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I, Laura Dell, hereby submit this original work as part of the requirements for the degree of Doctor of Education in Curriculum & Instruction.

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Nature Preschool through the Eyes of Children

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Nature Preschool through the Eyes of Children

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by

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Abstract

Nature preschools, which bridge the world between environmental education and early childhood education (Bailie, 2012), are gaining popularity across the globe. This educational philosophy has grown in response to the changing outdoor lives of children. Current research shows that children in the United States have limited access to unstructured play in outdoor settings (Clements, 2004; Singer, Singer, D'Agnostino, &DeLong, 2009; Wridt, 2004). Since a number of studies have linked childhood experiences in nature to environmentalist attitudes later in life (Broom, 2007; Chawla, 1999; Wells & Lekies, 2006), there is concern that children today are not getting these foundational experiences in nature that lead to a caring relationship with the natural world. Nature preschools aim to fill this gap by giving children facilitated experiences in nature and time for unstructured outdoor play.

The purpose of this photovoice study was to understand nature preschools through the perspective of the preschool children. This study adds to the literature by answering three research questions: 1) How do young children attending a U.S. nature preschool describe their school experience? 2) What are the characteristics of the child-nature relationship for young children attending a U.S. nature preschool? 3) What are best practices for working with preschool children in a photovoice process?

Results show that the children do not view nature preschool as a traditional classroom experience and that they value outdoor hikes as the most important part of the school day. The children are interested in learning the names of plants and animals and scientific terms and view being in nature as a positive experience. Photovoice methodology, having individuals use cameras to collect and analyze their own data, is typically used with teens and adults. The

results of this study demonstrate that children ages 3 – 6 are capable of being active collaborators in a photovoice protocol.

Implications for this study touch on issues in the research, traditional school, and nature preschool communities. Researchers looking to engage young children in the research process should consider photovoice as a viable methodology when working with preschool children. Traditional teachers and schools looking to implement outdoor learning strategies into their classrooms should consider adding outdoor hikes in the local neighborhood and enlisting volunteer or staff nature guides as outdoor learning facilitators. A top priority for nature preschools to consider in curriculum planning is unstructured playtime in local wild settings over time in indoor classrooms or on playscapes.

Keywords: nature preschool, children, photovoice, nature, preschool, competent social actors

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wonderful family of teachers. I am so thankful that you are here to share in this accomplishment. This journey ended up being longer than I had ever imagined and so much changed in my personal and professional life along the way. I am so grateful to finally reach this lifelong goal.

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Chapter 1

Introduction

"*All you needed for a horse was a stick and some kind of brindle,*
and you could gallop anywhere."

- From the picture book *Roxaboxen* by Alice McLerran

While this quote is from a picture book, I remember feeling like this as a child. One of my earliest memories is running down a path in the woods by myself. After realizing my family was not with me, I ran back to them, not understanding why they were so slow. My mother also remembers the incident and told me that I was around 4-years-old and they had taken me on a family backpacking trip. Since I was so young, she didn't have me carry anything, which is why I kept sailing ahead. My parents had great influence on my path as a natural sciences educator. Even though I grew up in an urban neighborhood, my parents made sure my life was full of experiences in nature. I remember building a fort and finding box turtles with my brother on the wooded hillside between our street and the next street. My mom would let us keep the box turtles on our porch for a few weeks before we had to return them to the woods. Our parents took me and my siblings hiking and camping each summer and drove us from one coast of the United States to the other visiting national and state parks. By the time I was 18, I had been to 46 states. I spent most of my pre-teen and early teen years as a Junior Zoologist at the Cincinnati Zoo & Botanical Garden. This entailed weekly lectures from the zoo's director of education and monthly field trips to natural destinations – everything from sleeping overnight in private caves to learning stories from the official storyteller of the Shawnee Nation.

These childhood experiences led me to a career in natural sciences and environmental education. As a college student, I thought I wanted to be a behavioral scientist in zoology, but

what I quickly learned after a year of field research with salamanders, was what I loved the most was natural sciences and environmental education. Early in my professional career, I designed a natural sciences and gross motor exhibit containing a treehouse at a children's museum. In the development of this exhibit, I delved into the practitioner and research literature on place-based education, treehouses, and children's special outdoor places (Hart, 1979; Nelson, 1994; Sobel, 1993; Sobel, 1997). This experience shifted my interest from zoological research to educational research. I became interested in how children learn to love nature. I wanted to know if my childhood memories matched the outdoor experiences of children today. I was especially drawn to a new avenue in environmental education – nature preschools and forest kindergartens. This dissertation is an exploration of nature preschools and how these unique outdoor early childhood educational experiences may help children to develop a relationship with nature.

Overview of Nature School Movement

The nature school movement traces its origins in the 1980s to the forest kindergartens of Scandinavia and the udeskoles, or outdoor schools, in Denmark. Bentsen, et al. (2010), define forest and outdoor schools as "*compulsory* educational activities outside of school on a regular basis" (p. 236). The activities of the udeskole are part of the regular school curriculum where local outdoor resources are used to teach concepts in traditional academic subjects through cross-disciplinary strategies (Bentson et al., 2009; Bentson et al., 2010). This movement has spread from Scandinavia to other parts of Europe. By 2007, over 140 Forest Schools existed in the United Kingdom (O'Brien, 2009) and over 700 Waldkindergartens (forest kindergartens) operated in Germany (de Quetteville, 2008). Today, over 10% of Danish preschools are forest or nature preschools (Stasiuk, n.d.). The movement is also quickly spreading in the United States and North America. As this philosophy entered North America, it evolved from forest

kindergartens to nature preschools (Sobel, 2016). Members of Natural Start Alliance in the U.S. now includes over 250 different nature preschools (Natural Start Alliance, 2017). While outdoor time in each school can vary from being outside all day, to a few hours a day, to specific trips to outdoor settings each week, there are hallmarks found across all forest kindergartens and nature preschools. Bailie and Finch define three central characteristics found in nature preschools (Natural Start Alliance, 2015):

1. Nature is central to the philosophy of the school curriculum.
2. The preschool curriculum is embedded in best practices and research in both early childhood education and environmental education.
3. Learning through nature fosters both developmental goals and goals of environmental appreciation and stewardship.

Nature Preschools

While forest kindergartens typically offer minimal or no indoor spaces, nature preschools in the United States tend to combine extensive outdoor experiences with more traditional classroom spaces (Sobel, 2016). Reflecting on the academic readiness expectations of preschools in the U.S., nature preschools also show more emphasis on traditional math and language arts skills (Sobel, 2016). However, the two types of schools share many similarities. Both forest kindergartens and nature preschools share a philosophical value in children engaging in nature through child-led and extensive experiences in nature.

Forest kindergartens and nature preschools promote unstructured, open-ended play through a multi-sensory and ever-changing natural environment (Bailie, 2010: Rivkin, 2000). Erin Kenny, founder of the Cedarsong Forest Kindergarten in Washington state, describes the play-based ethos of these outdoor education models as being “not content-based but process-

based" (Kenny, 2013, p. 12). The loose parts found in nature encourage complex, imaginative play, while also promoting problem solving (Fjørtoft, 2001), communication, and negotiating skills (Maxwell, Mitchell, & Evans, 2008). Nature play is not only more complex than play found in traditional playground settings; it also features more diverse types of play and longer periods of play (Luchs & Fikus, 2013; Samborski, 2010). Children find challenges in risky nature play such as sledding, climbing trees, or balancing on rocks as they cross a stream, which develop self-confidence, resiliency, and perseverance (Knight, 2011). The outdoor play and open exploration found in nature preschools also give children agency to make decisions, solve problems, and create their own games and play environments (Hanscom, 2016; Moss & Petrie, 2002). Developmental and cognitive benefits of nature preschools include socio-emotional skills (Acar & Torquati, 2015; Bailie, 2012; Slade, Lowery, & Bland, 2013; Zamani, 2016), academic learning outcomes (Bailie, 2012; Kirkham, 2005; O'Brien & Murray, 2007), and learning about nature and the environment (Lindemann-Matties & Knecht, 2011: Murray & O'Brien, 2005; Ridgers, Knowles, & Sayers, 2012).

The nature preschool philosophy aligns with a number of other early childhood education philosophies. Froebel, the originator of the kindergarten movement, focused on the interconnection of nature in the development of young children (Froebel, 1875). Froebel even created the term kindergarten, which translates to "garden of children" (Frost & Sutterby, 2017). Nature preschools share the values of promoting free and imaginative play and encouraging a sense of wonder with Waldorf education (Howard, n.d.). Similar to Montessori educators, nature preschool teachers promote a caring community where teachers instill a sense of environmental stewardship in children (Montessori, 2014). A final connection is with the Reggio Emilia approach. The parallels with this philosophy are engaging children in their local community and

environment and employing a child-centered model that focuses on listening to and observing the child (Knight, 2011). Warden (2018) defines the teaching found in nature-based schools – nature pedagogy – as "the art of being with nature, inside, outside and beyond." Following this pedagogical perspective, nature preschools typically use a holistic philosophy that aims to support the socio-emotional, physical, and cognitive development of young children through teacher facilitation that follows the interests and needs of the children (Bailie, 2012: Warden, 2018). This child-led philosophy extended into the research design of this project as the children were placed at the center of the research as active agents in data collections and analysis.

Purpose of Study and Research Questions

This study described and documented the experiences in and conceptions of nature and the outdoors in preschool children, ages 3 – 6, attending a nature preschool located on a private nature preserve in the Midwestern United States. To protect the identity of the children in this study, a pseudonym, Preserve Preschool, is used for the site in this document. Building on a theoretical framework that recognizes children as competent social actors who are experts in their own experiences, I chose photovoice as a research method to engage children as co-researchers who collected and analyzed data with me throughout the project. By choosing a photovoice process, this study recognizes that even young children can be active collaborators in the research process. The research questions for this study were:

1. How do young children attending a U.S. nature preschool describe their school experience?
2. What are the characteristics of the child-nature relationship for young children attending a U.S. nature preschool?
3. What are best practices for working with preschool children in a photovoice process?

