who-what-when-why-how>
- Spiropoulou, D., & Antonakaki, T. (2007). Primary teachers' literacy and attitudes on education for sustainable development. *Journal of Science Education and Technology*, 16(5), 443-45. Retrieved from <https://doi.org/10.1007/s10956-007-9061-7>
- State of New Hampshire, Office of the Governor. (2015). *Governor's task force on K-12 STEM education: Pathways to STEM Excellence*. Concord, New Hampshire. Retrieved from <https://www.education.nh.gov/instruction/stem/documents/stem-01-2015-k-12.pdf>

- Stevenson, K. T., Carrier, S. J., & Peterson, M. N. (2014). Evaluating strategies for inclusion of environmental literacy in the elementary school classroom. *Electronic Journal of Science Education, 18*(8). Retrieved from <http://ejse.southwestern.edu/article/view/13940>
- Teaching 2030 (Producer). (2011). *A look at Teaching 2030* [Video]. Retrieved from <http://www.youtube.com/watch?v=vk-aulXHymQ>
- Torquati, J., Cutler, K., Gilkerson, D., & Sarver, S. (2013). Early childhood educators' perceptions of nature, science, and environmental education. *Early Education and Development, 24*, 721-743. Retrieved from <http://dx.doi.org/10.1080/10409289.2012.725383>
- Toppino, T. C., Kasserman, J. E., & Mracek, W. A. (1991). The effect of spacing repetitions on the recognition memory of young children and adults. *Journal of Experimental Child Psychology, 51*, 123-138. Retrieved from [https://doi.org/10.1016/0022-0965\(91\)90079-8](https://doi.org/10.1016/0022-0965(91)90079-8)
- Tremblay, M.S., Gray, C. E., Akinroye, K., Harrington, D. M., Katzmarzyk, P.T., Lambert, E. V., Liukkonen, J., Maddison, M., Ocansey, R. T., Onywera, V. O., Prista, A., Reilly, J.J., Rodríguez Martínez, M.P., Sarmiento Duenas, O.L., Standage, M., & Tomkinson, G. (2014). Physical activity of children: a global matrix of grades comparing 15 countries. *Journal of Physical Activity and Health, 11*(1), 113-125. Retrieved from <https://doi.org/10.1123/jpah.2014-0177>
- Turner, L., Sandoval, A., & Chaloupka, F. J. (2014). *School garden programs are on the rise in US public school elementary schools but are less common in schools with*

economically disadvantaged student populations: A BTG research brief. Chicago, IL: Bridging the Gap Program, Health Policy Center, Institute for Health Research and Policy, University of Illinois at Chicago.

United Nations Educational, Scientific and Cultural Organization (UNESCO). (1997) Educating for a sustainable future. Retrieved from http://www.unesco.org/education/tlsf/mods/theme_a/popups/mod01t05s01.html

United States Census Bureau. (2010, September). *Current population reports: Income, poverty, and health insurance coverage in the United States*. Washington, DC. Retrieved from <http://www.census.gov/prod/%202010pubs/p60-238.pdf>

University of Washington. (2017, July 12). *Learning gardens aim to grow student engagement in science*. Retrieved from <https://education.washington.edu/news/learning-gardens-aim-grow-student-engagement-science>

Van Den Berg, A., & Van Den Berg, C., (2011). A comparison of children with ADHD in a natural and built setting. *Child: Care, Health and Development*, 37(3), 430-439. Retrieved from <https://doi.org/10.1111/j.1365-2214.2010.01172.x>

Wiersma, W. (2000). *Research methods in education: An introduction*. Boston, MA: Allyn and Bacon.

Wells, N. (2014). The role of nature in children's resilience: Cognitive and social processes. In Tidball, K.G, & Krasny, M.E. (Eds.), *Greening in the red zone: Disaster, resilience, and community greening* (pp. 95-109). London, United Kingdom: Springer. Retrieved from https://doi.org/10.1007/978-90-481-9947-1_7

Wilson, E. O. (1984). *Biophilia*. Cambridge, MA: Harvard University Press.

Zubrick, S., Taylor, C., Lawrence, D., Mitrou, F., Christensen, D. & Dalby R. (2009).

