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The Impact of a Forest School Model and an Interdisciplinary Curriculum in a Third-Grade Classroom: An Action Research Study

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The Impact of a Forest School Model and an Interdisciplinary Curriculum in a Third-Grade Classroom: An Action Research Study

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DEDICATION

To my family, without you this would not be possible. To my husband, I am thankful for all your support during the late nights and early mornings spent behind the computer screen, for the words of encouragement when I wanted to crumble everything up and throw it away, and for the much-needed distractions along the way. To my daughter, my love, you have been my inspiration through this entire process. The hope of creating a better environment, something more for you has been the fuel I required in times of exhaustion and frustration. You are my sunshine!

ACKNOWLEDGMENTS

I would like to acknowledge the research site for its role in this study, Rabbi Meir Muller for offering his guidance throughout this process and the third-grade students who took part in the study.

ABSTRACT

New policy at LHP (pseudonym) requires all teachers to implement the Danish Forest School approach and integrate the natural outdoor areas surrounding the campus in their curriculum and pedagogy. The purposes of the present study are to identify the cognitive, affective and psychomotor impact of the Danish Forest School approach on students and to design a professional development plan for teachers that enables them to combine this approach within an interdisciplinary framework that will include the State Standards that are required of all third-grade students in this southern, private, parochial school. Action research methods were used to collect observational data in both the indoor and outdoor classrooms. Data was analyzed to compare the two settings. Data findings include: 1. Teacher resistance; 2. Student-to-student interactions; 3. Student attention spans; and 4. Student anxiety to the outdoor classroom. An action plan is designed to enable teachers to effectively design curricular plans that integrate the Danish Forest School approach with state standards and are sensitive to students' needs.

Keywords: action research, affective domain, Danish Forest School (DFS), Friluftsliv, interdisciplinary curriculum, mixed methods research, nature deficit disorder, psychomotor domain

PREFACE

The nature of the diversity/social justice component of this proposed dissertation in practice is the concept of a Danish Forest School based program serving as an equalizer of ‘-isms’; that among trees and the natural environment gender, race, sexuality, and social class are all placed upon equal footing. “...All of us enjoy some degree of privilege” (Carbado, 2013, p.392) but the “...most privileged people are unaware because they take these privileges for granted” (Niehuis, 2005, p.481). America has a long history of privileging one group of people over another. In an DFS approach white heterosexual male privilege is a moot point, gender stereotypes are lifted, and social class does not define materials available or the surrounding environment. The deconstruction of these ‘-isms’ are presented in the core principles of the DFS approach in Chapter Two. Limitations of the study as related to ableism, SES and availability of the current DFS based program are addressed in Chapter One.

This study was undertaken due to the dismaying realization that there is growing gap between humanity and the natural world. Being a child that spent the greater portion of her time outdoors in nature than indoors, it was disheartening to think that my daughter could possibly be a member of a generation that thought of nature as a picturesque notion of a bygone age. This study sought to find a place for nature within my daughter’s world, embedded in her education and ultimately a part of her being just as it had been for me.

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CHAPTER 1

INTRODUCTION

Topic and Background

As educators, it is our obligation to allow students the time and resources necessary to delve deeper into their natural inquiries; “children generally acquire speedily and certainly whatever they are not pressed to learn” (Rousseau, 1964, p.121). The Danish Forest School (DFS) approach affords students the time to explore and learn independently about topics within their natural environment that interest them (Williams-Siegfredsen, 2012). The DFS pedagogical approach was developed by Danish educators to enable students to have an opportunity to learn in a natural environment outside of the four walls of the schoolhouse. This approach is a natural fit for the LHP school (pseudonym) students who are accustomed to a progressive, constructivist, integrated curriculum and pedagogy. The LHP philosophy is steeped in the belief “that young children construct knowledge based on their culture and lived experiences. Through reflecting, raising questions, making hypothesis, and sharing ideas children challenge existing understandings in order to construct new insights” (M. Muller, personal communication, 2017). It is the hope of the teacher-researcher that through the current action research and the implications of implemented actions based upon which the research site will more fully utilize an untapped resource of vast value in hopes of alleviating what Richard Louv (2008) describes as nature-deficit disorder, or the cost of

decreased time spent outdoors in nature. “The philosophical stance of the Forest School movement in promoting engagement with woodlands addresses these concerns and serves as one vehicle through which children can gain regular access to the natural environment” (Slade, Lowery & Bland, 201, p. 66) and is a guiding source for the current action research study.

Numerous research studies show the benefits of this pedagogy, which is based upon seven core principles (Louv, 2008; Williams-Siegfredsen, 2012). These core principles are as follows: a holistic approach to education, student individuality, active learning, meaningful learning& time to develop thoughts, child-centered environments, and social interactions (Williams-Siegfredsen, 2012).

Following the Williams-Siegfredsen (2012) Danish Forest School (DFS) model, the teacher-researcher developed a ‘Woods School’ unit aligned with the State Standards (SS) that integrated science, math, English Language Arts (ELA), and social studies. The teacher-researcher implemented the “Woods School’ unit, at a private parochial school in a third-grade classroom over the fall 2017 semester.

Teachers, administrators and students are all the subject of the present action research study. Teacher-participants and administrator-participants took part in an online survey and semi-structured interviews regarding their perceptions of the usage of the natural wooded area provided by the research site.

Student-participants attended class as normal within the four walls of the schoolhouse the week prior to the study. The following week students participated in an interdisciplinary class that was held outdoors in the natural wooded area provided by the

research site. All sessions were recorded and immediately transcribed by the teacher-researcher. All student work completed during both weeks of class was documented in journals given to student-participants at the beginning of the study. Data was comprised of student-participant journals, video evidence, and a teacher-researcher field journal.

Data analysis in reciprocity with the student-participants following Mertler's (2014) action research paradigm for quantitative research took place in the spring of 2018.

Findings seem to indicate that the DFS model coupled with the interdisciplinary 'Woods School' unit did have an impact at a private, parochial school in the south in the following ways:

1. Cognitive domains: increased engagement and follow through by student-participants
2. Affective domains: Decreased student to student disagreements and negative interactions
3. Psychomotor domains: increased movement and natural obstacles

Problem of Practice

In recent years, I have noticed a large portion of my school's natural wooded grounds being overlooked and under-utilized by the school's teachers as a learning environment. To incorporate the outdoors within the curriculum, LHP administration has implemented a new policy that requires all staff members to take their classes to the wooded area for frequent visits. Many staff members are resistant to the policy and have

reported increased anxiety due to the requirement. The current action research study has been developed to demystify the new policy for dubious staff.

Simultaneously, there have been numerous texts published that suggest being in a natural outdoor environment and an integrated curricular design has a plethora of benefits, ranging but not limited to motor-skill development (psychomotor), psychological well-being (affective domain) and critical thinking skills (cognitive domain) (Drake, 2014; Louv, 2008).

As LHP begins to implement new policies that incorporate the natural wooded area into daily curriculum, the DFS model is a natural fit to enable teachers to expand their classroom or what Shulman calls a “laboratory of practice” (2004) beyond the four walls of the school house. The Danish Forest School (DFS) approach has set a precedent for integration of the outdoor natural environment and interdisciplinary education. However, such an approach has yet to be effectively utilized in at the research site.

Research Question

To explore any potential impact of the Danish Forest School model combined with an interdisciplinary curriculum, the following research question was asked:

1. What is the impact of the Danish Forest School model combined with an interdisciplinary State Standards (SS) curriculum at a private parochial school in the South

Purpose Statement

The primary purpose of the present action research study is to investigate the cognitive, affective, and psychomotor impact upon student-participants who experienced an interdisciplinary unit that combined math, science, and English language arts in a Danish Forest School pedagogical approach to learning. The secondary purpose is to determine ways to incorporate a DFS based program into the curriculum and pedagogy of the school.

Participants

Teachers, administrators and students are all the subject of the present action research study.

Student-Participants

The student-participants of this study were the 14 students of the LHP school's third grade class in the fall of 2017. Of the 14 participants seven identify as a male, and seven identify as female. Three student-participants are students of color and the rest identify as Caucasian. All student-participants apart from one have been with the school for over three years, as such a level of comfortability and familiarity has been developed. Consent to conduct the research was obtained by the teacher-researcher (see Appendix A). All who were asked to participate (n=14) choose to do so, however, during the week of outdoor sessions two female students did not participate citing the outside temperature as the reason.

The teacher-researcher has been with the school for the past decade, teaching kindergarten through third grade. She has been involved in many environmental and

conservation project through the school in the past. Her focus upon the wooded area is a natural fit for research.

Teacher-Participants

Twenty staff members of the research site, eight preschool teachers, five elementary teachers, three administrators, and three special interest teachers (foreign language and religious studies) were invited to complete an online survey focused on the perceived usage of the natural outdoor area. Thirteen of the twenty staff members invited to participate did so, four were preschool teachers, five elementary teachers, two special area teachers and one administrator. Of these all identify as female except the one male administrator. One is African American and the remaining twelve teacher-participants are white. Semi-structured interviews were conducted with the teacher-participants following the completion of the online survey.

Research Site

The research was conducted at an affluent, private parochial school located near a southern capital. The school serves children from six weeks old through fifth grade. There are two principals, one overseeing the preschool wing (6-week olds-kindergarten) and another overseeing the elementary wing (1st grade -fifth grade). Supervising the principal is the head of the school and assisting him is a board of directors. The physical space of the school has recently been renovated and an additional hall built. Along with new construction to the building, an effort to make the natural wooded area provided by school more accessible has successfully been undertaken.

Scholarly Framework

The theoretical framework grounding the present action research study stems from a “holistic approach” to curriculum and pedagogy that includes: 1. Garner’s multiple intelligences theory (1999); 2. Dewey’s progressivist theory (1938); 3. Vygotsky’s constructivist approach (1935); and, Drake’s interdisciplinary curricular theory (2014); and Williams-Siegfredsen’s Forest School outdoor learning theory (2012). Chapter Two of this dissertation provides an in-depth look at each of these five theories through a review of related literature.

Holistic Approach

“A holistic approach to learning is concerned with the development of every child’s intellectual, emotional, social, physical, creative and spiritual potential; it seeks to engage children in the learning process and encourages personal and collective responsibility” (Williams-Siegfredsen, 2012, p.17). Jean Jacques Rousseau stressed that to engage and teach the whole student “children generally acquire speedily and certainly whatever they are not pressed to learn” (Rousseau, 1964, p121).

Multiple Intelligences

Howard Gardner’s theory of Multiple Intelligences (MI) supports the notion that each child is unique and capable, as a key element of MI theory suggests there are multiple types of intelligences and everyone processes each to some degree but “although we all receive these intelligences as part of our birth right, no two people have the same intelligences in the same combinations” (Gardner, 1999, p.45). One of the intelligence types is called ‘naturalistic’. Naturalistic intelligence enables persons to see patterns and

different features of the natural environment, “a naturalist demonstrates expertise in the recognition and classification of numerous species-the flora and fauna- of his or her environment” (Gardner, 1999, p.48).

Progressivism

Educational theorist, John Dewey believed that “education must be conceived as a continuing reconstruction of experience” (as cited in McDermott, 1973, p.450). Famed educational psychologist, Jean Piaget supports Dewey’s notion arguing that “children construct their own knowledge by giving meaning to the people, places, and things in their world” (as cited in Williams-Siegfredsen, 2012, p.22). Piaget also believed that children need time for “real-world” life experiences, such as experiences outside of the classroom to construct this knowledge that relates to their lived world experiences.

Constructivism

Russian psychologist, Lev Vygotsky, developed a social development theory that includes the zone of proximal development (ZPD). Tasks that are adequately challenging yet still accomplishable without or with limited adult assistance fall within a child’s ZPD. A child’s ZPD is constantly changing and through scaffolding or the assistance needed from others a task can change position within a child’s ZPD (Vygotsky, 2011). Constructivism relates to the FS approach in that through social interactions and interactions with the natural environment children are constantly re-evaluating where tasks fall in their ZPD (Williams-Siegfredsen, 2012) as well developing independent thinking skills.