Significance of Study

This study addresses gaps in the literature by documenting the experiences of children at a U.S. nature preschool through the perspectives of the children. This study also addresses the research gap in English language data and data on American nature preschools. While research on American nature preschools is starting to emerge, there is still much to learn about the specific nuances found in the American cultural context with this educational philosophy. I believe that the cultural context is an important aspect of the implementation of any educational system in a society – meaning that how an educational system is implemented can vary greatly from country to country due to the values and educational constraints found in each country. Evidence in the literature on early childhood educational settings has found that the pedagogy, practices, and curriculum vary among cultural contexts (Kutnick, Brighi, Avgitidou, Genta, Hännikäinen, Karlsson-Lohmander, & Lofqvist, M., 2007; Osborn, Broadfoot, McNess, Planel, Ravn, Triggs, Cousin, Winther-Jensen, 2003). There are a number of examples where the cultural context affects what is viewed as appropriate content for young children in outdoor educational settings (Roberts & de Jong, 2016). For example in one German forest kindergarten, preschoolers use pocketknives to whittle fire starters from sticks (Gregory, 2017). Similarly, at the Exeter Forest School in Devon, England, toddlers learn to use a saw for basic woodworking (Lights, 2014). In a UK forest preschool, the curriculum includes teaching young children to cook on an open fire (Hazelwood Academy, n.d.). One final example is from a Danish forest preschool, where the children watched the teacher butcher a chicken, which the children had raised from a chick, and then the children participated in plucking the chicken to prepare it for cooking (Stasiuk, n.d.). These outdoor skills and lessons are examples of activities that may not be culturally acceptable in American culture for preschoolers, but are appropriate in a European

context. The litigious nature of American society may also affect the kind and amount of risk taking behaviors that are culturally acceptable in educational settings in the United States (Hanscom, 2016). This study adds to the research base available around the cultural context of American nature preschools.

This study also contributes to the field by outlining best practices for teachers, administrators, and researchers working in nature preschools and forest kindergartens. By describing the experiences of children at a nature preschool from a child's perspective, teachers may be better able to implement strategies that will support the development of positive child-nature relationships in a wide variety of educational settings.

A methodological goal of this study is to describe best practices for using photovoice with young children. Using photovoice with preschoolers is not well documented in the literature. While it is not unusual to see photovoice protocols (Wang & Burris, 1997) in the fields of education and health to inject the voices of teens and adults into research (Alaca, Rocca, & Maggi, 2017; Catalani & Minkler, 2009; Rubkin & Davis, 2007; Vaughn, Rojas-Guyler, & Howell, 2008), this method is rarely employed with younger children. In a search of peer-reviewed and dissertation literature through Google Scholar and through databases available through the University of Cincinnati Libraries, I was able to find only one research project that worked with preschool age children (ages 3-5) as active agents in a photovoice protocol. Alaca et al. (2017) used disposable cameras to learn more about communities from the perspective of children ages three to five. In this study, children took photos over a weekend of their communities and selected three of the images to discuss with the researchers. This study was the only one I was able to locate that engaged young children as collaborators in the research process through data collection and contextualizing in a photovoice protocol. Other photovoice research

with this age group either engaged adults as participants or utilized children only in the data gathering step of the protocol. There were a number of photovoice projects that centered on the experiences of preschool children, but adults were either the full participants in the project or the children had minimal or partial involvement in the photovoice protocol. For example, some studies utilized preschool parents or teachers as the data gatherers and analyzers in a photovoice protocol (Kaesberg, 2013; McAllister et al., 2005; Skrzypiec et al., 2013; Sood et al., 2018; Torres et al., 2013). In these studies, while the topic of the research was the experience of preschool children, the children were only the subjects of the research and they were not directly involved as participants in any way in the research process. In these examples, only the teachers and parents of the children were the collaborators in data collection and/or analysis. In other studies, the children took photos, but adults (parents, teachers or researcher) decided which photos were important and/or what the photos meant to the children (Al-Bader, 2012; Bartie et al., 2016; Darbyshire et al., 2005; Lam, 2009). While the children were involved as preliminary data collectors in these studies, they were not involved in the data analysis portion of the methodology. Still other researchers have also chosen to adapt photovoice for preschoolers by having the children draw pictures rather than take photographs (Hernandez et al., 2014).

With only one other study engaging preschool children as data collectors and analyzers in a photovoice methodology, this indicates there are very limited research data available using photovoice methods with the age group. The current study aims to add to this research base by describing best practices for helping young children use photovoice as a means to describe their life experiences and to document their learning.

The photovoice method was also chosen as a means to provide substantive feedback to the Preserve Preschool community on the effectiveness of the program. In this way, the children

were engaged as active agents in the continuous improvement model of the school. A final goal of this study was to show that photovoice has the power to give even young children a voice in the assessment and documentation of their educational environment.

Delimitations

The following delimitations exist for this research study:

1. Since this research project was focused on the nature preschool experience from the perspective of the preschool attendants, no data were collected from parents, teachers, volunteers, or other members of the nature preschool community.
2. While there were multiple classes at the study site, only one class was included in the study. Since all classes had the same teachers and followed the same curriculum, I decided additional classes in the project would be unlikely to add new results to the analysis.
3. The study site was selected as a research site because it has a partnership with the University of Cincinnati and is the only nature preschool in close proximity to the researcher.

Limitations

This research study included the following limitations:

1. This project was conducted over four months in the spring season. The season may have impacted the breadth of the data. For a more thorough understanding of the children's experiences at Preserve Preschool, data from the entire school year may have yielded results that were not seasonally constrained.

2. This research represents the nature preschool experiences of one class at Preserve Preschool. These results may not be generalizable to other nature preschools or environmental education settings.
3. The children were able to select and edit the data they collected. The bias of these individuals was then present in the data they collected.

Assumptions

This research study included the following assumptions:

1. The children understood the prompt in the photovoice project and made an honest attempt to collect data to address that prompt.
2. The children made their best effort to take photographs that captured their experience at nature preschool.
3. The children selected photos that best represented their experience at nature preschool.

Definition of Terms

The following is a list of operational definitions for key terminology used in this study:

- *Children's perspectives* - Children are active participants in sharing their views on an issue or experience. Not to be confused with *child perspectives*, which is when an adult arranges an experience to best meet the developmental needs and interests of children (Pramling Samuelsson & Pramling, 2009).
- *Ethnography* – Qualitative research that seeks to document human experiences through extended periods in everyday contexts using open-ended methods (Hammersley & Atkinson, 2007).

- *Nature preschool* – State-licensed preschools where children have daily, regular access to unstructured play in wild, outdoor spaces. These preschools aim to connect early child education and environmental education philosophies (Bailie, 2016).
- *Natural playscape* – Designed playgrounds that include child access to water, plants, dirt, and natural loose parts and affordances (Carr & Luken, 2014). The goal of these spaces is to encourage free play, creativity, and connectivity to nature (Wight, Kloos, Maltbie, & Carr, 2016).
- *Participatory action research* – Research undertaken by researchers and community members as partners to reflect on life experiences in order to understand and improve the lives and communities of the participants (Baum, MacDougall, & Smith, 2006).
- *Photovoice* – A participatory action research methodology where community members create, share, and analyze photographs to promote community understanding and change (Wang & Burris, 1997; Wang, Yi, Tao, & Carovano, 1998).
- *Preschool* – State licensed public and private schools for ages 3 – 6. These can be either full-day or half-day educational sessions and may meet several times per week or every week day.

Organization of Dissertation

In the next chapter, I review the literature on nature preschools and outdoor learning, comparisons between outdoor experiences of children in different countries, preschool child development and storytelling, and photovoice and other visual research methodologies. An overview of the theoretical framework for this project is also included in the next chapter. Chapter Three is a description of the data collection and analysis procedures and decisions. Chapter Four presents the data analysis results in context of the research questions. The final

chapter of the dissertation is a discussion of the results regarding nature preschools, photovoice and photo documentation with preschool children, and the implications for practitioners and researchers in early childhood education.

Chapter 2

Review of Related Literature

This chapter reviews relevant research in three main topic areas: childhood experiences in nature, engaging children as collaborators in research, and developmental perspectives on children as learners, storytellers, and photographers. The chapter concludes with a summary of the literature and its impact on decisions made in the design of this dissertation study.

Childhood Relationships with Nature

Louv (2008), journalist, outdoor education advocate, and author of the influential book, *The Last Child in the Woods*, interviewed elementary school children on their play preferences and one fourth grade student told him, "I like to play indoors better, 'cause that's where all the electrical outlets are" (Louv, 2008, p. 10). This quote reflects the priorities for this child and demonstrates how play in childhood has changed dramatically over the last century. Louv's book, originally released in 2005 and now in its second edition, warns of a generation of children who are growing up detached from nature. Louv presents in-depth research on the positive effects nature has on the development of children and he postulates that this current generation may be growing up with "nature-deficit disorder," which he defines as the diminished physical and emotional capacities found in individuals when they are disconnected from nature (Louv, 2008, p. 36). Currently published in eleven countries and in twelve languages, this book has sparked an international discussion among teachers, environmental educators, parents, doctors, and community leaders about the outdoor lives of children (Louv, 2010). Louv, along with prominent environmental researchers and educators, founded the Children & Nature Network in 2005 to address the issue of nature-deficit disorder. This organization now has over 40 regional coalitions across the United States and around the world (Children & Nature Network, 2018).

Louv worries that the current generation of children is losing a vital connection with nature. His work builds on the writing of E. O. Wilson, a biologist and Harvard professor. Wilson's (1984) *Biophilia* presents the argument that past and continuing human development—including physical, cognitive, and spiritual development—is dependent on interaction with other forms of life. Wilson (McVay, 1993) defines biophilia as "the innate tendency to focus on life and lifelike processes…to the degree that we come to understand other organisms, we will place greater value on them, and on ourselves." (p. 4). In a later refinement of the biophilia hypothesis, Wilson contends that humans have the intrinsic urge to affiliate with other forms of life (Wilson, 1993). Similarly, Louv (2008) defines biophilia as the "life enhancing sense of rootedness in nature" (p. 246). Louv fears that children with limited access to and time with nature have not developed a natural sense of biophilia and are unable to make these connections with nature. In *The Last Child in the Woods,* Louv (2008) introduces us to a ninth-grader, Jared, who had recently taken a trip to the Grand Canyon:

> But after seeing the canyon from several different vantage points, I was ready to leave. Although the canyon was magnificent, I felt that I was not part of it – and without being part of it, it seemed little more than a giant hole in the ground (p. 69).

Jared appreciates the beauty on a basic level, but he feels no personal connection to the experience. Sobel (1996) is concerned that children, like Jared, are not developing biophilia, but instead are developing ecophobia – "the fear of ecological problems and the natural world" (p.5).

Why then is it important that children feel connected to and positive about nature? What are the long-term risks of children's limited outdoor play to our society? Research indicates that outdoor play and time in nature have a wide range of cognitive, socio-emotional, and physical development benefits for young children. Table 1 summarizes the benefits for young children to

increased access to natural spaces and natural playgrounds.