The development of human capability across the lifecourse: Perspectives from childhood. *Australas Epidemiol*, 16(3), 6-10. Retrieved from

https://espace.curtin.edu.au/bitstream/handle/20.500.11937/6241/131735_The_development_of_human.....pdf

Appendix A: Consent Form

Consent for Participation in Interview Research

Hello. Thank you for participating in my research study. This study is about outdoor classrooms in public elementary schools throughout the Pacific Northwest. I have invited public school teachers, such as yourself, who have taught instruction using outdoor classrooms for at least 2 years to be in the study. I obtained your name/contact info via the Green/Green Ribbon Schools website. This form is part of a process called “informed consent” to allow you to understand this study before signing that you agree to take part.

Please read this form and let me know if you have any questions before we begin the interview. This study is being conducted by me, Lori Goff. I am a doctoral student at Walden University at the Richard Riley School of Education. You may already know the researcher is as a local environmental educator, but this study is separate from that role. I will keep that role separate and not present myself during this interview as an expert in outdoor education. My primary role is to be an active listener, so I can collect and analyze data for the sole purpose of completing this study.

Background Information:

The purpose of this study is to gain an understanding of the supports, barriers, and resources that teachers use when creating or improving outdoor classrooms.

Procedures:

Please confirm that you understand that you will be participating in the following steps:

Table A1

Steps for Participating in the Study

Step	Description	Time	Method
1	Participate in interview (in-person or via Skype)	60 minutes*	Public space or Skype call**
2	Read electronic transcript of interview	30 minutes	Internet email
3	Email any updates to electronic transcript (optional)	15 minutes	Internet email

* This interview should take no longer than 60 minutes. If for any reason 60 minutes is not enough time to complete the interview, I will ask if you can go a little longer than 60 minutes. If you cannot, I will schedule another time within the next two weeks to complete the interview if that is acceptable to you.

** The preferred public space we'll be meeting at is a public library study room that is most convenient to your location.

Voluntary Nature of the Study:

This study is voluntary. You have been free to accept or turn down the invitation. No one at your school or the school district will treat you differently if you decide not to continue to be a part of the study. If you decide to be in the study at any point, you can always change your mind later. You can stop at any time.

Risks and Benefits of Being in the Study:

Being in this type of study involves some risk of the minor discomforts that can be encountered in daily life, such as fatigue or stress. Being in this study would not pose risk to your safety or wellbeing.

A potential benefit of this study is that other teachers who utilize outdoor classrooms would read the results of this study and gain knowledge that participants in this study have shared about their experiences. This knowledge could also be helpful to the larger environmental education community.

Payment:

I recognize that your time is extremely valuable. If you agree to sign this consent form, I would be extremely grateful. As a small token of my appreciation, I am offering you a \$10 gift card, that you will receive before the interview begins. If we meet using Skype, I will send the gift card to you in the US mail.

Privacy:

Reports coming out of this study will not share the identities of individual participants. Details that might identify participants, such as the location of the study, also will not be shared. I will not use your personal information for any purpose outside of this research project. Data will be kept secure by storing in a password-protected computer. Names and schools will be changed to pseudonyms in the published dissertation. Documents include actual names, such as consent forms, participant recruitment letters, and so on will be kept separately from the digital data in a locked file cabinet. Data will be securely stored for a period of at least 5 years, as required by the university.

Note: As a licensed educator, I am required to report any criminal activity and or child/elder abuse or neglect. If criminal activity or child/elder abuse are discussed during the interviews, I must ask if the incident has been appropriately reported to authorities. If it has not been reported, as a mandated reporter I will consult the procedures that are in place according to state law.

Contacts and Questions:

You may ask any questions you have before we begin the interview. Or if you have questions later, you may contact the researcher via phone or text at (xxx) xxx-xxxx or by email lori.goff@waldenu.edu. If you want to talk privately about your rights as a participant, you can call the Research Participant Advocate at my university at 612-312-1210. Walden University's approval number for this study is 01-09-18-0134864 and it expires on January 8th, 2019.

There are two copies of this consent form for you to sign. One copy is for the researcher, and the other copy is for you to keep for your records.

Obtaining Your Consent:

If you feel you understand the study well enough and agree to participate, please indicate your consent by signing below.

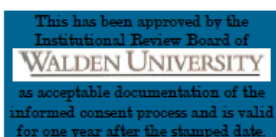
Signature of Participant

Date of Consent

Printed Name of Participant

Signature of researcher

For further information, please contact Lori Goff at (xxx) xxx-xxxx or lori.goff@waldenu.edu.