Interdisciplinary Curriculum

According to Drake (2012), curriculums can be integrated in any number of ways. One such method for curriculum integration is known as “interdisciplinary curriculum” (p. 6). Interdisciplinary curriculum provides student with overt connections across content-specific subject areas that link to State Standards (SS). For example, during the unit in the wooded area students will be tasked with creating a ‘home base’ or ‘nest’. An area in the woods they feel most comfortable in. This area will be measured and mapped out in their journals. Students will be asked to think critically about their area, observing and documenting any changes that may occur over the week spent in the woods. These changes will be categorized and graph as either naturally (changes in water level and/or branches blown down, etc.) or man induced (litter and/or damaged limbs). Students will be asked to expand their thinking and brainstorm what their area would have looked like in the late 1600’s, connecting the current lesson to prior knowledge of the early settlement of the area. This activity alone meets numerous state standards:

- Math: 3.MDA.3 Collect, organize, classify, and interpret data with multiple categories and draw a scaled picture graph and a scaled bar graph to represent the data
- Science: 3. E.4B.3 Obtain and communicate information to explain how natural events (such as fires, landslides, earthquakes, volcanic eruptions, or floods) and human activities (such as farming, mining, or building) impact the environment.

- Social Studies: 3-1.3 Explain interactions between the people and the physical landscape of South Carolina over time, including the effects on population distribution, patterns of migration, access to natural resources, and economic development.

Outdoor Learning

There are multiple studies focused on the importance of outdoor learning in natural settings. According to Flom, Johnson, Hubbard, & Reidt (2011) research shows that taking advantage of a natural environments that are accessible to students in their normal school day activities, promotes overall well-being for those students. By overall well-being, I am referring to the cognitive, affective and psychomotor domains (Drake, 2012).

McClain & Vandermaas-Peeler (2016), Fjørtoft (2001) and Nedovic & Morrissey, (2013) all concluded a correlation exists between outdoor natural environments and positive social, emotional behaviors among the participants as well as the affordance of play and the variety of the physical surroundings. In addition to these studies, Mygind (2009) conducted a study that focused on two classes in Copenhagen that could teach in the forest once a week for three years. The study concluded learning in an outdoor setting had a more positive effect when compared to learning indoors. These findings support the conclusion of the current action research study that indicates the DFS model and interdisciplinary curriculum had an impact at the research site.

Action Research Methodology

Action research and traditional research differs in many accounts. “Traditional research in education is typically conducted by researchers who are somewhat removed from the environment they are studying” (Mertler, 2014, p.7) and seeks understanding of an existing educational phenomenon, whereas action research in education is conducted by practitioners, i.e. teachers whose objective is to implement action that will improve a current educational phenome. “The traditional scheme is, in essence, one of imposition from above and from outside” (Dewey, 1938, p. 18) and often results in generalized policy that is not applicable or relevant to within localized populations and hence often ineffectual within a classroom setting. The teacher-researcher has the advantage of working alongside the student-participants and the teacher-participants at LHP.

The current action research study focuses on solving the problem of staff trepidation over new policy changes through the implementation of a DFS Model coupled with an interdisciplinary curriculum. My study’s design follows Mills (2007) action research methods including the identification of an area of focus or a problem of practice; collecting data, analyzing and interpreting data, and developing an action plan in reciprocity with my participants.

I. Phase one of the study includes the identification my problem of practice and the creation of a research plan through a detailed review of literature;

II. Phase two of the study includes the collection of data using student-participant journals, video evidence, teacher-researcher field journal, an online survey (Please see Appendix B) and semi-structured interviews conducted with teacher-participants.

III. Phase three of the study is an analysis of the collected data I reciprocity with the participants.

IV. Phase four of the study involves a holistic reflection leading to an action plan for the implementation of future interdisciplinary ‘Woods School’ units of study at LHP that incorporate the Danish Forest School approach.

Significance of Study

Many argue that the Danish FS approach is effective teaching strategy with students across socio economic lines. My students at the private parochial school are primarily high and middle SES. As such, their guardians value educational opportunities for their children that enable them to be college ready. The students are expected to test well on standardized measures and be committed to social justice work in the local community. Therefore, the cognitive, affective, and psychomotor domains are part of the common core of the school’s philosophy.

Overview of Study

The identified problem of practice for the present action research study focuses on identifying staff trepidation regarding the usage of the natural wooded area provided by the research site and the implementation of an interdisciplinary approach to learning based upon the DFS model among a group of third grade students at a private parochial school.

Chapter One of this Dissertation in Practice (DiP) has presented the reader to the recognized problem of practice (PoP), study rationale, research question, theoretical framework, and the action research methodology. Chapter Two of this DiP describes in

detail the related literature on the benefits of learning outdoors in a natural setting and the Forest School pedagogy. Chapter Three of this DiP details the one-group pretest-posttest explanatory mixed-methods action research design of this study, how data was collected and analyzed and all parameters of the study. Chapter Four of this DiP reports and reflects upon findings of this study. Chapter Five of this DiP presents major findings and their implications, suggestions for future research in the field and an action plan for implementation going forward.

Glossary of Key Terms

Action Research: A methodical inquiry performed by individuals that are actively involved in the teaching-learning environment to gather information and implement action to solve identified problems of practice (Mills, 2007)

Affective domain: The educational domain that is concerned with the emotional aspects of the student.

Cognitive domain: The educational domain that is concerned with the thought process, thinking and formulation of concepts by the student.

Danish Forest School (DFS): Forest School: An educational approach which originated in Scandinavia and has become an integral of Denmark's education system. This approach was born from an informal shift in societal views of the area. From the 1700's to present Denmark has begun to recognize the benefits of being in natural outdoor settings and implementing change in the education system that affords students the opportunity to reap these benefits by holding classes outdoors in wooded areas (Williams-Sieghfredsen, 2012). "Definitions of FS can be debated, and practitioners have

different expressions to defining what these are” (McKinney, 2012, p.24) however, my early research indicates that regardless of its origins, DFS holds the belief that students need regular visits to the same natural outdoor area, these sessions are headed by a trained DFS leader and help facilitate independent learning and promote socioemotional wellbeing as well as cognitive growth (Slade, Lowery, & Bland, 2013, & Power, Cree, & Knight, 2015).

Friluftsliv: A Scandinavian term that refers to cultural traditions and legal rights of citizens to have access to and right to explore natural, wooded areas to reap the many benefits being nature may provide (McKinney, 2012, p.25).

Interdisciplinary curriculum: A method of integrated curriculum that makes overt connections among common concepts and skills across all disciplines (Drake, 2012).

Mixed methods research: A method of research that utilizes both qualitative and quantitative methods to gain the advantages of both methods while working to avoid common challenges present in both and dealing with problems unique to the combination of both (McKim, 2015; Feilzer, 2010; Mills, 2007).

Nature deficit disorder: The effect of limited time spent in nature. The cost such includes but is not limited to “...diminished use of the senses, attention difficulties, and higher rates of physical and emotional illnesses” (Louv, 2008, p.36).

Psychomotor domain: The educational domain that is concerned with growth of gross and fine motor skills.

CHAPTER 2
REVIEW OF RELATED LITERATURE

Introduction

It is our responsibility, as educators, to permit students the time and resources necessary to delve deeper into their natural inquiries; “children generally acquire speedily and certainly whatever they are not pressed to learn” (Rousseau, 1964, p.121). The Danish Forest School (DFS) pedagogical approach was developed by Danish educators to enable students to have an opportunity to learn in a natural environment outside of the four walls of the schoolhouse, affording students the time to investigate and learn independently about topics within their natural environment that interest them (Williams-Siegfredsen, 2012). This approach is an accepted fit for the LHP School students who are familiar with a progressive, constructivist, integrated curriculum and pedagogy (Drake, 2012). At LHP, “We believe that young children construct knowledge by experimenting and exploring with materials, reflecting, asking questions, and sharing ideas. Our teachers plan explorations that incorporate standards, assess each child, and strive to create students who are critical thinkers” (CJDS, 2017). “The philosophical stance of the Forest School movement in promoting engagement with woodlands addresses these concerns and serves as one vehicle through which children can gain regular access to the natural environment” (Slade, Lowery & Bland, 201, p. 66) and is a guiding source for the current action research study.

Purpose of Study

The prime purpose of the present action research study is to investigate the cognitive, affective, and psychomotor impact upon student-participants who experienced an interdisciplinary ‘Woods School’ unit that combined math, science, and English language arts in a Danish Forest School pedagogical approach to learning. The secondary purpose is to determine ways to incorporate a DFS based program into the curriculum and pedagogy of the school.

Problem Statement

Presently the research site of this action research study is undergoing a renovation during which a natural wooded area has become more accessible as such school administration has implemented a new policy that requires all teachers to take their classes out to the area for regular visits. Many staff have trepidations about doing so, the reasoning generally stems from a lack of knowledge of possible benefits and/or how to use the area are voiced by teachers. This action research study will serve as a rebuttal to these responses as possible effects of using the natural wooded across student domains will explored in conjunction with an interdisciplinary approach to disciplines. This action research study will also serve as a preliminary guide as to how to utilize the natural wooded area as an environment conducive to student learning.

One exemplary model of effective usage of naturally wooded areas as learning environments comes from the Danish Forest School (DFS) approach. The DFS approach, popular in the UK has not found a strong foothold in American education, largely in part

to the current US trend that emphasizes standardization and testing in the schools as well as a lack of understanding of the DFS approach and the benefits it offers students.

Research Question

This action research study will document any effects an DFS approach has on domains of third grade students by addressing the identified problem of practice. The problem of practice being the demystification the new frequent woods visit policy for dubious staff. To explore any potential impact of the Danish Forest School model combined with an interdisciplinary curriculum, the following research question was asked:

1. What is the impact of the Danish Forest School model combined with an interdisciplinary State Standards (SS) curriculum at a private parochial school in the South?

Importance of Literature Review

The selected texts that are presented in this chapter were chosen purposefully. The current action research study utilized a mixed method approach; therefore, it is necessary to present text that support the usage of such a design including possible limitations that may occur during the study. Through a careful review of similar studies, a better understanding and implementation of the mixed methods process can be executed by the researcher.

The goal of the current action research study is to influence current practices within the research site concerning the usage of a natural wooded area. To properly conduct the research a strong understanding of similar research is needed. Texts

presented in this chapter illustrate the researcher's knowledge of critical areas relevant to the current action research study.

The action research methodology employed by the current study is a one-group pretest-posttest explanatory mixed methods design. This chapter will provide an analysis of this method and through doing so make overt reasons as to why this research method is best suited for the current research study. This review of explanatory mixed methods research demonstrates a strong comprehension of implementation and the limitations of such, which will serve the development of the implications regarding the researcher's ability to conduct an efficacious action research study.

Previous studies reporting on the varying effects of outdoor learning environments upon students is presented as it directly relates to the current action research study. This is organized by the dependent variable (effect) that is reported, psychomotor, cognitive and affective. Each domain is defined and studies related to the effect as defined are reported. The significance of presenting texts comparable to the current action research study presents a recognition of problems that have arisen previously in the field of study and a disposition toward avoidance of related difficulties.

The DFS approach is one method of utilizing outdoor environments as learning environments and is the guide for the present research study. Texts explaining the DFS approach are presented to the reader, illustrating the researcher's understanding to the approach. A thorough understanding, as demonstrated by the following pages, indicates a robust ability to implement such an approach in the existing research study. A key component to the understanding of the DFS approach resides in comprehension of theoretical basis that serve as the foundation of the approach. This theoretical basis is

reviewed through texts that have been published by theorists and have stood the test of time these theories and texts have been reviewed by other scholars, accepted by the field as valuable and previously implemented in education.

The present action research study revolves on the application of an DFS approach, as such the historical context of DFS is discussed. The literature presented illustrates a clear understanding of the sequence of thought that has led to the development of the DFS approach.

Methodology

The methodology that will be used in the present research is a sequential explanatory mixed methods method. Research conducted in this manner requires either qualitative or quantitative data to be collected first, followed by the other type of data (Castro, F.G., Kellison, J.G., Boyd, S.J., & Kopak, A., 2010). To gather quantitative and qualitative data, the researcher utilized pretests and posttests in the form of student-participant journals and observations completed prior to and during the ‘Woods School’ unit that was set in the natural wooded area. Journal entries written by the teacher-researcher, an online survey completed by teacher-participants and semi-structured interviews with teacher-participants serve as additional data.