Table 1

Benefits of Access to Nature during Early Childhood Development

Developmental Benefit	Research Citation
Fewer hyperactivity symptoms	• Faber Taylor & Kuo, 2009 • Flouri, Midouhas, & Joshi, 2014
Decreased stress levels	• Wells & Evans, 2003
Increased self-control	• Faber Taylor, Kuo, & Sullivan, 2002 • Mårtensson, Boldemann, Söderström, Blennow, Englund, & Grahn, 2009 • McArdle, Harrison, & Harrison, 2013
Increased selective attention	• Carrus, Pirchio, Passiatore, Mastandrea, Scopelliti, & Bartoli, 2012 • Chalwa, Keena, Pevec, & Stanley, 2014 • Dadvand, Nieuwenhuijsen, Esnaola, Forns, Basagaña, Alvarez-Pedrerol, Rivas, López-Vicente, de Castro Pascual, Su, Jerrett, Querol, & Sunyer, 2015 • Mårtensson et al., 2009 • McArdle et al., 2013 • Schutte, Torquati, & Beattie, 2017 • Wells, 2002
Increased working memory	• McArdle et al., 2013
Higher health ratings by parents	• Aggio, Smith, Fisher, & Hamer, 2015 • Söderström, Boldemann, Sahlin, Mårtensson, Raustorp, & Blennow, 2013
Increased physical competence and fitness levels	• Chalwa et al., 2014 • Fjørtoft, 2001 • Klesges, Eck, Hanson, Haddock, & Klesges, 1990
Increased physical activity	• Cosco, Moore, & Smith, 2014
Decreased risk of being overweight or obese	• Bell, Wilson, & Liu, 2008 • Petraviciene, Grazuleviciene, Andrusaityte, Dedele, & Nieuwenhuijsen, 2018

In additional to these developmental benefits, there is evidence that children personally value access to outdoor areas. However, in closer study of these outdoor play environments, researchers have found that children may describe their outdoor play environments in ways that are surprised to adults. When asked about important outdoor areas, children make designations that are independent of those play areas designed by adults for children's play. This underscores the need to engage children directly in research regarding their experiences. Children associate playgrounds as areas for play, but they also identify other non-designed areas as play areas (Jansson, 2008; Rasmussen, 2004; Sancar, & Severcan, 2010; Smith & Barker, 2000). These non-designed areas include woods and other natural features. Children value the social aspects of outdoor play and private spaces that are available or can be constructed in nature (e.g. forts, dens, tunnels in playground equipment, etc.) (Clark, 2007b; Jansson, 2008; Rasmussen, 2004; Smith & Barker, 2000).

A number of researchers have also found that childhood play in nature positively correlates with environmentalism later in life. Wells and Lekies (2006) interviewed over 2,000 adults in urban areas across the United States and found a high correlation between childhood experiences in wild nature settings (e.g. camping, fishing, playing in the woods) and environmental attitudes and behaviors as adults. Less of an effect was evident with childhood domesticated nature experiences (e.g. gardening, indoor plant care). Although this study did not determine causality between wild nature experiences in childhood and adult environmentalism, it indicates that childhood access to authentic nature experiences may influence the next generation of the conservation movement. In related research in the United Kingdom, Thompson, Aspinall, and Montarzino (2008) found that childhood experiences in natural places strongly correlated with positive adult attitudes toward nature and their use of natural spaces. In interviews with 56

adult environmentalists, Chawla (1999) found that the adults most often attributed their current pro-environmental stances to childhoods spent in nature and to family members who taught them to respect nature. Broom (2017) found a correlation between childhood experiences in nature and environmental beliefs and actions in young adulthood. All these of these studies indicate that a generation of children disconnected from nature may grow up to be a generation of adults who are not interested in environmental protection issues.

Of the environmentalists that Chawla (1999) interviewed, most talked of special natural places where they played during their youth. Research with children has found that children cite special natural places as an important aspect of outdoor play (Moore, 2000; Rasmussen, 2004; Sobel, 2002). Research shows that American children now have fewer opportunities to find these special natural places and develop these influential and life-long relationships with nature. Children now spend less time outdoors than their parents did as children. Clements (2004) collected data from over 800 mothers in the United States concerning their own childhoods and their children's outdoor lives. The mothers reported that their children spent less time than they did outside as children, their children participated in less free play and in more adult-organized outdoor play, and their children participated in more indoor rather than outdoor play. Similarly, Wridt (2004) in New York City found that during the last half of the 20th century, children's lives shifted from being rooted in the outside to being secluded in the indoors. This change in the patterns of childhood has been attributed to parental fears of traffic and crime and to the increased time children spend with electronic media or in organized afterschool and weekend activities (Charles, Louv, Bodner & Guns, 2008; Clements, 2004; Karsten, 2005; Valentine & McKendrick, 1997; Wridt, 2004). In interviews with 150 mothers in the United States, Singer, Singer, D'Agnostino, and DeLong (2009) found that only 33% reported that their children spent

time exploring nature. A study of childcare centers in North Carolina indicates that even when children are able to spend time outdoors, they still have little access to natural materials (Cosco, 2007). In this study of over 300 centers, the researchers found that almost 25% of settings had only one piece of playground equipment and across the sample few natural materials or even shade were available to children.

With American children spending less time outdoors, there is a danger that they will never develop biophilia, a deep and personal connection to nature. Current research indicates that children have less knowledge and interest in nature. In a survey of over 2000 children ages 8 to 18, Rideout, Foehr, and Robert (2010) reported that children engage in entertainment media for an average of 7 hours and 28 minutes per day. With this amount of time devoted to media, it leaves little room for intense time spent in nature. A study by Juster, Ono, and Stafford (2004) supports this assessment. On a weekday, children ages 6 to 11 reported an average of only six minutes per day spent doing outdoor activities. One could argue that weekdays are busy times for school-aged children, but the study found that the time only rose to 12 minutes per day on weekends for this same age group.

This shift in childhood from outdoor activities to indoor media-based activities is shifting the knowledge base of children away from biodiversity. In a 2002 study, Balmford, Clegg, Coulson, and Taylor (2002) asked 109 children, ages 4 to 11, to identify photos of common plants and animals and to identify photos of Pokémon characters (a popular children's trading card game, video game, and TV show). At age 4, children could identify the natural objects 32% of the time and Pokémon characters 7% of the time. At age 8, their success rate rose to 53% for the natural objects and 78% for the Pokémon characters. Clearly, the experience and knowledge of these children was rooted in media and not in nature. Similarly, in a study of advanced

biology students ages 16 to 17, Bebbington (2005) found that none of the students could identify ten common wildflowers and 86% could only name three or fewer. Both studies indicate a generation of children who are not engaging in a deep relationship with the natural world.

Nature preschools. Nature preschools have the opportunity to shift this trend of childhood toward indoor activities by helping the youngest children engage with the outdoors and develop relationships with nature. Since children are spending less time in nature than previous generations, nature preschools are helping to fill this developmental gap. While there is rapid growth in this type of preschool education, there are limitations in the research around forest kindergartens and nature preschools. Since this movement began in Denmark, Norway, and Sweden, much of the early research on these types of outdoor schools is not readily available to American researchers, as the work has not been translated to English (Bentson et al., 2009). However, even with this limitation on the research literature around forest and nature schools, in a review of the literature available in English, there are patterns emerging regarding the educational benefits of forest kindergartens and nature preschools. The current research findings fall into three broad categories: increased pro-social behavior, academic learning across the content and developmental areas, and environmental learning. Table 2 summarizes the research on the prosocial and developmental outcomes of nature preschools.

Table 2

Prosocial and Developmental Outcomes of Nature Preschools

Outcome	Research Citation
Increased confidence in new activities	• Bailie, 2012; Kirkham, 2005 • O'Brien, 2009 • O'Brien & Murray, 2007 • Slade, Lowery, & Bland, 2013

Outcome	Research Citation
Working cooperatively	• Acar & Torquati, 2015 • Bailie, 2012 • Kirkham, 2005 • Lindemann-Matties & Knecht, 2011 • Murray & O'Brien, 2005 • O'Brien, 2009 • O'Brien & Murray, 2007 • Ridgers, Knowles, & Sayers, 2012 • Slade et al., 2013
Self-regulation skills	• Acar & Torquati, 2015 • Bailie, 2012
Gross and fine motor development	• Kirkham, 2005 • Murray & O'Brien, 2005 • O'Brien & Murray, 2007 • Zamani, 2016
Decreased anger levels	• Roe & Aspinall, 2011
Developmentally appropriate risk taking	• Bailie, 2012 • Zamani, 2016
Increased creativity and imaginative play	• Kirkham, 2005 • Ridgers, Knowles, & Sayers, 2012 • Zamani, 2016

These findings illustrate that outdoor educational experiences benefit the abilities of children to work in groups and manage their emotions, while promoting the development of cognitive and physical skills.

While pro-social behaviors and physical development are a benefit to the overall development of children, many may argue that academics are the central purpose of school-based education. Researchers have found that academic skills are developed through nature preschool

and forest kindergarten curricula. Table 3 summarizes research on specific content area knowledge and learning skills developed at nature preschools and forest kindergartens.

Table 3

Academic Learning Outcomes of Nature Preschools

Outcome	Research Citation
Math skills	• Kirkham, 2005
Problem solving skills	• Bailie, 2012
Increased motivation to learn	• Kirkham, 2005 • Lindemann-Matties & Knecht, 2011 • O'Brien, 2009 • O'Brien & Murray, 2007 • Slade et al., 2013
Language development	• Kirkham, 2005 • O'Brien, 2009 • Murray & O'Brien, 2005 • O'Brien & Murray, 2007

These findings are evidence that nature-based pedagogies can develop math and language arts content knowledge and support growth in important academic skills such as problem solving and motivation to learn.

Environmental education is the final domain where forest kindergartens and nature preschools benefit children's development. Environmental education is a prominent part of the philosophy of forest kindergartens and nature preschools. Table 4 summarizes research findings on the nature and environmental learning outcomes developed in these outdoor educational settings.

Table 4

Nature and Environmental Learning Outcomes of Nature Preschools

Outcome	Research Citation
Increased ability to identify plants and/or animals	• Lindemann-Matties & Knecht, 2011 • Murray & O'Brien, 2005 • O'Brien & Murray, 2007 • Ridgers et al., 2012 • Slade et al., 2013
Development of conservation and environmental values	• Bailie, 2012
Positive child-nature relationships	• Bailie, 2012 • Lindemann-Matties & Knecht, 2011 • MacEachren, 2013 • Murray & O'Brien, 2005 • Ridgers et al., 2012

These research findings demonstrate that forest kindergartens and nature preschools have positive influence on the development of young children's cognitive and socio-emotional development and improve academic and environmental learning outcomes.

National variation among nature preschools and forest kindergartens. While there is growing evidence of the benefits of forest kindergartens and nature preschools, the differences in the traditional European and Scandinavian forest kindergartens and the more American nature preschools indicate a need for specific research focused on American contexts. Sobel and Wolf Fritz (2016) discuss six differences in the parental expectations of preschool in Europe and the United States, which can lead to different types of learning opportunities in these outdoor school settings:

1. American parents expect an academic focus in preschool, whereas European perspectives focus on play.

2. In European early childhood settings, adult staff at preschool are more typically viewed as facilitators and play workers rather than as teachers.
3. American preschool parents are risk adverse, while European parents see risk and potential injury as a part of life.
4. In Europe, it is better understood that extended time outside in all weather may sometimes be challenging, while American parents expect school to be fun all day, every day.
5. European parents see that nature is a part of everyday life and it can have both good and bad aspects, whereas American parents can be more inclined to idealized concepts of nature.
6. European parents view childhood as a training ground for the adult world and expect children to learn independence at an early age. Conversely, American parents aim to create idyllic childhoods and supervise children very closely.