2018.01.09

10:18:40

-06'00'

Appendix B: Interview Protocol

The interview protocol below guides the implementation of the interview. This protocol includes instructions to be followed for each interview, to ensure consistency amongst the interviews, and ultimately increase the reliability of the findings.

Table A2

Checklist for Prior to the Interview

Task	Description	Achieved
Setup interview	Explain purpose of interview, why they've been chosen, and anticipate length of interview	
Confidentiality	Explain how the information will be kept confidential, and the use of notes and digital recorder	
Signals	Establish agreement for signal will give if they need more time to answer question or a break	
Meeting details	Make sure I have the correct information, including the meeting place, date, and time	
Pre-interview discussion	Offer to talk briefly on the phone the day before the interview, to confirm meeting details and the researcher and participant can go over any questions before the interview	
Questions	Make sure the participant has a copy of the interview questions emailed at least 3 days before the interview	
Consent forms	Make sure the participant has agreed to read and sign the consent form	
Mandated reporter	Explain that as a licensed educator, I am required to report any criminal activity and or child/elder abuse or neglect. If the participant reveals and criminal activity	

or child/elder abuse is discussed during the interviews that has not been previously reported, I am required by state law to report the incident to the proper authorities.

Defining roles Make sure the participant understands the role of the interviewer and interviewee

Table A3

Checklist for During the Interview

As part of my interview protocol, I will use the interview questions (see Appendix C) during the interview.

Task	Description	Achieved
Questions	<p>Make sure to have a copy of the most up-to-date version of the interview questions</p> <p>Notebook for taking notes</p> <p>Participant's Skype username received</p> <p>Digital recorder for audio recording with backup recording device and extra batteries</p> <p>Copy of items for the participant:</p> <ul style="list-style-type: none"> • Consent forms (2 copies to sign before the interview) • Glossary of terms • Gift certificate (\$10 to Fred Meyer) <p>Bring a cell phone, in case I need to call the participant if they don't arrive at the interview, or if I need to make an emergency phone call for any reason</p>	

Table A4

Checklist for After the Interview

Task	Description	Achieved
Interviewer	<p>Explained the study (including human subject aspect)</p> <p>Established rapport with participant</p> <p>Asked clear, short, open-ended questions</p> <p>Used probes to elaborate responses</p> <p>Questions focused on main research questions</p> <p>Listened carefully</p> <p>Elicit detailed responses to the questions</p> <p>Demonstrated application of qualitative methods as modeled and discussed with participant</p>	
Transcription	<p>Audio recording checked for clarity</p> <p>Tape was thoroughly transcribed personally by me</p> <p>Transcription was reviewed by participant</p> <p>Format of transcription was clear and easy to read</p> <p>Pages and lines numbered</p> <p>Identifying personal information was included in header/footer</p> <p>No real names used for people or places (pseudonyms)</p> <p>Participant mailed a copy of the transmission</p>	

Appendix C: Interview Questions

Table A5

Interview Questions

Task	Question
<ul style="list-style-type: none"> • Open-ended questions 	<p>1. <i>These questions are about your experiences with outdoor classrooms.</i></p>
<ul style="list-style-type: none"> • Ask factual questions, not opinions 	<ul style="list-style-type: none"> • How did you first learn about outdoor classrooms? • What motivated you to get interested in using an outdoor classroom to teach?
<ul style="list-style-type: none"> • Use probes as needed 	<ul style="list-style-type: none"> • Talk a little about how you created your outdoor classroom. Or if you haven't created one, what would you like to do to change the one you are now using?
<ul style="list-style-type: none"> • Avoid asking opinionated questions 	<ul style="list-style-type: none"> • What is your ideal use of an outdoor classroom for your students? • What do you think is the ideal amount of time for children to spend outdoors on a given school day and why? <p>2. <i>These questions are about barriers to implementing outdoor classrooms.</i></p> <ul style="list-style-type: none"> • What types of barriers have you experienced when implementing an outdoor classroom? • In what ways have you overcome these barriers? • What kinds of improvements to your outdoor classroom are you currently working on? • What are some things that make it difficult to carry out your design ideas/plans of what you want your outdoor classroom to become? • What would you say is your biggest problem that you currently

face, whether it be a problem with people, resources, facilities, etc.?