When using a mixed methods design the researcher must first decide if such a design would add to the research or detract from it (McKim, 2015). To answer this the pros and cons of such a method must be explored. Quantitative research yields statistical data whereas qualitative research yields narrative data, both types of data are valuable in research. Mixed methods research enables researchers to use qualitative methods to

measure some aspects of the phenomenon under inquiry and quantitative methods for other aspects in which qualitative data may not be sufficient (Feilzer, 2010). A mixed methods design allows the researcher to harness the benefits of both quantitative and qualitative research but comes with its own unique obstacles and limitations.

Mixed research designs require researchers to be proficient in both qualitative and quantitative research and many researchers do not have training in both methodologies, which can lead to additional researchers within specialized field of research (McKim, 2015). Along with this challenge researchers conducting mixed methods research must control for limitations of both quantitative and qualitative designs.

Although there are challenges to a mixed methods design, the current research study is enhanced by utilizing such a design, as the perceived benefits outweigh the disadvantages. McKim (2015) reported a similar view of mixed methods research in a sequential explanatory study that explored the value of mixed methods studies among graduate students. The result of this study concluded "...that students believed mixed methods studies present more evidence for findings and interpretations" (McKim, 2015, p.11).

The present research study was conducted by a teacher-researcher actively involved within the research setting (a classroom) to affect change in current practice (Mertler, 2014), as such this research study falls under the umbrella of action research and the limitations of the current study will be analogous to those present in similar action research studies. One major concern of this action research study is that of generalizability, "A term that refers to the applicability of findings to settings and context different from one in they were obtained" (Mills, 2007, p.96). As an action research

study, the problem of practice is extremely localized, as such the notion of any accurate generalizability is null. This concern is raised in many other research studies including a multi-dimensional and cross-scientific case study that explored lessons in a classroom in comparison to lessons in a forest setting (Mygind, 2009). Mygind (2009) notes that "...generalizations cannot be made from the material presented. The results should be critically evaluated on the outlined premises" (p.167-168). This applies to the current action study as such the purpose of this study is to develop a solution for a perceived issue within the confines of the research setting, a small private parochial school located near a southern capital.

Another subject specific concern of the current action research study is the lack of previous research in the area addressing of the impact of DFS beyond socioemotional and physical development. The study of cognitive effect of an DFS approach is relatively recent. "Some exploration of academic attainment and progress might go some way to explaining the effect of forest school on young people" (Swarbrick, Eastwood, & Tutton, 2004, p.144).

Participants

Teachers, administrators and students are all the subject of the present action research study.

Student-participants

The student- participants of this study were the 14 students of the Cutler Jewish day school's third grade class in the fall of 2017. Of the 14 participants seven identify as a male, and seven identify as female. Eleven student participants are white and three are

not. All student-participants apart from one have been with the school for over three years, as such a level of comfortability and ease has been developed. Consent to conduct the research was obtained by the teacher-researcher (see Appendix A). All who were asked to participate (n=14) choose to do so, however, during the week of outdoor sessions two female students did not participate naming the outside temperature as the reason.

The teacher-researcher has been with the school for the past decade, teaching kindergarten through third grade. She has been involved in many environmental and conservation project through the school in the past. Her focus upon the wooded area is a natural fit for research.

Teacher-Participants

Twenty staff members of the research site, eight preschool teachers, five elementary teachers, three administrators, and three special interest teachers (foreign language and religious studies) were invited to complete an online survey focused on the perceived usage of the natural outdoor area. Thirteen of the twenty staff members invited to participate did so, four were preschool teachers (two-year-old and three-year-old teachers), five elementary teachers (1st grade through 5th grade), two special area teachers (Hebrew and Jewish Studies) and one administrator. Of these all identify as female except the one male administrator. Semi-structured interviews were performed with the teacher-participants following the completion of the online survey.

Theoretical Basis

Richard Louv (2008) warns that a lack of time spent in the natural world has numerous negative effects on children and adults alike. He coins the term ‘nature-deficit’ to describe ailments resulting from limited exposure to the natural environment. Louv (2008) notes that “as nature deficit grows, another emerging body of scientific evidence indicates that direct exposure to nature is essential for physical and emotional health” (p.35). Numerous studies indicate that time spent outdoors in a natural environment is not only advantageous for children and has an impact on psychomotor, affective and cognitive domain but is preferred as is reported in a study of children preference regarding outdoor environment (Norðdahl & Einarsdóttir, 2015).

Psychomotor domain

The psychomotor domain is focused on fine and gross motor skills. In an experimental study conducted in Telemark, Norway children aged 5-y years were offered play in either a structured man-made playground or a natural wooded area then tested with European Test of Physical Fitness. The Motor Fitness Test and the results indicate “a general tendency that the children using the forest as a playscape performed better in motor skills than the children on the traditional playground” (Fjørtoft, 2001, p.115). The implications of this study suggest that the innate diversity of nature environments affords more versatile play which in turn helps aid the development of motor skills. Another example of increased psychomotor development has been reported from a qualitative data gathered during research conducted in an early childhood center located in New Zealand (Mawson, 2014). In this setting 28 children and seven teachers were observed during times spent in a heavily forested area near the center. During these times the researcher

observed higher more diverse physical movement amongst students than compared to times children spent in the structured outdoor playground provided by the center. Examples of the activities requiring the negotiation of a varying motor skills included “...climbing of trees and swinging on the branches and of clambering around and playing on the rock formations” (Mawson, 2014, p.519). At the Ruth Staples Child Development Lab in Nebraska students aged from 20 months to five years participant in a natural outdoor classroom, observations during which help validate Mawson (2014) findings, noting that a natural playscape affords a plethora of physical challenges. “Crawling through low bushes, ducking under tree branches, feeling tiny next to a huge cottonwood tree, or stretching our arms up just like the branches that reach up to the sky- all are common experiences in the natural environment” (Benson & Miller, 2008, p.25). Researchers refer to a child that climbs a large tree as an example of balance and strength development. In another study that observed 24 children from seven schools in Oxfordshire, Shropshire and Worcestershire over an eight-month period as they attended a Danish Forest School (DFS) program reports increased fine and gross motor skills, visible improvements in physical development, transferring of fine and gross motor skills to activities outside the DFS program (O’Brien, 2009). Furthermore, O’Brien (2009) and Benson & Miller (2008) reports gains in affective and cognitive domains as well.

Cognitive domain

The cognitive domain is defined as critical thinking, reasoning and problem-solving abilities. Slade, Lowery, & Bland (2013) conducted a study that involved the implementation of a Forest School program in the summer of 2012, during which children attended 3 sessions and following the experience students, teachers and family

were interviewed about their views of the program. During these interviews it was reported that students engaged in numerous cognitive tasks such as changing strategies when needed, reflecting upon approaches to problems, making predictions, noticing patterns, and developing ideas on cause and effect and sequencing (Slade, Lowery, & Bland, 2013). As referenced earlier, O'Brien (2009) and Benson & Miller (2008) noted improved cognitive skills in FS participants, reporting increased creativity, improved academics, use of language, planning and review abilities, and environmental knowledge.

In the summary report of the *California student assessment project: The effects of environment-based education on student achievement research phase one* conducted by the State Education and Environment Roundtable (SEER) (2000) on behalf of the California Department of Education, asserts that using the environment as an integrating context (EIC) is more beneficial for students than traditional education. The purpose of the study was to compare EIC based programs to similar traditional programs based upon student achievement as assessed by standardized test results, attendance rates and grade point averages. The standardized test scores were taken from the Stanford Achievement Test (SAT), the California Test of Basic Skills (CTBS) and the California Achievement Test (CAT). Researchers did a comparable analysis of treatment groups (EIC based program participants) and control groups (students who did not participate in EIC-based programs but had similar demographics). The study reports on eight comparable pairs. Of the three evaluated pairs of high school programs, EIC students scored higher than their traditional equivalents in both academics and attendance in two of the comparisons. In the third comparison, students participating in Lincoln High School's Integrated Studies in Systems Program (treatment group) and Lincoln's traditional students (control

group) demonstrated little difference. The one comparison of middle school programs, “Pinecrest students (EIC treatment) scored higher than Bridgeport students (control) in 9 of the 15 assessments analyzed” (SEER, 2000, p.10). Of the four elementary school programs compared, students in the treatment groups (EIC-based programs) consistently scored higher than their control group (traditional programs) counterparts on both academics and attendance in all four school comparisons. When all eight sets were analyzed together, “EIC students scored higher than their traditional counterparts in 72%, 101 of 140 academic assessments” (SEER, 2000, p.20) and demonstrated a higher attendance rate. When the results of this was combined with SEER’s national research, EIC students exhibited higher scores on academic assessments, as well as, higher attendance rates than their traditional peers.

SEER revisited this research project in 2005 during phase two and reported continued positive outcomes for EIC students. In 2004, Julie Athman and Martha C. Monroe, conducted a similar study that examined EIC programs and high school students’ achievement motivation; the results of which indicate, “environment-based education programs have a positive effect on students’ achievement” (p.20). That same year Edward H. Falco reported on the efficacy of EIC-based programs within ten South Carolina middle schools, stating that “quantitative and qualitative EIC Model data collected in South Carolina by an outside evaluator the first year of the program’s operation in the state show improvements in student attendance, behavior, and attitudes- the first steps toward academic achievement” (p.5). Clare Von Secker completed a three-year summative evaluation of the Bay School Project which was initiated by the Chesapeake Bay Foundation (CBF). The CBF developed and helped educators

implement EIC-based programs using the Chesapeake Bay and/or its watershed as a focal point in five Maryland counties. The findings of this study has significant implications; “first, they provide confirmatory evidence of the impact of EIC on three components of student environmental literacy: knowledge, attitudes, and stewardship behaviors” (Von Secker, 2004, p.1), as well as, adding validation to previous research that found EIC-based programs increase student engagement and suggesting that EIC programs can be used effectively with students from varying demographics.

Affective domain

Affective domain refers to the emotional aspect of students. Nedovic & Morrissey (2013) conducted an action research study in which 3-4 year olds redesigned and played in a natural outdoor area. During this time observations were recorded, and interviews were conducted after. This qualitative data revealed “...calmer, more focused play; and positive social interactions” (Nedovic & Morrissey, 2013, p.281). In a questionnaire sent out to Oxfordshire schools to evaluate a FS approach “...adults working within the foundation stage mentioned increased ability of quiet children to express themselves, an increase in confidence, and positive participation from disruptive children” (Swarbrick, Eastwood, & Tutton, 2004, p.144). Results from study in which 2 third grade classes in Copenhagen held 20% of their class time in a natural outdoor environment over a three-year period indicate a positive effect upon children’s social relationships and the perception of learning (Mygind, 2009). In another study in which student participants perceived as ‘underachievers’ by educators were placed in an outdoor learning environment more child-initiated learning was observed by educators and the preconceived label of ‘underachieving’ diminished (Maynard, Waters, Clement, 2013).

As referenced earlier O'Brien (2009) and Benson & Miller (2008), as well as, Flom, Johnson, Hubbard & Reidt (2011) also reported a positive affective impact of a FS approach upon students. These include increased independence, social skills, confidence, focus, and cooperation.

Danish Forest School

There is a consensus among scholars that the Danish Forest School (DFS) movement was initiated in Scandinavia, however, there is some debate whether it's origin can be traced back to Denmark or Sweden (Swarbrick, Eastwood, Tutton, 2004 & Maynard, 2007). "Definitions of FS can be debated, and practitioners have different expressions to defining what these are" (McKinney, 2012, p.24) however, regardless of its origins, DFS holds the belief that students need regular visits to the same natural outdoor area, these sessions are headed by a trained DFS leader and help facilitate independent learning and promote socioemotional wellbeing as well as cognitive growth (Slade, Lowery, & Bland, 2013, & Power, Cree, & Knight, 2015, Bennett, 2007). These visits must occur regularly (at least once a week) over an extended period in any weather and allow student the time and freedom to explore individual interests, student to teacher ratios are usually 12:1 (O'Brien & Murray, 2006). "A key aim of Forest School is to inspire lifelong learning through contact with natural settings" (O'Brien, 2009, p.55).