These variances in parental expectations are likely to put differing pressures on the policies and teaching practices at outdoor schools in the different cultures. MacQuarrie, Nugent, and Warden (2015) found that cultural contexts did create variances in the pedagogy, curriculum, and policies at nature kindergartens when comparing Scottish and Nordic schools.

The general educational experiences of young children also vary from nation to nation. Formal education in many parts of Europe does not start until age seven, whereas in the United States it typically starts at age five (Kenny, 2013). This changes the pressures on academic skills in preschools and kindergartens in the United States when compared to their European counterparts. Hanscom (2016) also notes that the litigious impulse of American society has decreased the risk taking skills practiced in educational settings and increased the amount of

rules imposed on children's play in the name of safety. This finding contrasts starkly with New Zealand, for example, where the federal insurance system covers all injuries, so lawsuits against schools for child injuries are exceptionally rare (Hanscom, 2016). New, Mardell, and Robinson (2005) also observe that Norwegian, Danish, and Swedish early childhood teachers have less aversion to risky play than their American colleagues do. These cultural differences underscore the need for continuing research on nature preschool and forest kindergartens in American settings. Potential areas for future research in these cultural differences include risk tolerance by parents and teachers, effects of litigation and insurance regulations on program policies, and parental expectations of nature preschool experiences.

There are also disparities between the outdoor worlds of European and American children. Raustorp, Pagels, Bolderman, Cosco, Söderström, and Mårtensson (2012) found that on weekdays, preschool children in Sweden spent significantly more time outside than their U.S. counterparts. The Swedish children spent an average of 47% of their time outside, while the children in North Carolina spent only 18% of their time outside. Another example is in the amount of independence children are allowed to have outdoors. Tim Gill, childhood scholar and advocate, notes, "I've been told that in Switzerland, parents are judged badly if they DON'T let their children walk to kindergarten (yes, kindergarten) on their own." (Greenfield, 2015). This contrasts with the United States where in Maryland in 2015, a family was investigated for neglect after the parents let their two children, ages six and ten, walk together to a neighborhood playground and play unsupervised (McCarren, 2015). As the outdoor lives and parental expectations of children vary from culture to culture, it is reasonable to assume that these differences would influence the development of outdoor learning environments such as nature preschools. These national differences among parental expectations indicate a need for research

specifically on American contexts for nature preschools, as the data on these schools may vary from European or Scandinavian models. My research aims to address this gap by examining children's experiences at an American nature preschool.

While research shows physical, emotional, and cognitive benefits to children who have access to nature, American children have less access to outdoor play and nature. Nature preschools address this changing world of childhood in the United States by giving children time for free play and facilitated learning experiences in nature. Current research on nature preschools and forest kindergartens indicates that these models of early childhood education can support the development of cognitive, socio-emotional, physical, and academic learning outcomes in young children. This finding aligns these preschool models with NAEYC's Early Childhood Program Standard #2: Curriculum. The expectation of this standard is that a quality early childhood program "promotes learning and development in each of the following areas: social, emotional, physical, language, and cognitive" (NAEYC, 2018). While there is evidence for the educational and developmental benefits of outdoor educational models in early childhood, much of that research comes from Europe and Scandinavia, where the philosophical model began.

This dissertation study addresses two gaps in the current literature: 1) data on nature preschools from the American cultural context and 2) data on nature preschools from the perspective of children. This study also aims to add to the literature on contemporary outdoor learning experiences of children. In the next section of this review, I shift from literature on nature preschools and forest kindergartens to the research literature related to the methodological decisions used in this dissertation study.

Engaging Children as Collaborators in Research

The guiding principles for the research methods used in this study are grounded in the critical stance that children are competent social actors who must be engaged as collaborators in research about their experiences. In this next section, I discuss the literature surrounding the epistemological and theoretical frameworks for my research, considerations for conducting research with children, and photovoice and participatory action research models.

Constructivism as an epistemological framework. As a learning theory, constructivism recognizes that each individual brings a unique background to every learning experience and that this distinctive background affects how individuals interact with the experience and what knowledge they construct from it (Fosnot, 2005). Therefore, when adults observe the play patterns of children, they are not necessarily capturing the cognitive constructions of those children. By relying on adult observations or interviews regarding children's play, there is a risk misrepresenting the complexity or meaning of the play. Nicholson, Kurnik, Jevgjovikj, and Ufoegbune (2015) conducted a study of children's play that involved interviews with adults and children in 21 different countries on the subject of children's play. They found that the adults' descriptions of the play of children varied greatly from the children's descriptions and that the adult discourse focused on deficit language. In the constructivist paradigm, adults are able to discover the underlying meanings that children associate with their experiences only when we engage children in the discussion and representation of their thinking. Adult observations of children at play do not necessarily tell us what that play means to the children or how they feel about the experience. Researchers cannot watch and see a child's thought processes, nor can they assume that their own adult memories of childhood thinking are the same as what the child under observation is thinking. We are not

acknowledging the unique perspective and cognitive constructions of children, unless we include their unique experiences and perspectives. If we view adult memories of childhood as a good measure of how children think today, we are assuming that all childhoods are the same, all children think the same, and the experience of childhood has not changed over generations. Technology has changed the world dramatically over the past 50 years, so it would be hard to argue that the world of childhood has been untouched by these changes in society. Since the world of children has changed, we must engage children during research in order to understand their cognitive constructions.

Even with evidence of the changing world of childhood, the role of children's perspectives in research is still a matter of debate in educational research. One may ask whether it is possible to obtain the needed information from children, especially young children, and whether the data will be as detailed as data developed through adult observations and reflections. While others take a critical stance on this issue and assert that we can only learn about childhood when we recognize children as competent social actors.

Kahn (2002) believes children's voices are key to understanding their experiences and argues, "Children construct rich and varied constructions and values of the natural world, and they do so in even economically harsh urban settings" (p. 112). Mayall (2002) contends that if we redefine childhood and the value of children's perspectives as Kahn suggests, then "children move from being objects of adult work, to being competent, contributing social actors" (p. 248). The educational research communities around the world, especially those in Europe and the Nordic region, are making the transition to treating children as competent social actors and including them as research partners (Bühler-Niederberger, 2010).

Critical theory as a theoretical framework. Critical theories in education developed across the 20th century starting with the Frankfurt School in 1923, which advocated for a need for human agency in social systems to avoid repression of minority or powerless cultural groups (Giroux, 2017). These theories look at the social and educational culture of our society from the perspective of non-dominant and marginalized cultural groups. McLaren (2017) defines culture as "a set of practices, ideologies, and values from which different groups draw to make sense of the world" (p. 60). Critical perspectives maintain that educational research has been historically controlled by the dominant culture – white, able bodied, heterosexual, males of European descent – and that this has led to biased treatment in educational settings of groups with little power in the society, including:

- African Americans and Latinos (Parker, 2003);
- people with disabilities (Goodley & Runswick-Cole, 2010);
- women (Weiler, 2003; Lather, 1992);
- members of lower economic classes (Henderson & Tickamyer, 2009);
- and gay, lesbian, transgender, and transsexual individuals (Unks, 2003).

Children as competent social actors. Like these other marginalized groups, childhood culture is distinct from the dominant social group of adulthood. The cultural group of childhood meets McLaren's definition of culture as it possesses its own unique beliefs, rituals, vocabulary, traditions, and social norms for behavior (Mullen, 2008). We see many examples of cultural practices that are common and sometimes exclusive to childhood culture: text messaging abbreviations, playground games, media interests, slang, and practices around maintaining social statuses. An argument can be made that childhood is not a social group because children age out

of it; however, even though individuals leave the social group, childhood itself persists in our society (Mullen, 2008).

Even though children age out of this social group, it is still an important, albeit many times voiceless, social group in the United States. It is actually quite common for us to move in and out of various social groups throughout our lives, e.g., able/disabled, working/retired, lower class/middle class, non-parent/parent. So while individuals will age out and leave the social group, childhood itself persists in our society (Mullen, 2008). Like other critical theories that have developed before it, critical childhood theory argues for the necessity of recognizing children as competent social actors and valuing the perspectives of individuals from this marginalized group.

Being a competent social actor is the ability to be a contributing member of society whose ideas and perspectives are respected and utilized in decision making in the wider society (Mayall, 2000). However, being a competent social actor does not necessitate being a perfect social actor, so we must be sure to include all social groups within the decisions of society. This means even including some groups, like senior citizens, children, or those with disabilities, who may need additional support in contributing to societal decisions. Bjerke (2011) defines this variability among social groups as "differently equal responsible beings" (p. 68). Even though some groups, like children and older adults have different skills, it does not make them less important members of society.

Medicine provides a useful example of how critical approaches can be used to improve practice and research related to the needs of a differently abled social class – senior citizens. In contrast to the pediatric community, the gerontology medical community has addressed the issue of critical studies. Critical gerontology is an established theoretical frame within the

gerontological research community (Luborsky & Sankar, 1993). This field was created in response to the abuse, neglect, and lack of equal human rights seen in medical treatment and care of older adults (Luborsky & Sankar, 1993). The U.S federal government has also recognized the potential human rights abuse to older adults. The U.S. Equal Opportunity Commission (2012) outlines federal protections for adults over 40 years of age from age discrimination or harassment in employment. In contrast, the United States is the only United Nations member state that has not ratified the United Nations Convention on the Rights of the Child (United Nations, 2018). Full details of the UN Convention on the Rights of the Child are discussed later in this chapter.

Like older adults, children represent a social group in U.S. society with limited power, voice, or valued intellectual merit. However, in contrast to older adults, children have rarely been viewed through a critical lens. Why do we use a critical lens at the end of life but not at the beginning? Children, like senior citizens, bear the risk of being taken advantage of by more sophisticated members of the society. Both age groups also struggle with wanting more independence than it may be safe for them to have. However, with seniors, we respect them as competent social actors in our community. Perhaps even more importantly, practices in the medical community are being shaped by this critical framework. Children, who like their grandparents, may have more limited capabilities, also deserve the respect given to competent social actors within a community. Like other critical theories that have developed before it, critical childhood theory argues for the necessity of utilizing the perspectives of individuals from the marginalized group. Therefore, in critical childhood theory, children must be active members in the study of childhood experiences and the cognitive constructions of children.

Children, especially the very young, are not treated as experts or even reliable witnesses to their own experiences. Historically, much of the research on childhood nature experiences has

been conducted by adults observing children or by adults reflecting on childhood – both on their own childhoods and on the childhoods of today (Wells & Lekies, 2006; Thompson, Aspinall, & Montarzino, 2008; Chawla, 1990). Prout & James (2002) argue that, historically, much research in childhood studies has framed the researcher as the "detached scholar" (p. 29), who can objectively observe and comment upon the experiences of children. In contrast to this opinion, the critical theory perspective argues that no researchers are truly detached because they always brings their own filters to the research – and in this case, it is the filter of adult experiences, values, and sensibilities. While we traditionally think that the experiences we build over our lifetimes help us to be better problem solvers, this may not be the case in childhood studies. The "detached scholar" perspective assumes that adults understand the experience better and can provide a more accurate description than the actual participants, the children themselves. Punch (2002) argues, "As adults we were once children but we soon forget, unlearn and abandon elements of our childhood culture" (p. 325). Also from a constructivist epistemology, data created by an adult cognitive perspective do not present a complete picture of the meanings that contemporary children associate with their experiences. If we want to investigate the development of children's attitudes, knowledge, and conceptions, we must use methodologies that help us learn about these internal constructions.