3. These questions are about supports, including resources, that you need when implementing outdoor classrooms.

- What types of professional development have you experienced that supports the evolution of your outdoor classroom?
- What other things, such as curriculum or other resources, have you encountered that has made it easier for you to implement an outdoor classroom?
- What resources, such as grants or other professional development have you heard about that you want to try or explore further?
- How have the supports and resources you've implemented impacted your ability to teach more effectively, specific to teaching using outdoor classrooms?
- Please share any special memories, thoughts or feelings about teaching using outdoor classrooms?

4. These questions are about the connection with outdoor learning and ecoliteracy.

- How do you feel about the amount of time you and your students are spending outdoors?
- How do you differ in how you use the outdoor classroom compared to your colleagues?
- What subjects are you teaching using the outdoor classroom?
- What have you noticed about how outdoor experiences have influenced your students' behaviors and attitudes about the outdoors and the natural world?
- Please share an example or two about how the 2013 changes to

- the state environmental education standards has applied directly to how you teach ecological literacy?
- Is there anything else you'd like to add before we conclude this interview?
- Alternate questions
 - What has worked well with your outdoor classroom?
 - What would you do differently if you could start over?
 - What effect do you feel that outdoor classrooms has had on the school community in which you work?
 - What recommendation do you have for teachers getting started creating outdoor classrooms?
 - What do you recall about your first experience with outdoor learning environments?
 - How would you describe the role of outdoor classrooms in public school elementary education overall?
 - What do you know of any students who have gone onto to do things in their life/career involving environmentalism or ecoliteracy?
-

The following table lists probes to use with each question (as needed).

Table A6

Probing Questions

Type	Question
Get more details	When did that happen?
	Who else was involved?
	Where were you during that time?
	What was your involvement in that situation?
	How did that come about?

Where did it happen?

How did you feel about that?

Elaborate

Can you elaborate on that?

Could you say some more about that?

That's helpful. I'd appreciate if you could give me more detail.

I'm beginning to get the picture: but some more examples might be helpful to understand it better.

Clarify

You said _____. What do you mean by that?

What you're saying is very important, and I want to make sure that I get it down exactly the way you mean it. Please explain some of the details of that situation so I understand it clearly.

Appendix D: Glossary of Terms

Dear participant,

Below is a glossary of terms that would be helpful for you to review prior to the interview. If you have any questions regarding the terms or would like to add to or modify the definition, I am open to having a conversation about that with you. You can either contact me before the interview or bring your questions or changes to the interview.

Outdoor classroom: Dedicated outdoor spaces that include and are not limited to, outdoor gardens, seating areas where teachers can conduct lessons outdoors, walkways, natural structures, and exploratory natural environments, such as areas with plants and trees (Carrier et al., 2013).

Outdoor programming. A place where educational activities happen outside of school buildings on a regular basis, and can take place in various settings, such as forests, parks, local communities and farms (Jordet, 2007).

Ecoliteracy. Emotional, social, and ecological intelligence are essential dimensions of our universal human intelligence that simply expand outward in their focus; from self, to others, to all living systems (Goleman et al., 2012).

Appendix E: List of A-Priori Codes

Table A7

A-Priori Codes

Code	Code	Code
Ecological literacy	Financial barriers	Barriers
Supports	Administrative barriers	Environmental education
Nature-based learning	Outdoor classrooms	Resources
Challenges	Academic progress	Student behaviors

Appendix F: Request for Participants Letter

To: Potential Interview Participant
From: Lori Schultz Goff, Ph.D. Candidate at Walden University
Date: TBD
Subject: Request to Participate in Study

Dear _____,

Hello! My name is Lori S. Goff. I am a PhD student at Walden University, and I'm looking for public school elementary teachers to participate in my dissertation study about outdoor classrooms. I am particularly interested in exploring the barriers and supports teachers experience when creating and improving outdoor classrooms. Also, the conceptual framework for my study involves the connection between outdoor learning and ecological literacy.

I will be interviewing 9 teachers from different schools that have at least one outdoor classroom. You qualify to participate if you: a) have at least 2 years of experience teaching in a school setting that has an outdoor classroom, b) currently have access to an outdoor classroom, and c) have contributed to creating or improving an outdoor classroom. This research will add to the general body of knowledge about outdoor classrooms, and how to better integrate outdoor learning into lesson plans for teaching ecological literacy throughout all subject areas.