The DFS approach is based upon core principles each relying on educational theories for support. These core principles are as follows: a holistic approach to education, student individuality, active learning, meaningful learning & time to develop thoughts, child-centered environments, and social interactions (Williams-Siegfreden, 2012).

Holistic Approach

A holistic approach to education believes the aims of education is to develop the whole person, emotional, social, cognitive and physical. The DFS approach utilizes a holistic approach as it concerned with every aspect of the learner, social, cognitive, emotional and physical (Williams-Siegfredsen, 2012) and affords learners a variety of meaningful experiences. Depending on the setting there are unlimited types of activities that can take place in a DFS contributing to the holistic development of children. “Activities in FS can include imaginative play, shelter building, construction and crafts with materials in the environment” (McKinney, 2012, p.26), as well as many other learning opportunities such as species identification and documentation, storytelling, games in varying forms, scavenger hunts and visual art (McKinney, 2012). “The focus is on the ‘whole child’ (not only academic ability) and how they can develop their own learning styles at their own pace” (O’Brien & Murray, 2006, p.6).

Student Individuality

The DFS approach views children as organism that develops according to their own innate developmental plan, no two children are alike, and it is the teachers’ responsibility to facilitate the individual growth of each child based upon the child’s needs. The DFS approach allows each child a certain amount of autonomy when deciding what they will focus their learning. Howard Gardner’s theory of Multiple Intelligences (MI) supports this principle.

The MI theory states that there are eight or nine differing types of intelligences within every human being and everyone possesses some combinations of each. These

intelligences are as follows: Linguistic, logical mathematical, musical, spatial, bodily-kinesthetic, interpersonal, intrapersonal, naturalistic, and a speculated ninth intelligence of 'big questions' (Gardner, 2005, 1999).

Of these intelligences the naturalistic intelligence lends itself nicely to the DFS approach. Naturalistic intelligence allows individuals to readily identify flora and fauna specimens within a natural setting (Gardner, 1999). Persons with strong naturalistic intelligence are given the opportunity to succeed in an academic setting using an DFS approach.

One component of individuality is the socially constructed notion of gender. Female or male, everyone "does gender" (Lober, 2013, p.325). Doing gender is based upon the notion that "individuals are born sexed but not gendered, and they have to be taught to be masculine or feminine" (Lober, 2013, p.325). This idea is born from "the sociological theory of doing gender [which] focuses on interpersonal interaction and symbolic behavior on the social sphere..." (Vantieghem, Vermeersch, & Van Houtte, 2014, p.364). Doing gender in this sense begins before birth as parents decorate nurseys in boy or girl colors, pick out gender appropriate names and with little to no conscious awareness begin developing their child's gender before they have exited the womb. Little boys will play with trucks while little girls will play with dolls because this what they have been conditioned to do by society. Within a natural setting, children of both genders have the freedom to explore roles that may not be traditional, both genders are afforded the opportunity to redefine the gender stereotypical confines of their sex, girls may play in the mud while boys may design flower wreaths.

Active Learning

The DFS approach emphasizes that learning is an active process and through hands on interaction with the environment students can acquire knowledge and skills. Educational theorists, John Dewey, states that “the active side precedes the passive in the development of child-nature” (Dewey, 2013, p.38), that education is active, and children are not receptacles to be filled with knowledge. For Dewey learning and experience cannot be separated (Dewey, 1916); the DFS approach built in part upon this notion.

Meaningful Learning & Time

Interest driven inquires take on meaning and what is meaningful easily becomes learned. Rousseau (1964) noted, “The grand motive, the only motive which leads him far ahead with certainty, is present interest” (p.120). John Dewey (1916) notes that “parents and teachers often complain-and correctly- that children “do not want to hear or want to understand”” (p.129), this is because the content in which they are being taught holds no interest or personal meaning to the child. Children will easily learn what gains their attention, however, even with due interest to a topic time must be afforded to the student for inquires to be sufficed and knowledge constructed. The DFS approach allows students the autonomy and time needed to follow through on individual interest driven explorations.

Social Interactions

The DFS approach hold Dewey’s belief that school is a social institution (Dewey, 1938) and learning occurs through the navigation of social interactions. Les Vygotsky shared this belief and purported that social and cognitive development work together and

build upon one another. From this idea Vygotsky developed the Zone of Proximal Development (ZPD). “It [ZPD] is the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers” (Vygotsky, 1978, p.86). In other words, if a child can complete a task independently in a reasonable amount of time then the task falls within that child’s ZPD, if a child completes a task too quickly then it is too easy and falls outside that child’s ZPD, the same is true if a child requires assistance to complete a task. If a task is outside a child’s ZPD due to difficulty, scaffolding can be used to move it within that child’s ZPD and eventually out as the child masters the skill. Scaffolding is the process by which support is offered to a child and slowly removed bit by bit until the child can complete the task on their own (Vygotsky, 2011).

Vygotsky believed social interactions and cognition were intertwined, in a DFS this certainly is the case as children must constantly evaluate and re-evaluate tasks to determine whether they fall in their ZPD and what if any scaffolding is needed as well as negotiate social interactions with peers and teachers.

Integrated Curriculum

DFS approaches learning in a holistic manner, there is no need to partition learning into academic disciplines rather education is an integration of all academic disciplines occurring simultaneously. Many of educational theorists that provide the theoretical bases for DFS also support integrated curriculum. There three ways that integration of curriculum may occur, fusion, multidisciplinary, interdisciplinary and transdisciplinary. The fusion approach to curriculum fuses something into the already

existing curriculum. From the multidisciplinary approach deliberate connections are made between disciplines. For example, students may study a similar theme through different disciplines and classes. “From the multidisciplinary perspective, teachers do not need to make very many changes” (Drake, 2012, p.16). The interdisciplinary approach makes more explicit connections across disciplines, but the curriculum continues to revolve around a central theme like that of a multidisciplinary approach. The transdisciplinary approach is like the other approaches as it makes overt connections across disciplines where it differs is where it begins. The other approaches begin with academic disciplines or common concepts whereas “the transdisciplinary approach begins with a real-life context” (Drake, 2012, p.20).

Each approach of integration can be tailored to differing degrees and molded to fit specific educational environments. Depending on the setting, a DFS can utilize any of the above integration approaches, the key point is that a DFS will use one or another as the very principles that DFS is built upon calls for the integration of curriculum.

Historical Context

As referenced earlier, there is some debate where the DFS was first developed, which is “to be expected in a social movement with multiple experiences and spares literature” (Cree & McCree, 2012, p.32), however there is agreement that DFS was born to Scandinavian (Swarbrick, Eastwood, Tutton, 2004 & Maynard, 2007) and has experienced growing popularity in the UK. To understand the DFS approach, we must explore the historical and cultural context from which it was derived. Unlike many cultures that either overlook the natural environment or have severed ties to the natural world in search of urbanization; Scandinavian culture not only holds the natural world in

high regard but has legislation that makes interaction with nature a legal right for its citizen. “*Friluftsliv* is a term that expresses Scandinavian cultural traditions and legal rights of spending time outdoors with family and friends for recreation but also to restore a personal balance with the aid of nature” (McKinney, 2012, p.25). What this means is that every citizen must not only have access to a natural landscape, but they have the legal right to wander and roam in these areas. Where did this cultural devotion to the nature and the outdoors originate? Williams-Siegfredsen (2012) presents the development of *friluftsliv* in 3 phases resulting in the development of the DFS.

Phase 1

“In the 1700s a change in thinking about being outdoors occurred” (Williams-Siegfredsen, 2012, p.7) in Scandinavia. This shift was characterized by a lessening in the thought of nature as something to battle and nature became something to experience and enjoy. Rousseau’s writings on the child and nature became popular during this time and his ideas about the beauty and benefits of nature help influence the shift in opinion regarding the natural environment.

Phase 2

As the 1800s were concluding many people were living in more urban areas because of the industrial revolution. Long working hours decreased the amount the time available for people to spend in the outdoors. Crowded urban areas help contribute to rising health issues among people. One readily utilized remedy for numerous ailments of the time was increased time outdoors in natural surroundings. “Outdoor sanatoriums

and kindergartens were established so that patients and children could have fresh air, peace in nature and more hygienic living conditions” (Williams-Siegfredsen, 2012, p.8).

Friedrich Froebel open the first kindergarten in Germany in 1840 and this served as inspiration for Søren Sørensen to create a play and preparatory school in 1854. Sørensen emphasized outdoor play for children, echoing cultural beliefs at that time of the beneficial nature of the outdoors (Williams-Siegfredsen, 2012). During this time Margaret McMillian had begun an ‘Open Air Movement’ which combined Froebel’s ideas on education with an open-air environment. McMillian’s ‘Open Air Movement’ gave birth to two London schools, one in Bow opened in 1908 and the other in Deptford opened in 1910 (Cree & McCree, 2012).

Adding to these initiatives was the work of Maria Montessori whose views on education and the importance of nature help mold DFS then and now. Montessori compared students within a traditional classroom to “...butterflies mounted on pins, are fastened each in his place, the desk, spreading the useless wings of barren and meaningless knowledge which they have acquired” (Montessori, 2013, p.25). She warns that if children are continually repressed then they will become like dead bugs. She urged schools to “...permit free, natural manifestations of the child...” (Montessori, 2013, p.25).

In 1901 Sofus Bagger and his wife Hedevig opened the first ‘folebornehave’ (public kindergarten for working people). Here the students were afforded large playgrounds and gardens. The school housed poultry and gave children access to digging areas. (Williams-Siegfredsen).

World War 1 resulted in many changes worldwide. Outdoor learning in the UK and surrounding areas was still prevalent but what the outdoor learning emphasized changed. After the war emphasis began to be placed on the cultivation of leadership skills and independent learning (Cree & McCree, 2012). Adventure schools and adventure playgrounds became popular. In 1943 John Bertelsen created an adventure playground in Emdrup Banke in Copenhagen. This playground contained many loose parts (wood and recycled items) for children to construct and play with using provided tools.

Scandinavian education experienced some key developments after World War 2. Most notably the Skogsmulle School in Sweden. Skogsmulle was created by a retired soldier, Gosta Frøhm, and based its practice around songs, stories and characters in the outdoors. Skogsmulle served as inspiration for “I Ur Och Skur” (in rain or shine) early years movement whose premises is that children should be outside everyday no matter the weather (Cree & McCree, 2012). Building upon the “I Ur Och Skur”, Ella Flautua introduced the first wandering kindergarten in 1952. Here children would assemble at a meeting point in the morning then spend the day in the forest and later assemble at the same meeting point for parent to pick them up in the afternoons (Williams-Siegfredsen, 2012). A cabin was eventually constructed in the forest and this became the first forest kindergarten.

Phase 3

In the 1960s and 70s increased popularity in Progressive education help strengthen DFS. Principles underpinning the Progressive Education Movement, learner

centered education, a holistic view of children and education as integrated, meaningful and active (Schiro, 2013) permeate DFS.

Currently increased awareness of environmental issues, in part as response to the 1970s energy crisis and global warming, the advent of 'nature deficit disorder' (Louv, 2008) and the call for educational reform has added to the popularity of the DFS. Numerous schools in the UK have adopted the DFS approach and DFS has begun to breach the border of the United States. Because DFS can take many forms it is the constant requirement of regular (at least weekly) visits to a natural wooded area in any weather during which students are given the time and freedom to explore individual interests that characterizes DFS.

CHAPTER 3
ACTION RESEARCH METHODOLOGY

Introduction

This chapter presents the methods that were used to implement this action research study. Chapter Three is organized into the following sections: (a) purpose of the study, (b) statement of the problem of practice, (c) research design (including a field site description), and (d) conclusion.

The primary purpose of the present action research study is to investigate the cognitive, affective, and psychomotor impact upon student-participants who experienced an interdisciplinary unit that combined math, science, and English language arts in a Danish Forest School pedagogical approach to learning. The secondary purpose is to determine ways to incorporate a DFS based program into the curriculum and pedagogy of the school.