A critical stance on childhood studies asserts that adults can only learn about childhood when we recognize children as competent social actors (James & Prout, 2002; Matthews & Tucker, 2000; Punch, 2002; Smith & Barker, 2000). When utilizing this critical lens, researchers strive to do research *with* children, instead of research *on* children (Christensen & James, 2008; Conroy & Harcourt, 2009; Mayall, 2002). Cook and Hess (2007) warn, "While childhood is something common to all humans, the child within each of us tends to be buried by the

conventions of adult socialization" (p. 43). Punch (2002) agrees, "As adults we were once children but we soon forget, unlearn and abandon elements of our childhood culture" (p. 325). In this perspective of children as experts, adults are not *former children* who can accurately report on the nature of childhood. Rasmussen's (2004) study of children in Denmark provides an example of how our adult lens colors our perspectives on childhood experiences. She examined the play spaces that had important significance to children, which she identified as "children's places," and those places that adults designated as "places for children." She found that children did relate to the areas created and designated by adults, the "places for children" (e.g., backyard swing or sandbox), but they also identified meaningful special places that may seem insignificant in the adult perspective (e.g., a group of bushes at the edge of the playground or a special tree in the yard). Adults can only interpret the nature of childhood through the lens of adult experience, so great care must be utilized in research design to record and present children's voices and their meanings (Pramling Samuelsson, 2004). Adults do have knowledge about children, but this is restricted to what Pramling Samuelsson and Pramling (2009) refer to as "child perspectives." However, only a child can truly provide a "children's perspective." Children's perspectives can only really be gained when children are actively engaged in the research process and are sharing their reflections, opinions, or ideas (Pramling Samuelsson & Pramling, 2009).

Traditional societal structures, including educational systems and research, regard children as "becomings" rather than beings (Qvortrup, 1994). If we shift to viewing children as beings, we then acknowledge children as capable humans and competent social actors today, not just potential humans and potential social actors. Once we view children as competent social actors, then we need to acknowledge them as experts in their own experiences and active participants in the wider culture. Treating children as becomings, as incomplete human beings,

is a paternalistic perspective that segregates children to a powerless status in our society. In fact, other marginalized groups are often defined as "childish" or "infantile" by the dominant group, which Qvortrup (2002) argues may make children the "proto-typical minority group" (p. 73). If researchers recognize children as a marginalized group in our society, then it suggests the inclusion of children's voices in research to minimize potential or accidental misrepresentation of their experiences by adults.

Conducting research with children. When moving to a model that includes children as competent social actors capable of being collaborators in research, questions arise as to what is developmentally appropriate for this age group. Researchers are investigating the differences between doing research with adults and research with children. Additionally, researchers are debating how best to include children's perspectives and how to engage children in better ways through all phases of research. These investigations have yielded a number of specific recommendations on how to do educational and social research in partnership with children successfully. As shown in Table 5, researchers must think about research design with children in ways that are uniquely different from research design with adults. By designing the research around the unique needs of children, a researcher has a greater chance of collecting reliable data that highlight children as meaning makers and important social actors in the culture.

Table 5

Challenges and Solutions for Effective Research with Children

Challenge	Solution	Research
Adults may not feel comfortable establishing rapport with children	View child as an expert and treat as a partner in the research process.	• Clark, 2007a • Cook & Hess, 2007 Punch, 2002

Challenge	Solution	Research
Adults may impose their own interpretations on the child's meaning.	Use multiple methods to collect data about the child's perspective.	• Punch, 2002 • Smith & Barker, 2000
	Allow children to give feedback on interpretations.	• Matthews & Tucker, 2000
Children have limited language skills.	Incorporate communication tools that maximize the skills of children (e.g. drawings, dramatics, photographs, etc.).	• Clark, 2007a • Dell Clark, 1999 • Matthews & Tucker, 2000 • Punch, 2002
	Use age appropriate vocabulary.	• Punch, 2002
Children have shorter attention spans.	Use methods that are engaging to children.	• Cappello, 2005 • Matthews & Tucker, 2000 • Punch, 2002 • Smith & Barker, 2000
Children may be unfamiliar or uncomfortable with research methods or settings.	Avoid question-and-answer interviews, which may be outside the normal communication experiences of children.	• Cappello, 2005 • Dell Clark, 1999
	Allow children to take part in the selection of research methods.	• Smith & Barker, 2000 • Punch, 2002
	Use methods that give children control over data collection.	• Dell Clark, 1999
	Choose settings that are comfortable for children.	• Punch, 2002
Children may give answers to try to please adult researcher.	Build relationships on equal terms, not with the adult as superior over the child.	• Dell Clark, 1999 • Punch 2002
	Explain purpose of research to child.	• Matthews & Tucker, 2000

These recommendations influenced the research design of this dissertation study, especially in my choice of photovoice as a methodology. I applied the following best practices in conducting research with children from Table 5 in the design of this study:

- Treated children as experts and engaged them as partners in the research.
- Engaged children as active agents in the data analysis process.
- Incorporated photography as a communication tool that utilized the communication assets of young children.
- Used engaging tools to collect data – iPod Touches and creating books.
- Avoided any formal interview process. Instead chose to use the photo captions to understand the children's perspectives on each photo.
- Gave children control over the initial data collection and the process of determining which images were the most important data.
- Since the data collection and initial analyses were embedded in their normal school day, the children were able to participate in the study in the comfortable setting of their preschool.
- In explaining the research to the children, I attempted to always be respectful and let them know that they were helping me learn more about how they felt about their school.

The next section outlines the use of photovoice and other visual methodologies in the research with children.

Photovoice and other visual research methodologies. Photography, videography, and drawings have the power to address a number of these issues in research with children by providing a comfortable communication tool, an engaging process, equality in the child-researcher relationship, and clearer insight into the child's ideas and perspectives. One

methodology in sociological and anthropological research that utilizes photography is photovoice. Photovoice embeds the voice of community members in the research data and analysis by changing individuals from research subjects to active members of the research team through a participatory action research model. Researchers in a wide variety of fields, including sociology (Nash, 2014, Wang & Burris, 1997), anthropology (G. Johnson, 2011), education (Keat, Strickland, & Marinak, 2009), and health sciences (Dell Clark, 1999; Dennis, Gaulocher, Carpiano, & Brown, 2009; Epstein, Stevens, McKeever, & Baruchel, 2006), now use photovoice, a specific research methodology employing photography, to better understand the experiences of children, adolescents, and adults. This methodology is highly related to a variety of visual methodologies including photo interview (Cappello, 2005), photo elicitation interviews (Clark-Ibáñez, 2004; Epstein et al., 2006), participatory photo mapping (Dennis et al., 2009), and photo narrations (Keat et al., 2009).

The origins of photovoice are in the work of John Collier, an anthropologist, in the 1960s. Collier used a combination of photos he provided and interviews with adult community members to gain greater understanding of the lives of individuals (Collier & Collier, 1986). Wang and Burris (1997) further refined the photovoice process by having community members take the photos and then asking them to discuss the meaning of their photos in order to identify problems and create community change. The accessibility and relatively low expense of digital and disposable cameras have expanded the interest in visual methodologies like photovoice for both child and adult community members.

Children and participatory action research. The United Nations Convention on the Rights of the Child (1990) supports the right of children to have their voices heard in society. Article 12 of the Convention states:

> States parties shall assure to the child who is capable of forming his or her views the right to express those views freely in all matters affecting the child, the views of the child being given due weight in accordance with the age and maturity of the child (para. 1).

Educational research, which influences educational institutions and pedagogy, certainly meets the criteria of being a matter that affects the child. Children's right to be have their voices heard in matters that affect them is mirrored in the NAEYC's Early Childhood Program Standards. Standard 1 (Relationships) requires accredited programs to "foster each child's ability to contribute as a responsible community member" (NAEYC, 2018). As young children can learn to be responsible community members in the classroom, they can also learn to take on that role as members of a research team.

In accordance with the United Nations Convention on the Rights of the Child, researchers should evaluate the ethics of leaving the child's perspective out of the research process. Participatory action research (PAR) models address the criterion of adding the views of the child to the research process. While YPAR (youth participatory action research) projects engage the voices of youth in addressing issues of change or inequities in their lives, they may not be including the youngest children in our society. Caraballo, Lozenski, Lyiscott, and Morrell (2017) define YPAR as PAR studies working with elementary school age youth through college undergraduates, so preschool children may not be seen as viable contributors in this model. In this research project, I chose photovoice, a participatory action research strategy, as the methodology for the data collection and analysis in the project. By choosing photovoice as my methodology, I placed the voices and skills of the very young children at the center of the study by engaging them as collaborators in the study. The goal was also to demonstrate that even young children can work as research collaborators in PAR models.

A participatory action research model engages those who are the focus of the research not as subjects but as active participants who shape the direction of the research questions, collect and analyze data, and guide the use of final data and results (Mertens, 2010). This framework is centered on the belief that community members "hold deep knowledge about their lives and experiences, and should help shape the questions, [and] frame the interpretations" (Torre & Fine, 2006, p. 458). While the studies outlined in the previous section illustrate researchers advocating for and implementing participatory methods with children's research, I was unable to find examples of research that used a participatory action research framework in research with preschool children (ages 3-5). I used the following search operators in the University of Cincinnati Libraries Summons database and the Google Scholar search engine and was unable to find any studies that utilized PAR models with preschool-age children as participants: youth participatory action research and preschool participatory action research. One pattern that did emerge was that PAR was used in research <u>about</u> preschool age children, but that the children themselves were not participants, only their caregivers or teachers were participants (Alexander, Awad, Clark, & Nelson, 2009; Ampartzaki, Kypriotaki, Voreadou, Dardioti, & Stathi, 2013; Erwin, Puig, Evenson, & Beresford, 2012; Garwick & Seppelt, 2010; and Lemelin, Gallagher, & Haggerty, 2013).

Using a PAR research frame, this study used photography to engage children as active agents in data collection and analysis around their preschool experiences. One benefit to community members in PAR projects is that the research can support change or development of policies and protocols that affect the community members (Cammarota, 2012). Since the Preserve Preschool was only in its third year during the period of this research, the school program is still in early stages of operation. This research benefits the children by giving

continuous improvement feedback about the school experience from the children's perspective to the adults who design the curriculum. These data may lead to adaptations or expansions of parts of the school curriculum or daily format.