Thank you for your consideration for participating in my study. Your participation is completely voluntary. The interview should not take longer than 60 minutes from start to finish. If you're running a few minutes behind, just call or text my cell phone. You do not have to answer any questions you do not want to answer. If at any time you do not want to continue with the interview, you may decline. Interviews will be held in a public location, such as in a library study room, to ensure the most quiet and uninterrupted interview as possible. If you are not able to meet in person, we can meet via Skype.

I sincerely appreciate the time and effort you can give to help me with completing my study. If you're interested in participating, **please respond via email, phone or text, and include your name and phone number at your earliest convenience.** Then I will call you within 3 business days to set up a convenient time for the interview or Skype call. If you would like to review a copy of the participant consent form before making a decision about participating in this study, please state this in your email or phone response.

Sincerely,
Lori S. Goff
Walden University
Phone: (xxx) xxx-xxxx
Email: lori.goff@waldenu.edu

Appendix G: Interview Scripts

Table A8

Script for Phone Call Prior to Interview

Key components	Script
<ul style="list-style-type: none"> • Thank you • My name • Purpose • Confidentiality • Duration • How interview will be conducted • Opportunity for questions 	<p>I want to thank you for taking the time to meet with me today. My name is Lori Schultz Goff, and I would like to talk to you about your experiences creating and maintaining outdoor classrooms. Specifically, as one of the components of my research, I am gathering information about supports and barriers that teachers face when creating and improving outdoor classrooms, so that this can be used for future programs.</p> <p>The interview should take no more than one hour. We will meet at a public space, such as a nearby public library study room that is most convenient for you. During the interview, I will audio record the session because I don't want to miss any of your comments. I'll also be taking some hand-written notes during the interview.</p> <p>All responses will be kept confidential. This means that your interview responses will only be shared with research team members. I will ensure that any information included in this report does not identify you as the respondent.</p> <p>Are there any questions about what I have just explained? Are you willing to participate in this interview?</p>

Table A9

Script for Beginning of Interview

Key components	Script
<ul style="list-style-type: none"> • Introduction to myself to build rapport 	Hi. I'm Lori Goff, a PhD student at Walden University. I've worked in environmental education
<ul style="list-style-type: none"> • Ask interviewee to introduce themselves 	for over 15 years and most recently I opened a nature-based preschool in Pierce county. Now, I'd like to do research to find out how far nature-based programs have been developing at the elementary level.
<ul style="list-style-type: none"> • "Tell me about your background" 	
<ul style="list-style-type: none"> • Discuss what I am studying and why I am studying it 	Can you share your background with me? I also need to review the informed consent process, and how I'll be collecting the data from our interview. Do you have any questions or concerns before we start?
<ul style="list-style-type: none"> • Review process of informed consent 	
<ul style="list-style-type: none"> • Discuss technology and transcription process 	Although I will be taking some notes during the session, I can't possibly write fast enough to get it all down. Because it will be recorded, please be sure to speak clearly and slowly, so I don't miss your comments. Remember, you don't have to talk about anything that you don't want to talk about. If at any time you feel uncomfortable, you may end the interview by letting me know that you need to go.
<ul style="list-style-type: none"> • Ask if any questions or concerns before we start 	
<ul style="list-style-type: none"> • Signature of consent 	
<ul style="list-style-type: none"> • Hand a gift certificate 	Thank you, then I'll have you sign and date this consent form. In appreciation for the time you've volunteered to help me with this study, I'd like to give you a small token of my appreciation. Here is a gift certificate for you.

Table A10

Script for Exiting of Interview

Key components	Script
<ul style="list-style-type: none"> • Thank participant for their time 	Thank you so much for your time.
<ul style="list-style-type: none"> • Make sure they have copies of signed consent 	<p>After I complete all the interviews, I'll be analyzing the information you and others gave me and submitting a draft report to the organization in one month.</p>
<ul style="list-style-type: none"> • Explain next step of reviewing transcribed interview 	<p>I would like to send you a copy of the transcript for you to review at that time, if you are interested.</p>
	<p>Thanks again for your time. Please don't hesitate to call me with any questions or comments that you might have.</p>