Problem of Practice

In recent years, I have noticed a large portion of my school's natural wooded grounds being overlooked and under-utilized by the school's teachers as a learning environment. To incorporate the outdoors within the curriculum, LHP administration has implemented a new policy that requires all staff members to take their classes to the wooded area for frequent visits. Many staff members are resistant to the policy and have reported increased anxiety due to the requirement. The current action research study has

been developed to demystify the new policy for dubious staff.

Simultaneously, there have been numerous texts published that suggest being in a natural outdoor environment and an integrated curricular design has a plethora of benefits, ranging but not limited to motor-skill development (psychomotor), psychological well-being (affective domain) and critical thinking skills (cognitive domain) (Drake, 2014; Louv, 2008).

As LHP begins to implement new policies that incorporate the natural wooded area into daily curriculum, the DFS model is a natural fit to enable teachers to expand their classroom or what Shulman calls a “laboratory of practice” (2004) beyond the four walls of the school house. The Danish Forest School (DFS) approach has set a precedent for integration of the outdoor natural environment and interdisciplinary education. However, such an approach has yet to be effectively utilized in my local community

Research Design

The current action research study focuses on solving the problem of limited outdoor interaction while incorporating an interdisciplinary curriculum with the hope of advocating for a realistic change in the method of instruction. My study’s design followed Mills (2007) action research methods including the identification of an area of focus or a problem of practice; collecting data, analyzing and interpreting data, and developing an action plan in reciprocity with my participants.

I. Phase one of the study included the identification my problem of practice and the creation of a research plan through a detailed review of literature;

II. Phase two of the study included the collection of data using student-participant journals, video evidence, teacher-researcher field journal, an online survey (Please see Appendix B) and semi-structured interviews conducted with teacher-participants.

III. Phase three of the study is an analysis of the collected data I reciprocity with the participants.

IV. Phase four of the study involved a holistic reflection leading to an action plan for the implementation of future interdisciplinary ‘Woods School’ units of study at LHP that incorporate the Danish Forest School approach.

Phase One

Mills (2007) identifies the first step of action research as identifying the area of focus. For an inquiry to be meaningful and engaging the teacher-researcher must identify a problem within their environment that is of importance to them. During this phase of the action research process I began to observe my environment, noting a lack of utilization of the natural wooded area my school offers and learning that a new policy would be implemented that requires all teachers to take their classes out the area for frequent visits. Upon implementation of the policy numerous staff members reported heightened anxiety due to the frequent woods visits requirement. To demystify the new policy the teacher-researcher created an action research plan.

Research Plan

Following the Williams-Siegfredsen (2012) Forest School (FS) model, the teacher-researcher developed a ‘Woods School’ unit aligned with the State Standards (SS) that integrated science, math, English Language Arts (ELA), and social studies. The

teacher-researcher implemented the ‘Woods School’ unit, at a private parochial school in a third-grade classroom over the fall 2017 semester.

Teachers, administrators and students are all the subject of the present action research study. Teacher-participants and administrator-participants took part in an online survey and semi-structured interviews regarding their perceptions of the usage of the natural wooded area provided by the research site.

Student-participants attended class as normal within the four walls of the schoolhouse the week prior to the study. The following week students participated in an interdisciplinary class that was held outdoors in the natural wooded area provided by the research site. All sessions were recorded and immediately transcribed by the teacher-researcher. All student work completed during both weeks of class was documented in journals given to student-participants at the beginning of the study. Data was comprised of student-participant journals, video evidence, and a teacher-researcher field journal.

Data analysis in reciprocity with the student-participants following Mertler’s (2014) action research paradigm for quantitative research took place in the spring of 2018.

Research Site

The research was conducted at an affluent, private parochial school located near a southern capital. The school serves children from six weeks old through fifth grade. There are two principals, one overseeing the preschool wing (6-week olds-kindergarten) and another overseeing the elementary wing (1st grade -fifth grade). Supervising the principal is the head of the school and assisting him is a board of directors. The physical

space of the school has recently been renovated and an additional hall built. Along with new construction to the building, an effort to make the natural wooded area provided by school more accessible has successfully been undertaken.

Research Participants

Twenty staff members of the research site, eight preschool teachers, five elementary teachers, three administrators, and three special interest teachers (foreign language and religious studies) were invited to complete an online survey focused on the perceived usage of the natural outdoor area. Thirteen of the twenty staff members invited to participate did so, four were preschool teachers, five elementary teachers, two special area teachers and one administrator. Of these all identify as female except the one male administrator. Semi-structured interviews were conducted with the teacher-participants following the completion of the online survey.

The student-participants of this study were the 14 students of the LHP's third grade class in the fall of 2017. Of the 14 participants seven identify as a male, and seven identify as female. Three student participants are non-white, the rest are white. Thirteen of the student-participants have been with the school for numerous years, as such a level of comfortability and familiarity has been developed. Consent to conduct the research was obtained by the teacher-researcher (see Appendix A). All who were asked to participate (n=14) choose to do so, however, during the week of outdoor sessions two female students did not participate citing the outside temperature as the reason.

Phase 2

The second phase of action research as defined by Mills (2007) is the collection of data. The teacher-researcher gathered both quantitative and qualitative data throughout the study. Teacher-participants were asked to complete an online survey (Please see Appendix B). After completing the survey semi-structured interviews were conducted with teacher-participants in the halls and classrooms of the research site.

Prior to beginning the study all student-participants were journals to document all their work for the duration of the study. Each day of the study student-participants were required to write a reflective entry in these journals regarding their learning for the day. In addition to the student-participant journals, the teacher-researcher completed a field journal as well, documenting any observations that were made during the study. Along with the journals from both the teacher-researcher and student-participants perspectives, all sessions were video recorded and immediately transcribed by the teacher-researcher.

Phase 3

Mills (2007) defines the next phase of action research as the analysis and interpretation of data. During this phase of the study the teacher-researcher reviewed student-participant journals and the teacher-researcher journal. The review process involved coding entries based upon language used. For example, positive adjectives used to describe an experience was classified as optimistic and categorized as such. Once all journals were reviewed and coded, the entries provided a unique window into the ‘Woods School’ experience. Video documentation of the study was transcribed and reviewed by

the teacher-researcher as well. All findings were reviewed with the student-participants as part of the reciprocity of the study.

The online survey that was given to teacher-participants was coded and reviewed by the teacher-researcher, revealing data trends and a consensus of staff anxiety regarding the usage of the wooded area provided by LHP. Semi-structured interviews were held with teacher-participants to gain a better understanding of the survey results.

Phase 4

The final phase of action research, as defined by Mills (2007) is the development of an action plan. During this phase implications of cognitive, psychomotor and affective impact of an DFS interdisciplinary curriculum was reviewed in depth. It is during this phase that the teacher-researcher completed a holistic reflection leading to an action plan for the implementation of future interdisciplinary ‘Woods School’ units of study at LHP that incorporate the Danish Forest School approach. Results of the study were shared with administration and staff of LHP as well as guardians of student-participants.

Conclusion

The current action research study focuses on solving the problem of staff trepidation over new policy changes through the implementation of a DFS Model coupled with an interdisciplinary SS curriculum. My study’s design followed Mills (2007) action research methods including the identification of an area of focus or a problem of practice; collecting data, analyzing and interpreting data, and developing an action plan in reciprocity with my participants. I offer firsthand information to my colleagues, administration and school stakeholder that will reduce anxiety over frequent class visit to

the woods and offer a method of integrating the natural area into daily curriculum. My conclusions, which will be presented in chapter four of this dissertation, will shape the future of LHP' outdoor learning integration policies.

CHAPTER 4
FINDINGS AND IMPLICATIONS

Introduction

Chapter Four presents the findings of the present action research study that was conducted to demystify the new frequent woods visit policy for dubious staff at the LHP School through the implementation of an interdisciplinary unit that combined math, science, and English language arts (ELA), and social studies in a Danish Forest School (DFS) (also known as the ‘Woods School’) pedagogical approach to learning in a third-grade classroom. Qualitative analysis is divided into two phases. Both phases are coded into four reoccurring themes: 1. Provided Materials; 2. Physical Environment; 3. Peer Interactions, and 4. Student Attitudes. Teachers, administrators, and students are the subject of the present action research study that was conducted to answer the following research question:

What is the impact of the Danish Forest School model combined with an interdisciplinary State Standards (SS) curriculum at a private parochial school in the South?

Following the Williams-Siegfredsen (2012) Danish Forest School (DFS) model, the teacher-researcher developed a unit aligned with the State Standards (SS) that integrated science, math, ELA, and social studies. The teacher-researcher implemented

the unit and collected data, at a private Jewish day school in a third-grade classroom over the fall 2017 semester.

Students-participants attended class as normal in the brick and mortar schoolhouse the week prior to the study. The following week students participated in class that was interdisciplinary and conducted outdoors in the natural wooded area provided by LHP. All sessions were recorded and immediately transcribed by the teacher-researcher. All student work completed during both weeks of class was documented in journals that were given to student-participants at the beginning of week one. Data was comprised of student-participant journals, video tape and a teacher-researcher field journal.

The data indicates that the Forest School approach positively effected these student-participants' engagement and retainment of the material in the class. Student-participants displayed heightened levels of attention, engagement and they completed assigned tasks during the second week that was spent in the natural wooded area. They also displayed less negative peer interactions and aggressive behaviors while outdoors. However, for traditional learners (i.e., learners use to a subject-centered approach inside the four walls of the schoolhouse) the transition to the outdoors was more difficult than expected. For example, the traditional learners noted in their journals that they felt that there was a lack of structure and they felt that the increased freedom of exploration was overwhelming at first and that they were unsure how to adjust to the new outdoor environment. The purpose of Chapter Four is to describe and interpret these findings and to discuss their implications.

Data Collection Strategy

This study is an action research study using qualitative and quantitative data analysis. An online survey, semi-structured interviews, field journals and unstructured observations were used to gather observational and anecdotal data.

Teacher-Participants

Twenty staff members of the research site, eight preschool teachers, five elementary teachers, three administrators, and three special interest teachers (foreign language and religious studies) were invited to complete an online survey focused on the perceived usage of the natural outdoor area. Thirteen of the twenty staff members invited to participate did so, four were preschool teachers, five elementary teachers, two special area teachers and one administrator. Of these all identify as female except the one male administrator. Semi-structured interviews were conducted with teacher-participants and administrator-participants following the completion of the online survey. These interviews were conducted face-to-face within the halls and classrooms of the school.

Online survey via email invitation

The online survey created by the teacher-researcher included eight questions, six of which were multiple choice and two that were a Likert scale (see Appendix B). Question one, two and six asked about the frequency and usage of the wooded area. Questions three asked respondent to indicate any concerns they may have regarding the usage of the woods. Question four asked how confident the participant felt about integrating the outdoor area into their daily curriculum. Questions five inquired about the respondent's personal preference for the woods. Questions seven asked participants to

indicate what benefits they believe the woods affords them and their students. The final question asked respondents to indicate whether they were in favor of future integration units of study of the natural outdoor environment into their classrooms. Of those that completed the survey and semi-structured interviews that followed, one is an administrator, four teach preschool (a two-year-old class and a three old class), five teach elementary classes (grades 1st-5th), and the remaining two teach special areas (foreign language and religious studies).

Student-Participants

The participants of the present study include the 14 students of the LHP's third grade class in the fall of 2017. Of the 14 participants seven identify as a male, and seven identify as female. Three student participants are non-whites and 11 are white. All student-participants apart from one have been at LHP for over three years. Consent to conduct the research was obtained by the teacher-researcher (see Appendix A). All who were asked to participate (n=14) choose to do so, however, during the week of outdoor sessions two female students did not participate citing the outside temperature as the reason.

Field Journals

All student-participants were given notebooks in which all assignments and daily reflection were kept for the duration of the study. After each day student-participants were asked to write three-sentences reflecting on their day. The final day of each session both, indoors and outdoors, student-participants were asked to write one to three paragraphs reflecting upon their entire experience over the two-week period in which the 'Woods School' was implemented. The teacher-researcher documented events and

observations of each day in a private field journal. The teacher-researcher noted behaviors as well as dialogue with and between student-participants. Entries from the indoor sessions were compared to the entries from the outdoor sessions. At the end of the study, the teacher-researcher led a focus group with student-participants reflecting upon the study. Student-participants discussed with one another and the teacher-researcher their perceived pros and cons of 'Woods School'.