The final section of this review outlines the cognitive capabilities of preschool children and the developmental readiness of preschool children to share the stories of their experiences and perspectives. This section also demonstrates that even young children are capable of being part of the evaluation and documentation of their own experiences.

Developmental Perspectives on Children as Learners, Storytellers and Photographers

Young children as learners. Piaget (1971) contends that learning happens by the individual interacting directly with the environment and building theories (schemas) about the world through a process of assimilation (drawing parallels between similar activities) and accommodation (adjusting theories based on new or contradicting observations). While Piaget viewed the thinking of young children as not being centered in logic (Piaget, 1929), a number of more recent developmental psychologists view the cognition of young children as capable and logical. Bjorklund (2005) argues "children's immature cognition can be seen as having an integrity and possibly a function of its own, rather than being seen only as something that must be overcome" (p. 6). Gopnik (2012) sees the cognition of preschoolers in everyday learning as modeling the structure of the scientific method: using data and repeated experimentation to test hypotheses and develop new conclusions. These contemporary views on cognition in early childhood align with the critical stance that young children are capable of being active partners in research.

Young children as storytellers. It may not be typical to include the voices of preschool children in a program evaluation process and some may question whether young children are

capable of sharing accurate and meaningful data regarding their learning environments and experiences. However, research shows that even very young children are capable of telling and sharing basic stories.

In Piaget's theory of cognitive development, preschool children are in the preoperational stage where they are developing symbolic thought represented by language (Piaget & Inhelder, 1969). Piaget sees language, rather than relying on images alone, as essential for individuals to communicate their experiences (stories) effectively to others (Piaget, 1959). In this way, storytelling is an inherent part of the way that humans convey their perspectives and experiences to others. By age three, most children have developed the ability to tell stories without assistance (Engel, 1995; Applebee, 1979). Being storytellers means that preschool age children are able to describe events and provide narratives that include details on the order and locations of events. Stadler & Ward (2005) identify five levels of storytelling development: labeling, listing, connecting, sequencing, and narrating. The first level, labeling, is basic description of unrelated items with no development of narrative or plot. Listing is the second level. At this stage, children build action onto the basic labels. In the connecting stage, children develop a core topic with actions that join characters and/or events. When stories are told with time sequencing and causality for actions, children have moved into the sequencing level. The final level of storytelling development in early childhood is narrating. This stage adds plot with clear sequencing of events with predictable endings to the previous storytelling skills. Stadler & Ward (2005) note that preschool age children rarely exhibit this last stage.

Young children as photographers. One way to help children tell their stories and share their experiences is through photos, videos, or drawings. Early childhood educators now regularly use digital cameras in classrooms as learning and teaching tools. After the proper

orientation to using cameras, teachers and researchers have found that young children in preschool and elementary school are capable users of digital cameras (Byrnes & Wasik, 2009; Blagojevic & Thomas, 2008). Teachers in elementary schools and preschools use digital cameras as an instructional strategy in a various ways, including:

- communicating instructions or previewing activities for children (Byrnes & Wasik, 2009),
- documenting the classroom activities and the development and interests of children (Blagojevic & Thomas, 2008; Neumann-Hinds, 2007; Pastor & Kerns, 1997),
- promoting language and literacy development (Good, 2005/2006; Lamb & Johnson, 2008),
- teaching content across the curriculum (Carter Ching, Wang, Shih, & Kedem, 2006; Lamb & Johnson, 2008; Neumann-Hinds, 2007),
- promoting socio-emotional development (Byrnes & Wasik, 2009; Good, 2005/2006),
- building vocabulary and storytelling skills (Blagojevic & Thomas, 2008; Byrnes & Wasik, 2009),
- improving self-concept (Byrnes & Wasik, 2009; Good, 2005/2006; Pastor & Kerns, 1997), and
- developing interpersonal skills (Blagojevic & Thomas, 2008).

In these examples, teachers and young children used digital cameras to create photos. As teachers demonstrate that young children are capable photographers, photovoice becomes a viable option for investigating the lives and thoughts of even very young children.

As outlined in Table 5, research with children should utilize methodologies that engage children in communication styles that are comfortable for them and allow them to have direct

involvement in data collection. Photography has the ability to include children as collaborators in research by providing a comfortable communication tool, an engaging process, equality in the child-researcher relationship, and clearer insight into the child's ideas and perspectives. Leitch (2008) views visual methodologies as an essential tool in narrative research with children. To her, "image making provides an opportunity to represent experience, a tangible process and product, within which stories are inherent, or out of which stories are (re)created" (p. 39). Photography not only has the ability to show the researcher the child's perspective, but it helps children understand their own perspectives better and creates a meeting ground for the child and adult to discuss the child's experiences (Ewald & Lightfoot, 2001). Visual methods may be especially useful in understanding the internal cognitive constructions of young children since they have limited vocabularies and verbal communication skills contrasted with high visual communication skills (Clark, 2007a; Matthews & Tucker, 2000; Punch, 2002). This perspective aligns with the Reggio Emilia early childhood educational philosophy, which contends that for effective communication we must interact through the "hundred languages of children" in the classroom (Edwards, Gandini, & Forman, 1998). Photography-based research methodologies have been used to better understand the world of children in a number of studies. Examples of photography-based research topics explored with preschool children include:

- children's experiences and feelings about schools and classrooms (Cook & Hess, 2007; Einarsdottir, 2005; Stephenson, 2009; Sodré & Cassimiro, 2014),
- how digital cameras can help immigrant preschool children communicate with their teachers (Keat, Strickland, & Marinak, 2009),
- distinctions between adult designated "places for children" and child identified "children's spaces" (Rasmussen, 2004),

- experiences of children with chronic illness (Dell Clark, 1999),
- experiences of children in outdoor school environments (Clark, 2007a; Einarsdottir, 2005),
- home and school environments of children with autism (Carnahan, 2006), and
- the transition from home to school for children in Hong Kong (Lam, 2009).

These studies show the range of topics that researchers are exploring through visual methodologies that engage the perspectives of preschool children. While the topics vary, findings focused on preschool children's experiences of physical spaces and their emotional experiences are regularly associated with studies using photography-based methodologies. These studies also show that young children are capable photographers and data collectors in research.

The literature discussed in this section reveals young children to be capable learners, storytellers and photographers. When we view the cognition of young children as being capable and scientific, rather than underdeveloped, then the perspectives of preschool children on their learning experiences should be valued as much as the perspectives of adults or teens in other learning settings. Using this stance on early childhood cognition, this study acknowledges child perspectives as sources for valid and reliable data on the learning experiences at a nature preschool. The literature on children as storytellers and photographers supports this study's choice of photovoice as a methodology appropriate for preschool children.

Summary

Traditional surveys from quantitative studies and interviews from qualitative studies show us that modern children are more engaged in media and spend considerably less time outside than previous generations. This trend has led environmental educators to fear that the

current generation will grow up without any connection to the natural world and become a generation of adults who are not concerned with environmental conservation. These educators are concerned about the attitudes and beliefs of children, but they are relying on research that has concentrated on adult observations of childhood. Researchers are now creating new methodologies and best practices to investigate not just the behaviors of children, but the attitudes and beliefs of children. Photovoice and other visual methodologies are options well suited to the development and communication skills of young children. By putting children's perspectives at the forefront, we can discover how children make decisions and how they feel about the world around them. This type of data may lead to better predictions about how they may make decisions and how they may feel about the world around them when they are adults. Since current research shows that the relationship that children develop with nature affects their adult environmentalist attitudes (Broom, 2017; Chawla, 1990; Thompson et al., 2008; Wells & Lekies, 2006), it is vital that we learn more about the perspectives and attitudes that children are developing about nature and the outdoors. The studies in this review reveal that children still value the outdoors even though they may have less access to it.

One new avenue for young children to learn about nature and engage in time outdoors is nature preschools and forest kindergartens. Early research in this field has centered in Europe and the Nordic region. Additional research on American nature preschools will help us to understand these learning environments. If we consider nature preschools through the perspective of those experiencing it rather than through the lens of our own childhood experiences and memories, we may develop new perspectives on the current nature learning experiences and outdoor lives of children. Photovoice was selected for this dissertation research, because this methodology placed children at the center of the research as data collectors and data

analyzers. The objective was to better understand their experiences at nature preschool and relationships with nature through a participatory action research model. By learning from the children themselves, the goal was to develop recommendations that would inform the design of their preschool, the Preserve Preschool, and to provide insights that could inform the physical, pedagogical, and curricular designs of other nature preschools.

When researchers let go of adult conceptions of childhood and share power in the research process with children, they have a better chance of understanding the perspectives and experiences of children. Once we better understand nature preschool and other outdoor experiences of young children and their perceptions and attitudes toward nature, we can work collaboratively with children to ensure that the next generation will appreciate and protect the natural world. Through these new insights into the world of children, we stand a better chance of developing effective environmental education strategies that will foster children's relationships with the natural world.

Chapter 3

Research Design and Methodology

This chapter provides an overview of the project and its goals, a review of the methods used in collecting and analyzing data, and a rationale for why decisions were made throughout the research process. Specific areas covered include a statement of researcher position in the research, research setting, child collaborators, consent, IRB, entrance into the setting, data sources, photovoice process, establishing trustworthiness of the findings, and data analysis process.

Overview

The purpose of this research project was to document the school perspectives and experiences of preschool age children in an American nature preschool. The study used photovoice methodology to engage the children as active researchers who worked as both data collectors and primary data analyzers. The theoretical frame that guided the methodology and analysis choices was a participatory action research model that respected these young children as competent social actors who could guide adult understanding of their experiences and perspectives about their nature preschool.

Research Questions

This study explored three research questions:

1. How do young children attending a U.S. nature preschool describe their school experience?
2. What are the characteristics of the child-nature relationship for young children attending a U.S. nature preschool?
3. What are best practices for working with preschool children in a photovoice process?

Subjectivity Statement

Utilizing a constructivist epistemology, I acknowledge that all research is conducted by humans, which inherently makes it subjective and that this subjectivity should not be viewed as a deficit, but as an inherent component of the research process (Patton, 2002). The following is a subjectivity statement to aid the reader in understanding my background as a researcher and educator and its potential impact on the study results. In this statement, I outline by background in relation to nature preschool and environmental education, and I explain how I navigated issues of subjectivity in the research design choices of this study.

I have worked as an environmental educator in a variety of settings, including working as an educator and zookeeper at a zoo; a day camp leader and naturalist for a city park system; and as an exhibit and program designer at a science and industry museum, a children's museum, and a public library system. In these career experiences, I have been able to observe children of all ages learning through unstructured play and exploration through adult-facilitated instruction. While I have not been a traditional classroom teacher, I have also worked to support teachers as a technology instructor and media and curriculum designer in public television. I currently work in higher education supporting teachers who are in preservice and advanced teacher preparation programs.