Unstructured Observations

Each session was video recorded, reviewed and analyzed by the teacher-researcher and later reflected on with the participants for member check. During review the teacher-researcher noted any repeating or unusual behaviors and/or dialogue between student-participants and shared with the participants as well. Documented indoor sessions were compared to the documented outdoor sessions and revealed most student-participants to have a positive reaction to the Danish Forest School approach. This was verified by the reflection sessions with the participants.

Ongoing Analysis & Reflection

Staff Survey

Twenty staff members of LHP were invited to partake in a survey that examined personal preference for the LHP woods and the use of such in the classroom (See Appendix B). Of the 20 staff members invited to participate only 13 did so; two of whom did not complete the survey. Of the 11 that completed the survey, five are preschool teachers, five are elementary teachers, two are special area teachers, and one is an administrator. One special interest teacher and one preschool teacher, did not complete

the survey, answering only one of eight questions, therefore the teacher-researcher did not include the results of these surveys in her analysis. The greatest concern of taking students to the wooded area as indicated by participants is limited visibility, despite this concern 75% of participants wish to incorporate the woods into their daily curriculum yet most indicated a lack of confidence regarding how to do so. The staff survey indicates a lack of confidence on implementing the Danish Forest School (DFS) ‘woods’ approach into their daily curriculum as well as a lack of confidence in student ability to make the correct choices when interacting with each other and cooperating with each other even when a teacher is not in eyesight. For example, there is limited visibility in the woods and this was the first concern of respondents. Their second concern was the quality of student interactions. These concerns were not supported by these present findings that indicate that these student-participants completed their work and made the correct choices when interacting and cooperating with each other. For example, students’ journal entries and teacher’s observational data suggests that with more room to roam and less teacher visibility, LHP students completed work and had less negative interactions with one another.

Observational Data

The week spent learning indoors before holding class outside and the week of outdoor class was video recorded and later reviewed by the teacher-researcher and reflected upon with the participants in a focus group. Technological problems were rampant during this as the video recorder itself malfunctioned causing periods of the study to not be recorded. During the indoor portion of the study student-participants were very aware of the recording devices and often would acknowledge the devices

directly. During the second half of the study in the woods, students did not interact with the recording devices. It is the opinion of the teacher-researcher that the open space afforded to students in the outdoors help diffuse interest in the recording devices whereas the confines of the indoor classroom helped to promote interest in the devices.

Video evidence supports teacher-participants' concerns of limited visibility in the woods. Student-participants were given direct instructions and assignments then would break off to find a 'den' of sorts to complete their tasks. The teacher-researcher did not have all students in view, at all times, however, more assignments were completed by students when in the outdoor classroom setting than in the indoor classroom setting. This suggests that student choice and freedom that is afforded by the outdoor environment helps increase engagement and follow through by students. This increased space and freedom also affords students an opportunity to walk away from negative peer interactions whereas the indoor classroom does not. Video evidence reveals less student to student disagreements and negative interactions (aggressive behaviors, name calling, invasion of personal space, and any other actions taken to annoy) in the outdoor environment than in the indoor environment.

Student Journals

Student participants kept field journals throughout the study and wrote entries based on prompts at the end of each school day reflecting on their experiences during Unit 'Woods School'. These journals were analyzed, and the data revealed that although student-participants were observed to be more engaged in the outdoor environment, the more traditional learners had difficulty adjusting to the environment. The teacher-researcher identifies traditional learners as those that thrive in a traditional setting i.e.

student desks and chairs oriented toward the front of the classroom where an instructor can give frontal lectures. Of the 14 student-participants, the teacher-researcher identified four to be ‘traditional learners’. Of these four identified traditional learners, none verbally stated their dislike and trepidation over the outdoors, however three wrote about their strong dislike of the outdoors in their journal responses. The remaining ten student participants indicated a strong enjoyment of the outdoor class in their journals.

Following the Unit ‘Woods School’, the teacher-researcher held a reflective focus group with all student-participants. During which those that indicated a dislike of the outdoors in their journals did not overtly speak out against the woods, however, they did point out perceived disadvantages of ‘Woods School’, including the temperature outdoors, a perceived heightened risk of injury and uncleanliness, as well as an annoyance with the distance to bathroom facilities. The ten student-participants that indicated an enjoyment of ‘Woods School’ spoke highly of their experiences, reflecting upon individual explorations, an enjoyment of privacy and a desire to continue ‘Woods School’.

Reflective Stance

As the teacher researcher, throughout this action research study I had to adjust data collection strategies as needed. Areas that required adjustment included recording equipment, initial meeting location for outdoor sessions and physical positionality of instruction when outdoors.

Technological Issues

A variety of recording devices and strategies were implemented throughout the present study in the hopes of reducing the intrusiveness of such. I began recording indoor sessions with a flip camera that was provided by the LHP. This equipment would malfunction repeatedly and not record full sessions. A personal laptop was the next device utilized, however the size of the device increased distractibility of students as noted in the data analysis. A cell phone was used during the outdoor sessions to record students. This captured the most data yet was not able to record full class discussions as the student participant size and the open environment was too large to be captured in a single frame.

Managing the Outdoor Meeting Area

Initially I had student-participants meet at the entryway to the forested area for the regular time that class begins at 8:15 a.m. This proved to be less than efficient as some student-participants were not punctual and thus, instructional time was wasted as I waited for students to arrive to school. As the teacher-researcher I did not want to leave the forest entryway without all student-participants nor did I want to waste much time waiting for students because students who were on time to school were becoming less motivated as we waited. I changed the meeting location to the indoor classroom for the next school day and then once all student-participants arrived we walked together as a class to the outdoor area.

Physical Positionality of Instruction

The outdoor environment in which sessions were held is quite large in comparison to the classroom setting, as such when direct instruction was given to the class student participants were widely dispersed within earshot but not necessarily within clear eye sight. For example, when giving instructions in the large field area of the woods students would be leisurely sitting on logs, behind bushes, in trees etc. Upon noticing this I decided to change my position when addressing the student participants facing a physical barrier, usually a fence. The student-participants then found themselves between me and the fence. This was later modified to a corner section of fencing as student-participants then were flanked on two sides and as the teacher-researcher I had direct eye contact with each student to ensure understanding before breaking off into smaller groups.

Data Analysis and Interpretation

The data procured throughout this study was categorized and analyzed as either quantitative or qualitative. The quantitative data was determined to be the results of an online survey that was open to staff at the research site. Qualitative data included interviews with selected survey participants, observational data collected by the teacher-researcher during the implementation of the two-part study (indoor and outdoor classroom environment), student-participant journal entries and teacher-researcher field journal entries.

Quantitative Analysis

Data collected through the online survey regarding staff perception of the utilization of the natural wooded area provided by the research site was analyzed as quantitative data. The results of which indicate a majority recognition of benefits

utilization the wooded area affords students, a desire to harness these benefits yet a lack of confidence and fear in doing.

Staff Survey Results

Question One: *How often do you take your class to the woods?*

This question revealed that the elementary staff utilize the natural wooded area more frequently than any other group of staff members. Special interest teachers that participated indicated they never use the woods.

Table 4.1: Staff-Survey Question 1

Participant	Daily	Weekly	monthly	never
Preschool		1	1	1
Elementary	1	4		
Special interest				1
Administration	1			

Question Two: *What activities did your class complete when visiting the woods, free play/recess, science lessons, other curriculum studies (math, ELA, Social Studies) and/or a specified other?*

This question revealed that the special interest teachers did not use the woods. First grade teachers and the fourth/fifth grade language arts/history teacher indicated that their classes visited the woods for free play only. The fourth/fifth grade science/math teacher and the second-grade teacher responded that their classes used the woods for free play and science lessons. The administrator-participant revealed that he uses the woods as a setting for free play and other curriculum studies. Three of the four preschool teachers responded that their classes use the woods as an area of free play and exploration. One preschool teacher responded that their class uses the woods for only science lessons.

Question Three: *What concerns regarding the usage of the woods do you have?*

Participants revealed that limited visibility and student interactions to be most concerning. No participants indicated a concern for wildlife encounters which surprised the teacher-researcher as last year there was a sighting of a snake that was thought to be venomous in the wooded area. This sighting resulted in the closing of the woods until a herpetologist completed a walk through and positively identified the snake as harmless. The teacher-researcher also found the only concern for plant consumption to be from an elementary teacher rather than a preschool teacher.

Table 4.2: Staff-Survey Question 3

Participant	Limited visibility	Student interactions	Consumption of plants	Student injury	Wildlife encounters
Preschool	3			1	
Elementary	2	3	1		
Special interest		1			
Administration	1				

Questions Four and Five: *Likert scales asking participants to indicate their personal preference for the woods and their level of confidence integrating the woods into their daily curriculum.*

Table 4.3: Staff-Survey Questions 4 & 5

Questions	Mean	Median	Standard deviation
#4 woods integration	46.91	50	26.27
#5 personal preference	82.91	90	18.61

Question Six: *What do you believe your student domains (physical, emotional, social and/or cognitive) were enhanced through the woods experience?*

Table 4.4: Staff-Survey Question 6

Participant	Physical	Emotional	Social	Cognitive
Preschool	4	4	4	4
Elementary	5	5	5	5
Special interest	1	1		1
Administration	1	1	1	1

Question seven: *Would you like to integrate the woods more into your daily classroom curriculum?*

The results revealed that most participants would like to utilize the provided outdoor area more. The two respondents who disagreed with increased woods integration displayed

low levels of confidence integrating the woods into their curriculum however they also indicated awareness of possible benefits of doing so.

Table 4.5: Staff-Survey Question 7

Participant	Agree	Neutral	Disagree
Preschool	3		1
Elementary	4	1	
Special interest			1
Administration	1		

Results of the teacher-participant survey and semi-structured interviews revealed a question of the impact of a DFS approach and an interdisciplinary SS curriculum to not be the main concern among staff-participants rather it is the implementation of such that is surrounded in worry and misconceptions. Staff members repeatedly indicated that they were unsure how to use the woods beyond recreation. Along with an insecurity of how to integrate the woods into daily classroom practices a fear of losing control was demonstrated by staff as evident in their expressed concerns of limited visibility.

Qualitative Data

Qualitative data was gathered through student-participant journals, observation of video recorded of sessions and analysis of the teacher-researcher field journal. Each student-participant was given a numerical identifier as to ensure anonymity. The results

of which indicate that a Danish Forest School (DFS) approach coupled with an interdisciplinary approach and SS curriculum had an impact on the domains of the third-grade class. Data suggests a student preference for classes held outdoors in nature.

Observational Data from Video Recorded Sessions

This part of the qualitative analysis is divided into two phases. Phase one describes behavior and interactions prior to the outdoor session in the woods. During this phase student-participants were video recorded in their regular inside classroom. Phase two describes behavior and interactions during the week spent outside in the natural wooded area. Both phases are divided into four reoccurring themes: 1., Provided Materials; 2., Physical Environment; 3., Peer Interactions, and 4. Student Attitude.

Phase One

During this week of the study class was conducted regularly inside the third-grade classroom. The introduction of video recording equipment was greatly distracting to students, as such the equipment used was alternated between a small hand-held flip camera, a cell phone and a laptop.

Throughout the week students displayed a high level of distractibility. Students consistently used school supplies in innovative ways as an alternative to completing assignments, the physical environment of the classroom proved to be restrictive for students, peer interaction were negative overall, and students displayed pessimistic attitudes toward personal abilities to complete tasks.

Provided Materials

Clay was provided to students to use to create model early settlements, a trio of students (students 13, 14 & 15) used the provided materials as a release of aggression,

punching and stabbing the clay with pencils. This behavior was recorded throughout the week and was not constrained to periods of time when the class was using the clay. Along with the clay, popsicle sticks were available for use in the creation of models. The popsicle sticks were transformed into weapons, as students used scissors to sharpen the ends and engage in battle. Rulers were also used in imagined battles.

As teacher-researcher the inclusion of school supplies, both directly (students instructed to use) and indirectly (materials sitting on shelves) proved to be more distracting than helpful. Multiple students required redirecting and close supervision.

Physical Environment

Throughout the week students displayed a high level of restlessness in the classroom. Students were walking around during direct instruction, laying on tables, climbing shelves, rolling on the floor and standing on chairs.