Having worked in both traditional classroom and nontraditional learning environments, I am concerned with how education as a concept is sometimes reduced to only those experiences that happen in schools. This divide is so great that I learned early in my career to call myself an "educator" rather than a "teacher." A number of licensed teachers would be offended if I called myself a teacher, since I was not a licensed classroom teacher. I have also observed this divide

in teacher preparation programs in higher education, which typically focus almost entirely on preparing classroom teachers. Since I straddle the divide between both types of educational settings, I have been intrigued by the nature education movement, which merges aspects of non-traditional settings (learning outside) with traditional classroom curriculum. This merger also has given clout within the traditional educational community to the idea that children do learn profound and meaningful lessons in settings outside the standard classroom.

My background as an informal educator has also influenced my perspective on assessment. I am more interested in assessing the learning environment and how it affects student learning and attitudes, rather than assessing what the students did or did not learn. I believe that we improve education in more profound ways when we deeply understand how the teaching and learning environment is impacting children than when we take static measures of learning. A student assessment tells us what the child did or did not learn, but it may not tell us exactly what needs to change in the teaching and learning environment in order to improve that child's learning. This study reflects my interest in understanding how a new model of preschool education – nature preschools – is affecting children and their learning.

A benefit to my experience and background is that I was well prepared to explore this topic through previous extended and intimate engagement with this topic in practical and academic settings. While I cannot disconnect by personal interests and background in relation to the topic from this research experience, I attempted to minimize the influence of my subjectivity by utilizing a participatory action research model. This choice centered the data collection and preliminary analysis on the children's perspectives rather than on my observations and analysis. Miles and Huberman (1994) position this as a best practice in qualitative research – "to capture data on the perceptions of local actors 'from the inside'." (p. 6). I believe that the best way to

understand the experience of any group, especially a marginalized one like children, is to utilize the perspectives and observations directly from group members. I also tried to minimize my influence by being aware of my subjectivity throughout the research process (Peshkin, 1985). I did my best to be aware of my facial expressions and words in order to not lead the children in their choices in photo subject matter or in their final selection and captioning of the most important images to tell the story of nature preschool. I also utilized a reflexive field journal in the study in order to explore potential issues of subjectivity throughout the study.

Research Setting

The research setting of this study is a private preschool (referred to as Preserve Preschool) on the grounds of a private nature preserve in a transitional suburban/rural area in the Midwestern United States. The school is not named in order to protect the identities of the children and families. Preserve Preschool is nestled on a 1,800-acre member-supported nature center and preserve. Over 150,000 visitors each year enjoy the trails, forest, fields, waterways, playscape, and educational programs for all ages. While structured to meet state educational standards using licensed teachers, Preserve Preschool is centered on the belief that children benefit socially, physically, emotionally, and cognitively by having regular and immediate contact with nature. Preserve Preschool defines itself as a nature preschool rather than as a forest preschool and it serves children ages 3-5. A learning outcome of their program is to "initiate a life-long, meaningful relationship with the natural world in a high quality early childhood environment." The research questions of this study aimed to provide the program with evidence as to whether its curriculum was meeting this outcome.

The class consisted of 15 children, ages 3-6, with two lead teachers. Volunteers or parents were also present on some days. Both teachers are state licensed preschool teachers.

Volunteers provided extra one-on-one attention for children and served as additional safety monitors and knowledgeable nature adults during outdoor activities.

The class met three days per week from 12:30 – 3:30 pm. Approximately two-thirds of each day was spent outside. Children went outside even in cold or rainy weather. Parents were instructed to dress children for the weather. This included parkas, snowsuits, raincoats, and boots during snow or rain. Children had spare clothes in their cubbies to replace any wet or muddy clothes. Children also keep slippers in their cubbies to wear inside the classroom in order to minimize the dirt and mud tracked in from outside. Regardless of the weather, the children went outside every day. In more extreme weather, such as sleet or heavy snow or rain, the outside time may be reduced, but the children still went outside every day. In the history of Preserve Preschool, the children have never missed a day outside.

Preschool Daily Schedule

While adjustments are sometimes made for special activities or due to the interests of the children, the daily schedule generally is as follows:

- 12:30 –1:00 pm Free play in playscape (outside)
- 1:00 – 1:15 pm Opening circle (outside)
- 1:15 – 2:30 pm Hike (outside)
- 2:30 – 3:15 pm Time in classroom building (free play & snack)
- 3:15 - 3:30 pm Closing circle (inside)

The preschool day starts with time on the playscape (Figure 1). The playscape is a private space attached to the preschool and is not available to other guests or members of the nature preserve. This is a free-play portion of the day where children can greet each other and teachers, play on the playscape, or do simple activities on the picnic tables adjacent to the

playscape. This free-play time also allows for families to talk with the teachers or to have extended transition time if needed by the children. The playscape is a fenced-in natural wooded area with a few designed elements added. These added elements include an earthen tunnel made from a corrugated tube, stumps for balancing, large cut logs for building, and a hillside drainage tube that functions like a small creek when the water is flowing off the hillside. The playscape also provides plenty of existing natural materials for exploring such as small trees to climb, muddy areas to dig, rocks to turn over, dried leaves in the underbrush, and growing plants.

Figure 1. Images of the Preserve Preschool Playscape.

The formal part of the preschool day starts with the opening circle (Figure 2). This is almost always outside, except on very rare occasions when the weather is particularly trepidatious. During my observation period, the opening circle was always held outside. The children gather with the teacher at a circle of stumps next to the playscape. After everyone finds a stump to sit on, the teacher starts with the welcome song where each child is welcomed by name. Next, the teacher introduces an activity based on the current educational unit. Each unit typically lasts two weeks, but can be extended if the children are particularly interested in continuing to explore the topic through a project. Sample topics include monarch butterflies, birds, wildflowers, tracks, etc. While each unit is based on a natural sciences topic, traditional

academic skills such as language arts and math are embedded in each unit. In an example opening circle activity on monarchs, the children act out the life cycle of a butterfly – starting as an egg, then transition to a caterpillar and chrysalis, then finally an adult who migrates back and forth from North American to Central America.

Figure 2. Image of the Preserve Preschool opening circle space.

At the conclusion of the opening circle, the children get ready to go on the hike. Preparation includes making sure the children have gone to the bathroom and have the right clothes and shoes on for the weather. The teacher also carries a backpack with a two-way radio for emergency communication, first aid kit, tissues, field guides, camera for documentation, a duck call, and exploration tools such as a magnifying glass or a shovel. The hike is the longest portion of the preschool day and goes to a variety of destinations on the grounds of the nature preserve. Sample destinations include the pond, a patch of fallen logs, a creek, a hillside for sledding, the boneyard, or a field (Figure 3). During the hike, the teacher may also pose questions or challenges based on the current educational unit. Possible challenges posed to children may be listening for birds or looking for butterflies. At the destination, there is open-time for children to explore the site, with minimal to no adult direction in the play. Teachers do monitor for safety and are available for children with questions. Teachers may also scaffold

children's learning or exploration through key questions or observations. Physical development and challenges are also exhibited during this portion of the school day when children may engage in risky play such as sledding or climbing over and around large fallen trees. During these kinds of activities, it is typical to see children working on physical development, self-confidence, and cooperation skills. When it is time to gather the children back together, the teacher uses the duck call to indicate it is time to reassemble.

Figure 3. Images of the children and teachers during the daily hike.

After the hike, the children return to the preschool for the indoor portion of the day (Figure 4). After shedding their jackets, boots, and any muddy or wet clothes, the children head into the indoor free-play portion of the day. Snack is also available during this free-play period. Snack is optional and is served family style, where children serve themselves from community bowls and plates. Snacks are provided by an assigned parent each day and specific nutrition guidelines are provided to parents. The children use reusable utensils, napkins, and table wear to support sustainability initiatives. The children are also instructed to place food waste in a bucket, which is then added to the school compost bin. The snack is just one of the activities available during this period. The preschool indoor classroom is set up in a variety of centers including: reading, blocks, art, writing, puzzles/manipulatives, nature resources, dramatic play,

sensory table, and an indoor treehouse. The classroom also is home to pet fish, a pet corn snake, and many live plants. The children are able to participate in feeding and caring for the class pets. Bird feeders are also outside the windows that children can watch.

Figure 4. Images of the Preserve Preschool indoor classroom.

The day concludes with a closing circle that happens inside the preschool (Figure 5). Children are actively involved in getting out the carpet squares and setting up for circle. Closing circle connects back to the educational unit and may involve specific language arts or math activities. An example math activity is a patterning activity using rocks, sticks, and leaves collected on the hike. Other sample activities are a storytime or a guest speaker related to the educational unit. After the circle concludes, children put their carpet squares away and can return to play in the centers until they are picked up by a guardian.

Figure 5. Image of the Preserve Preschool closing circle space.

Child Collaborators

The class collaborating on this study consisted of 15 children between the ages of three and six. All 15 children in the class were of Caucasian descent and none of the children were on an Individualized Education Program (IEP). The center is designed for children ages 3-5, however, in this class there was one 6-year-old. She had a younger 3-year-old sibling. The center allowed her to stay in preschool one more year, so she could have a year together with her sister. Table 6 shows the age and sex of the 14 children who completed the study. All children in the study are identified with pseudonyms to protect their identities.

Table 6

Participant Age and Sex

Child	Age	Sex
Mollie	4	Female
Matilda	3	Female
Jack	3	Male
Avery	5	Female
Amelia	4	Female
Mia	3	Female

Child	Age	Sex
Eliza	4	Female
Caleb	4	Male
Celeste	6	Female
Opal	4	Female
Teresa	4	Female
Olivia	5	Female
Kai	5	Male
Henry	4	Male

Consent and Assent

Consent from parents was gained from a signed consent form (see Appendix A). I gave the form to parents when they picked their children up at the end of the preschool day. The form contained my email and phone number for any questions. I also spoke with parents individually as they returned the form to see if they had any additional questions. The consent covered three categories: permission for their child to participate in the study, permission for the photos taken by their child to be used in academic publications and presentations, and permission for photos of their child (taken by other children) to be used in academic publications and presentations.

I obtained verbal assent from the children. I explained to the children that their preschool was different from the kind of preschool that many children went to and that I wanted to learn about their special nature preschool and wanted to help other adults understand what was important at their nature preschool. I explained to parents and children that the children were able to use the iPod Touch cameras whether they chose to participate in the study or not. I reminded the children that they could choose to exit the study when we started the photo taking process and again when we were selecting photos to create the final projects.

The study was completely voluntary for children and the parents. The children or parents could decide to leave the study at any time. Fourteen of the 15 children completed the study. Jewell, age 5, began the study, but appeared to be uninterested in completing the study. Her parents gave written consent for her to participate and she gave verbal assent to participate. She was very interested in taking photos and looking at the print outs of her photos. However, when it came time to complete the final project, she was uninterested in completing the project. We tried three times to see if she wanted to complete the final step in the Photovoice project – once with the researcher, once with a teacher, and once with her mother. But she "love[d] them [photos] all" and appeared uninterested in the final phase of the project. I determined this to be her withdrawal from the study.