Peer Interactions

Interactions that were recorded documented frustrations between students. During a small group math assignment, Student 10 was recorded walking around the room and not interacting with his assigned group on the task at hand. As time for the completion of the task neared this student became very angry, screaming at his group members because they had made critical decisions about the assignment without him. As teacher-researcher I intervened and reasoned with the student, pointing the fact that he was not actively participating therefore he cannot be upset with the decisions that were made. This line of reasoning was rejected by the student and his frustrations did not dissipate rather they grew.

On another occasion, during direct language arts instruction student 13 was recorded running around the classroom, swinging his arms and screaming at his classmates. This student was redirected to no avail and continued to scream at classmates focusing his attention on one peer, student 12. Student 12 sat silently not engaging. Student 13 was ultimately sent out of the classroom to return after speaking with the principal.

Student 15 destroyed student 1's settlement project. When questioned about the incident Student 15 responded they believed the project belonged to Student 14 which had given them permission to destroy their work. The teacher-researcher instructed Student 15 to explain the situation to Student 1 and apologize, Student 15 refused and was referred to the principal.

Student Attitudes

Throughout this week multiple female students were documenting expressing a pessimistic belief about their own capabilities and assignments.

Table 4.6: Student Attitudes

Activity	Response	Student demographic
New spelling words given	“we are stupid” referring to class	student ‘6’
Language arts assignment, verbal instructions write a letter	“no, I’m not, I don’t want to”	student ‘2’
Spelling activity	“I’m getting bored” did not complete assignment	student ‘13’
Online math assignment	“it’s too hard” did not begin assignment before giving up	student ‘8’

Phase Two

Provided Materials

During this phase limited supplies were provided to students. A small portable shelf was used to transport materials to and from the woods. Each day a clip board and a writing utilize was provided to students, other materials were dependent upon the day’s assignments. The physical environment of the outdoors made the upkeep of all materials challenging. Pencils were lost, and papers got wet. The reduction of available manipulatives and supplies did reduce innovative usage and distractibility of such.

Despite the availability of natural resources (sticks, stones, leaves, etc.) students were not documented using any of these during direct instruction.

Physical Environment

The open space afforded by the outdoors allowed students a range of movement. Students were recorded climbing trees, sitting on branches and stumps, rolling on the grass and scaling mounds of dirt. During lessons the class met at a wooden picnic table that is located at the edge of a cleared field within the woods. Most students were engaged and sitting at the picnic table. One or two students would linger within earshot but not at the table. As week progressed the meeting location was changed to a round picnic table located in the corner of the field, the table is flanked by a fence on two sides. By doing this I was able to ensure all student-participants understood assignments and lessons before breaking off into small groups or individually to complete assignments. When the class was broken into small group or given the opportunity to work individually on assignments students ran to small enclosed spaces throughout the woods. Students created individual ‘nests’ that were comfortable and allowed focused attention to the task at hand. Most notable were student 12 and 13’s isolated nests built with vines and pile of leaves. These students burrowed their way into these areas and completed assignments without the need of redirection.

Peer Interactions

During the week in the woods documented peer conflict during assignments was reduced. There was one occasion during free play when conflict among students arose. Students were playing an invented game called ‘woods war’. During this game small groups of students would scout the woods and claim small areas as their territory. The

object of the game is to invade and take over other territory while defending their own. There were no physical altercations however words were exchanged multiple times among students and ultimately students decided to terminate the game of their accord.

Student Attitudes

Student-participant attitudes during the week in woods varied. Multiple female students expressed negative emotions about having class in the woods. They were documented as saying “I don’t like the woods,” “Why do we have to do this?”, “I want to go inside.”. Male students on the other hand were recorded expressing very positive attitudes about the woods, saying: “I love forest school,” “We should do this all the time,” “Can we do this again?”.

Student Participant Journals

This component of the qualitative analysis is divided into two phases. Phase one highlights student-participant entries during the week prior to ‘woods.’ Phase two highlights student-participant entries made during the week outside in the ‘woods.’

Phase One

At the end of each day spent indoors, student-participants were instructed to write sentences reflecting upon their day in their journals. The following are some responses that were written in the student-participant journals.

Student Seven:

This student-participant commented on an activity that was completed in class as well as noting technological challenges the teacher-researcher experienced: “I drew a potato-powered clock. [teacher-researcher] had trouble with Brain Pop.”

Student 12 commented, “I hate school. I do not like school.”

Student 13 wrote “I want privacy. I need privacy.”

Phase Two

At the end of each day spent in the natural outdoor area, student-participants were instructed to write sentences reflecting upon their day in their journals. The following are some responses that were written in the student-participant journals.

Student 2 commented on an activity that was completed during the outdoor portion of the action research study then later expanded upon this deciding that they found ‘woods school’ enjoyable: “I made a water filter. Today was good. I love forest school. It is so fun. I love it because we get to explore, and we got to play games.”

Student 12 prior week had commented they hated school during the week spent outdoors they wrote: “Today was fun. I liked it.”

After some initial trepidation, Student 6, reflected upon the entire week outdoors positively. s I liked woods school. It way fun. We should do it more often. Sometimes it was bad. If it is hot do not do it.”

The teacher-researcher noted that when indoors Student 15 had great difficulty focusing on assignments and would often use classroom materials inappropriately. After a week in the forested area, Student 15 commented: “I love woods. I love woods. We get to go work wherever we want. It’s fun. It’s like a log recces.”

The week prior to ‘woods school’ Student 13 pleaded for privacy in their journal, their final reflection of time spent outside indicates that the open spaces afforded

by the forested area were beneficial; “It’s (woods school) awesome because fresh air. No cramped space”

Student 5, an identified traditional learner by the teacher-researcher reflected “I’d rather be inside, but if we have to do it then its ok!!”

Student 9 summed up the experience as: “The week in the woods was great. Not that you just go in the woods, but you can make stuff too. You get to play in the woods or the field. You also get to explore all around. I like being in the woods.”

Teacher Researcher Field Journal

This component of the qualitative analysis is divided into two phases. Phase one highlights teacher-researcher entries during the week prior to woods. Phase two highlights teacher-researcher entries made during the week outside.

Phase One

Retaining student attention and motivation was a struggle as noted by numerous entries. On Monday students 2 & 8 had to be removed from classroom during math because they refused to begin the assignment. Tuesday student 13 continually made inappropriate comments, “the leeches sucked me real hard’, ‘tardy means farty’. Wednesday student 8 refused to complete a language arts assignment. Thursday it was noted that the entire math lesson was a struggle to keep any student engaged.

Phase Two

The introduction to the woods was met with numerous groans and muttered complaints from student-participants however as the day progressed student-participants were engaged with lessons. Student 15 discovered a turtle in the woods and brought it to the attention of the entire class. All students were very interested in the animal and this

fostered a conversational review of cold-blooded and warm-blooded animals. During a science assignment that required students to test the creek water all students except student 12 were actively engaged.

Multiple student-participant guardians commented about the forest school throughout the week. Student 14's guardian commented on Tuesday: "Student 14 came home so tired, a good tired". Wednesday student 12's guardian commented: "Student 12 has been less aggressive at home since beginning forest school." Thursday student 14's guardian again commented about the 'good tired'. Student 7's guardian commented the same day, "Student 7 has been going to bed at 9:00 and (s)he's a night owl".

Conclusion

This action research study concluded that a Danish Forest School (DFS) approach coupled with an interdisciplinary approach and SS curriculum does indeed have an impact upon third grade student domains within the research setting. The results of this study will be used to continue to help staff of the research site to fully understand and implement such a program.

The staff survey revealed a shared fear among teacher-researchers of losing control. Teacher-participants indicated a significant anxiety of limited visibility when in the wooded area. Recorded data and field journal entries from both the indoor and outdoor environment directly contradict this fear. The more the teacher-researcher afforded student-participants freedom to roam in the wooded area with faith that assignments would be completed correctly and in a timely manner with little to no negative peer interactions the more this became a reality. The student-participants of this action research study responded very well to a DFS approach as documented in the

student journals and recorded evidence. This evidence aligns with previous studies (Slade, Lowery, & Bland, 2013; O'Brien, 2009; Benson & Miller 2008) that found positive effects of the DFS approach. Traditional learners found it challenging to adjust to their new surroundings however as they spent more time outdoors they became acclimated to the environment. The logistics of operating a DFS program were challenging, education materials needed for lessons were difficult to transport as was the physical location of the teacher-researcher during direct instruction. Although the DFS approach includes multiple challenges the benefits of such are easily recognized, as indicated by the staff survey. This action research study revealed that the question of impact to not be the main concern among staff-participants rather it is the implementation that is surrounded in worry and misconceptions. Through the presentation of these results a paradigm for DFS implementation at the research site shall be developed.

CHAPTER 5

SUMMARY, CONCLUSIONS, AND ACTION PLAN

Introduction

Teachers at LHP have an opportunity to utilize a natural wooded area as part of their daily classroom curriculum, however, most teachers do not and cite such fears as a lack of visibility and student injury as reasoning. To increase time spent in this outdoor area school policy has changed requiring each class to make frequent visit to the area. The teacher/researcher investigated the impact of utilizing such an area in a manner aligned with the pedagogical approach, Danish Forest Schools (DFS), that was developed by Danish educators. DFS is used to ensure all students can learn in a natural environment and reap the benefits of such.

To gain a better understanding and help alleviate teacher trepidations relating to the usage of the wooded area the teacher/researcher asked the following research question What is the impact of the DFS model combined with an interdisciplinary SS curriculum on the domains of third-grade students in a southern, parochial private school? Students of the third-grade class of the 2017-2018 school year participated in the action research study. The teacher/researcher documented all classroom activities/behaviors for a week prior to holding class outdoors in the natural area for a week. During the week in the woods all core subjects were taught in the wooded area. Participants and the

teacher/researcher documented their experiences in a filed journal during the study. Along with the field journal and video evidence of the project, the teacher-researcher conducted a staff survey regarding perceptions of the ‘woods.’

Chapter Five informs the reader of all key questions that arose during the study, discuss the role of the teacher-researcher and the reciprocity of results, introduce an action research plan and implications for future pedagogical change.

Key Questions

Three key questions arose during the action research project. Student participants communicated a love of personal space afforded by the woods, enjoying completing their assignments in areas often referred to as dens. These ‘dens’ are small hidden areas in the woods that are regarded as ‘top secret’ by many student-participants. Although student participants that utilized such areas completed assigned tasks and conducted themselves in accordance with school rules, the highest rated concern for staff regarding the use of the wooded area is lack of visibility. Therefore, the first key questions that arose during this action research study is: *How to increase the amount of trust staff have in students, allowing students to explore areas in the woods that are not visible?*

Although all core subjects were held outdoors for the week of the study, students had to return indoors for foreign language and religious studies classes. Students often communicated a lack of desire to do so, asking for both classes to be held outdoors. The teacher-researcher explored this possibility with both the religious studies and foreign language teachers. Both teachers expressed a desire to do so, however, the foreign language teacher indicated a strong belief that to do so is not plausible citing the classes’

dependence upon technology and short class period. Hence the second key question to arise is: *How the foreign language class could be integrated into the wooded area?*

Finally, the teacher-researcher received multiple email communications from student participant parents indicating a hope for future DFS opportunities at the school, as such the third key question is: *What form this would take in coming years?* Every student deserves an opportunity to learn in the forest, however, without full staff support and the proper training this cannot be implemented. Gathering more research and the sharing of such will help this situation. Teachers need a guide for the implementation of DFS with integration of art, ELA, math and science along the SS into their daily curriculum. In the future I will serve as such a guide.

Action Researcher

As the action researcher, I found my role to be fluid as both an insider and outsider. As an insider I participated in the week teaching and learning outdoors alongside the student participants. As such I encountered multiple logistical challenges including physical positionality during direct instruction, technological issues as well as difficulties storing need materials for class instruction. Aside from these challenges, guardian communication was a trapeze act as I had to keep guardians informed as to each days' activities from an insider's point of view yet include information on project from an outsider's nonbiased perspective. The boundary of insider/outsider only continued to get more muddled for me as I conducted and analysis staff survey results. The results of the survey indicated frequent visits to the wooded for some teachers, however, as a staff member of the school I had knowledge of the actual number of times classes visited the area which did not always equal the indicated frequency. Furthermore, as the curriculum

leader of the subject I was bombarded with concerns of how to integrate a DFS approach into classrooms. Staff members repeatedly indicated that they were unsure how to use the woods beyond recreation and for many of those that expressed a mastery of forest integration into class curriculum I found that science was the only subject successfully intertwined with the natural setting. Many staff members, including administration, were very curious of the study, inquiring daily as to its success; however, few were able to commit to increasing class time in the wooded area.

Action Plan

Based upon the findings of this action research study, a DFS approach coupled with an interdisciplinary curriculum was deemed a success and will be used as springboard for the mitigation of staff concerns and guide for future integration of the area into all classes.

Prior to the beginning of the 2018-2019 school year the teacher/researcher will present the findings of the action research study to the staff of the school. The presentation will be held in the wooded area during teacher in service days, August 14th and August 15th, at the LHP before the doors are open to students. The presentation will be held in two sessions, one for preschool staff and another for the elementary staff. Before beginning and at the end of each presentation staff will be asked to complete a short survey regarding the usage of the wooded area. Based upon the results of these surveys the teacher-researcher will focus on areas of heighten concern throughout the school year. Each trimester the teacher-researcher will revisit the subject of the woods and ask staff to share their successes and challenges faced when integrating the woods into their daily curriculum. The same survey will be issued during each trimester of the

school to assist in the monitoring of staff apprehensions. Ultimately, it is the hope of the teacher-researcher that in the 2019-2020 school year a permanent DFS program will be implemented at the research site.

Facilitating educational change

Individual classroom change

The current action research study investigated the impact of a DFS approach coupled with an interdisciplinary curriculum upon the domains of third grade students in the hopes of increasing student exposure to the natural environment and decreasing staff anxieties of doing so. The results of the study indicate positive implications for student that are afforded the opportunity to learn outdoors in a natural area, as such this coming school 2018-2019 school, I plan on increasing the amount of time spent teaching/learning in the natural environment. Guardians will need to be informed of this decision and the reasoning behind it. There is a plethora of research (Louv, 2008; Slade, Lowery, & Bland, 2013; Power, Cree, & Knight, 2015, & Mygind, 2009) that can be referenced to help ease any guardian fears over increased time in the wooded area. Flom, Johnson, Hubbard, & Reidt (2011) shows that utilizing natural environments routinely in daily school activities, promotes overall well-being for those students. McClain & Vandermaas-Peeler (2016), Fjørtoft (2001) and Nedovic & Morrissey, (2013) all concluded a correlation exists between outdoor natural environments and positive social, emotional behaviors among student-participants.

Along with research an open dialogue between guardian, staff and administration will ensure that concerns are addressed, and all stakeholders are informed of outdoor

integration decisions and the reasoning behind such. Administration are already onboard for increasing time spent in the wooded area as is evident in the staff contracts that require ‘frequent classroom visits’ to the wooded area.

School-wide Educational change

The results and sharing of this study will provide some comfort for the staff that are uncertain of the area. Monthly staff meetings will provide a time for staff to discuss the use of the area in a safe space that will encourage a culture of learning together as the entire school will be experiencing the same natural environment through the lens of educators. Some staff will continue to be reluctant to change, to help make the transition easier the teacher/researcher will be available throughout the school year to discuss challenges staff may face.

Along with an open dialogue between staff, administration and the teacher/researcher, a few amenities in the wooded area would behoove the initiative. These amenities include a trash can that is changed daily, a more secure boundary (a secure fence), and monthly walks by administration to ensure the safety of the area. The monetary investment in such would be meager and easily met with school funds. The time spent by administration completing monthly walk through of the area could prove to be more time consuming than administration are willing to commit to the project, as such the teacher-researcher could serve in place of administration.

Summary of Research Findings

This action research study came about in response to a change in teaching requirements at the research site that states all classes must make frequent visits to a

naturally wooded area provided by the school. Increased teacher apprehension led the teacher-researcher to inquire, via online survey, what areas are of chief concern for teachers. The survey revealed lack of visibility and students' interaction to be the biggest concern for teachers when visiting the wooded area with classes. To investigate the validity of these concerns the teacher-researcher asked the following research question: what if any or the implications a DFS approach coupled with an interdisciplinary curriculum and SS may have upon the domains of third-grade students. The teacher/researcher documented daily classroom behaviors, assignments and activities for a week indoors in the traditional indoor classroom setting before moving the class outdoors in a natural wooded area for a week. During both weeks of the study the teacher-researcher video recorded all sessions, documented dialogue and observation in a field journal and instructed all students participants to do the same.

Analysis of field journals revealed a greater student desire and enjoyment of a FS approach than an indoor setting. The video evidence indicates that with more open space and freedom to roam students were less likely to engage in peer conflict and completed assignments in a timely manner with less distraction. These findings suggest that the indicated teacher concerns may not be rooted in experience rather of fear of losing control. The inverse being the more freedom and trust given to students in the outdoor area the greater the benefits.

Suggestions for Future Research

The theme of teacher trust without direct student visibility permeates this study. The teacher/researcher suggests a continuation of the current study through all elementary grades that focuses solely upon the student behavior when in the wooded

area. This may take the form of checklists that indicate frequency of peer conflict completed by teachers after each visit to the wooded area and/or a comparison of incident reports related to situations that arose within the woods and in a classroom setting.

A desire to incorporate the wooded area into daily curriculum and a lack of knowledge of how to do so was communicated by many staff members. Future research in this area would behoove staff and provide a guideline of sorts for those that need one. This research may include a great deal of literature review and sharing of ideas during specialized staff meetings. It is critical that any learning activities that classes may incorporate into the wooded area be reviewed with a critical lens and shared with all staff members. By doing so future endeavors will be able to sidestep any follies that were made and improve upon the process of natural environment integration.

Conclusion

The present action research study explored utilizing a DFS approach within a naturally wooded area provided by the research site. The problem of practice involved a change of school policy that requires frequent classroom visits to the wooded area and the resulting staff trepidation regarding how do so. This action research study aimed to answer the following research question: *What is the impact of the Danish Forest School model combined with an interdisciplinary SS curriculum on the domains of third-grade students in a southern, private parochial school?*

The teacher-researcher conduct an online survey for staff members that was used to gain a better understanding of staff anxiety regarding the wooded area and change in policy. Results of this survey indicate a lack of control and visibility to be the highest

concern among educators when taking their classes to the outdoor area. These concerns did not deter desire to integrate the outdoors into daily curriculum, however a lack of knowledge as to how to do so was communicated by teacher-participants. To explore the soundness of these concerns the teacher-researcher held class outdoors in the wooded area for a week. During this week all core subjects (language arts, science, math and social studies) were held in the woods. Student-participants included the current 2017-2018 third grade class which consisted of seven male and seven female students. The week before holding class outdoors and the week of, the teacher-researcher documented day-to-day instruction via video recording and field journal entries. Student-participants kept field journals as well, reflecting upon their daily experiences in each environment.

Analysis of the data collected revealed that limited visibility of students in the wooded area did not lead to student conflict, in fact limited visibility afforded student-participants the opportunity to build personal spaces, 'dens', within the woods that were served as settings for the completion of assignments. Student-participants and some guardians communicated a desire to have continual classes outdoors.

The results of the present action research study indicate that an DFS approach couple with an interdisciplinary SS curriculum does indeed have an impact upon third-grade student domains. Cognitive domains of student-participants were impacted as the wooded area provided opportunity for students to investigate topics of personal interest and create connections to prior learning. This is evident when student 15's discovery of a turtle in the woods fostered a conversational review of cold-blooded and warm-blooded animals.

Affective domains of student-participants were impacted as evident in the reduction of peer conflict during the week in the wooded area compared to the week prior in the classroom. Video data revealed student conflict and negative commentary to be highest within the classroom, as Student 12 commented: “I hate school. I do not like school.” After a week attending class in the naturally wooded area Student 12 commented: “Today was fun. I liked it.”; their guardian communicated an observable decrease in Student 12’s aggression level during the week spent learning in the forest.

Psychomotor domains of student-participants were impacted through the physical demands holding classes in the wooded area requires, such as increased movement throughout the day and traversing the natural terrain. This included traveling through slippery mud, and a forest topography, running, jumping and climbing multiple obstacles. Student-participant guardians communicated a change in sleep patterns for some, stating an observed ‘good tired’ after having class in the ‘woods.’

Based upon these findings an action plan for future implementation was developed. Before the beginning of the fall 2018 school term, the current action research study will be shared with staff of the research site. The current woods policy has not changed, and staff are still required to take their class out to the natural area for frequent visits. Through sharing this action research study in two separate sessions, one for preschool staff and one for elementary staff, an open dialogue will be opened. A continuation of conversations regarding the usage of the wooded throughout the year will be essential to the success of continued integration of such into daily classroom curriculum.

The findings of this action research study provided evidence that supports the integration of the natural environment in daily classroom curriculum. Further research needs to take place to adequately address the lack of confidence among staff in doing so. Other reported staff concerns of limited student visibility and peer interaction in the wooded area are not supported by this study, which suggests a need for continued research in the area.

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APPENDIX A
INFORMED CONSENT FORM

This is to certify that I, _____, give my informed consent for my child, _____, to participate in the action research study that examines the perceived impact of the Danish Forest School model combined with an interdisciplinary CCSS curriculum on the domains of third-grade students in a southern, Jewish private school. I understand the risks and benefits of this research to be as follows:

- All names will be held confidential
- The benefits are to increase the knowledge of basic research regarding the implementation of the Danish Forest School approach within a private, Jewish school located in the southern United States. One important goal of the study is to see the differences and similarities in student domains before, during and after participating in a Forest School based program.
- The researcher, Valerie Hoyt-Parrish, has explained to me both the purpose of the research and the extent of my child's participation. My child's participation includes being present and participating in class held in the natural wooded area provided by the Cutler Jewish Day School for the duration of a full school week (Monday-Friday) during the month of October 2017. During that time, my child will be outdoors from 8:15-9:30

- & 12:30-2:30 each day. My child will have access to the indoors at any point when needed. My child will complete all class assignments for this week and the week prior in a specified notebook that will be given to them by the researcher. Along with regular assignments, my child will be asked to complete a reflection of the time spent outdoors.
- During the study, the researcher will record observations and conversations of participants. Transcripts of observed conversations will be transcribed by the researcher.
- Pseudonyms will be substituted in the transcripts for all names of persons. Every step will be taken to adequately disguise the participant's identity in any published materials or presentations.
- With the exception of the dissertation committee chairperson, I will not discuss with the dissertation committee or anyone else identifying the particulars of the participants.
- The transcripts, participant notebooks, and consent forms will remain in the direct physical possession of the researcher in a locked box.
- The information obtained from this study will be used for the writing of her dissertation, for possible presentations at future conferences, and for possible articles or chapters written about this subject.
- I understand that I will have the opportunity to ask questions at any time prior, during and after the study to my satisfaction. I may contact the researcher at any time at: Cutler Jewish Day School, 5827 N. Trenholm

Rd., Columbia, SC 29206. Telephone number: (803)600-6849, if I have any other questions or concerns.

- I have been given a copy of this consent form.
- I understand that I may refuse to give consent for my child to participate in any aspect of this study. I am aware of the fact that I may withdraw my consent and terminate my child's participation at any time without prejudice.

Signature of Participant

Date

Signature of Parent/Guardian (if a minor)

Date

Signature of Researcher

Date

APPENDIX B
TEACHER-PARTICIPANT SURVEY

- Q1. How often do you take your class to the woods?
- Q2. What activities did your class complete when visiting the woods, free play/recess, science lessons, other curriculum studies (math, ELA, Social Studies) and/or a specified other?
- Q3. What concerns regarding the usage of the woods do you have?
- Q4. Using the Likert scale indicate your personal preference for the woods
- Q5. Using the Likert scale indicate your level of confidence integrating the woods into your daily curriculum
- Q6. What do you believe your student domains (physical, emotional, social and/or cognitive) were enhanced through the woods experience?
- Q7. Would you like to integrate the woods more into your daily classroom curriculum?