Institutional Review Board (IRB)

This project was part of a University of Cincinnati's IRB approval for Study ID: 2014-0723 Arlitt Child and Family Research and Education Center Education Research Study for Institutional Continuous Improvement. As the activities of this project contributed to the continuous improvement of the curriculum and procedures at the Preserve Preschool, the study fell under "not human subjects research" as defined by the University of Cincinnati Institutional Review Board. By placing children in the center of a program evaluation process, the project built on V. Johnson's (2011) Change-Scape socio-cultural theoretical model, which utilizes children's voices to inform program decisions and processes. Change-Scape looks to improve children's services and children's well-being by directly linking children's participation with program evaluation and subsequent change.

Entrance into Setting

I served as a volunteer in the class for five class sessions (once per week) before beginning the formal research period began. During this pre-research period, a letter (see Appendix B) was sent home to parents introducing the researcher and giving them an overview of the research project. The letter also told them that a consent form would be distributed later for the research project.

Overview of Data Sources

Data were collected through multiple techniques and sources. These include:

- Photovoice projects – books created by the children with photos and captions.
- All photographs (including those used in the books and those not used in the books) taken by the children.
- Researcher reflexive field journal.

Photovoice Process

The overall methodological goal of the study was to have each child take photographs and decide the most important photos to include in a book. Each book was to tell the story of Preserve Preschool from that child's perspective. This project aimed to implement the standard photovoice process with preschool age children. The standard photovoice methodology process as outlined by Wang and Burris (1997; 1999) is as follows:

- Step 1: **Training** for the community members on the operation of cameras, the ethics of taking photos, and basic principles of framing subjects in photos.
- Step 2: Community members take **photographs** of their own choosing related to the research topic.

- Step 3: Community members share images and reflect on them through **facilitated group discussions**.
- Step 4: **Participatory analysis** of photos where community members choose the photos that best tell the story of their community, decide what these photos mean, and identifying patterns and themes common among the photos.
- Step 5: **Share final projects** with community leaders, stakeholders and decision-makers.

This study followed the Wang and Burris model as a means to better understand the experiences of preschool age children at their nature preschool. Through an ethnographic perspective (Hammersley & Atkinson, 2007), photovoice allowed the children to document their everyday school experiences with an accessible and open-ended media throughout the spring season. The next section is an outline of the photovoice process as adapted for the developmental needs of this age group.

Photovoice step 1: Training. I began the project by introducing the children to the idea of using photographs to tell a story. The children had created a class book at the beginning of the school year about families, which used photographs of their families. So the children had some prior experience in using photographs to tell a story.

I introduced the project to the children during one of the opening circles. The teachers use books many times during the opening circle to introduce a new project or theme. I showed the children a photobook I had made of a trip I took on a hot air balloon. We talked about how the photos help to show people what the experience was like. I then told them that they would each be creating their own photobook to tell the story of what it is like at their preschool. I let them know that they would each have a camera to use to take their own photos for their

photobooks. I told them that the photobooks would help me explain to other teachers and adults what it is like at their preschool. Several children wanted to know if they got to keep the cameras. I let them know that they would not be able to keep them, but assured them that they would be able to keep all the photos they took on the cameras.

I asked the children to take photos that told the "story of their preschool." The story of their preschool could include both elements they liked and those they disliked. By having the children take the photos instead of me taking photos of them during their class day, I made the choice to acknowledge them as experts in their own experience and engaged them as data collectors in the study.

Next, I trained the children on the proper use of the camera function on the iPod Touches and general care of the iPod Touches. The iPod Touches (cameras) were protected from water damage and falls by Otterbox cases. I had one spare iPod Touch in case one was damaged during the project. Prior to giving the cameras to the children, I deleted all extra apps from the devices and put any extraneous apps that could not be deleted into a folder. I hoped that this would make it harder to access these tools. The only apps left on the home screen were the Photos and Camera apps. The devices did not have wi-fi or data connections. Each camera was labeled with a number and the child's name.

At the end of the opening circle, I gave each child their iPod Touch and made sure each knew how to access the camera and photo functions. I reminded them that they should take photos that would tell the story of preschool and that would help someone who had never been to their preschool understand what it is like there. I encouraged them to take photos of both good and bad parts of preschool. During the hike that day, I helped children as they worked with the cameras and gave them one-on-one instruction. This training also covered basic principles of

photography for children, as outlined by Ewald & Lightfoot (2001), including the concepts of framing, deleting unwanted photos, distance from subject, and avoiding blurry photos. We also discussed not taking photos of anyone who asked for their photo not to be taken. I found that all 15 children had prior experience with using the camera feature on cell phones and needed very little instruction on how to take photos with the iPod Touches. The iPod Touch is similar in size to a mobile phone and has an identical operating system to the iPhone.

Photovoice step 2: Taking photographs. The children were encouraged to takes photos of their experiences throughout their school day. The children were able to use the cameras on four different class periods during four different weeks in late March and April of the school year. I carried the cameras with me in a messenger bag at all times. The children could choose to take the cameras or return them to me whenever they wanted. This allowed children control over the data collection process by giving them the choice of when to photograph and what was important to photograph. It also gave them the freedom to not be burdened by carrying the cameras all the time. For example, it is possible that some of the children may not have taken the cameras on the hike, if it involved a commitment to carrying the cameras the whole time. It was not unusual for some children to take/return the cameras a half dozen times or more during a class period. When the children arrived to class, I would ask, as a reminder, if they wanted their camera. Many would also approach me as soon as they arrived to claim their camera. When I gave the camera to each child, I would remind him or her to take photos that helped to tell the story of preschool. Children were again reminded about the cameras when we transitioned inside for snack and free play time.

While the children were working with the cameras, the teachers, parents, and volunteers were instructed not to guide the children in what photos to take. Occasionally, children would

want a photo of themselves on their camera and rather than take a "selfie", they would ask an adult to take the photo for them. This was allowed in the study, since the child was still organizing the photo content and perspective. In the parameters of the study, children were not allowed to use each other's cameras; however, I never observed a child trying to use another child's camera. The children appeared to be very proud of having their own camera and did not seem interested in sharing cameras.

Children could choose to use or not use their cameras on any given day. Some children used the cameras for large periods of time during all four class sessions, while others took only a few photos on as few as one day. The number of photos taken by each child ranged from 16 to 786. Some children also took videos using the cameras. Taking videos was not encouraged and videos were not used in the data analysis of the project. The video app on the cameras could not be deleted, so was a constraint of the technology. The video images printed as photos and those photos were included for children to select from when creating their books. Some children knew how to delete photos on the cameras and deleted some photos. I did not show the children how to delete photos, but I did not discourage them from deleting any photos. Since they would be the initial data analyzers, I did not want to restrict them from this additional level of controlling their image selections.

Photovoice step 3: Sharing images and facilitated group discussions. After the four class sessions with the cameras, I downloaded the images to my computer and printed the photographs for each child. Each photo was printed as a 3.5" x 5" photo on standard white copy paper. I tried distributing the photographs to the children during small group sessions of three children during the inside portion of the school day, but it was quickly apparent that the facilitated group discussion strategy would not work for the children. Most of the children were

very excited to see their photos and did not appear interested at all in photos of other children. Some children were busy with other activities in the classroom and did not want to be part of a group activity. However, the children were very interested in showing their photos to me or to another adult in the classroom. I decided that the small group facilitated discussion model would not work with this group of young children. They were very proud of their own work, but did not exhibit the patience or interest to look at and talk about another child's photographs. In the Wang and Burris (1997) model, one of the goals of the facilitated groups discussion is to gain some group consensus and decision making around the community issue. However, in this community of young children, they were more interested in telling their own personal story, rather than engaging in a group storytelling process.

After this failed experience with the facilitated group discussion model, I switched to a model where each child sat down with me (or another trusted adult) one-on-one to look at the individual's photos during the inside portion of the school day. During these sessions, the child would sit on the floor or at a table with me (or another trusted adult) and look at their photos. The photos were given to them in a stack in chronological order. Many of the children described each photograph to me as they looked at them.

Photovoice step 4: Participatory analysis. The next step in the project was to engage the children as collaborators in the first step of the data analysis process. Once they had had a chance to look at their photos, I gave each child a blank hard-bound book (portrait orientation), colored pencils and markers, and a glue stick. The books were 6" x 8" and had 28 pages (14 sheets). I asked them to then choose the most important photos that told the story of preschool to put in the book. I encouraged them to pick photos that would help someone who had never been to their school to understand what Preserve Preschool was like. If this prompt was difficult for

the child to understand, I asked him or her to pick the photos that they liked the best. I did not encourage the children to select any particular photographs, nor did I offer any comments, encouragement, or discouragement about any choices. I tried to keep myself as a neutral observer in the process. My role was to remind them of the activity prompt, to answer any questions the children had, or to serve as their scribe. I wanted to have my preferences not influence their decisions on which images were most important. As the primary data analyzers in the project, it was important to have each child make decisions on the most important images to include in his or her story of preschool.

As the child glued the photographs into the book, I asked the child to write a caption about each photo. If the child was not a writer yet, the child dictated the caption to me (or trusted adult that they were working with). The children were used to dictating captions to adults during previous art projects in the classroom. Not all of the children were comfortable talking with me as they created their books. For these shyer children, I tried having them work with a teacher to dictate the captions. If that did not work, I had them work with a parent. When a teacher or parent was working with a child, I briefed the adult in advance on the protocol and I stayed close by to observe the interaction to ensure that the protocol was followed. The protocol included the prompt, being neutral, and not commenting or guiding the child in selection. Out of 14 children who completed the project, three wrote their own captions, five worked with me, five worked with a teacher, and one worked with his mother. I reviewed all captions in the books on the day they were completed and asked the child follow-up questions if I did not understand what a particular caption referred to.

One child was uninterested in completing the photo book portion of the research project. She was very engaged by her photos, but was unable to narrow them down to the most important

ones. She said that she loved them all. This child's photos were not included in any of the data analysis for the study.

Each child was able to choose how many photos to include in the book and decide how to arrange the photos in the book. Some children put one photo on each page, others put two on a page, while others put only one photo per two-page spread. Some children also used the markers provided for decorating the cover of the book. After each child completed his/her book, I asked the child if I could borrow the book and makes copies of it. I told the children that I would bring it back to them and they could then take it home to keep. I told the children that I would use the copies I made to explain to other adults what it was like at Preserve Preschool. However, when the child was finished with the book, I gave him/her a fresh printed stack containing all of the photos they had taken. These photos they could take home right away. Every child agreed to let me borrow his or her book. I told the children that I would return the books at the family picnic at the end of the school year, which was less than 2 weeks away. I thanked them for sharing their work with me, especially since I knew they were very proud of their work and were excited to share it with their families and friends. Being able to take home copies of all of their photos right away seemed to help the children agree to let me borrow the books. When the parents came to pick up their children, I also gave each parent a DVD containing their child's photos and videos. I made digital copies of the books for my data records and for further analysis.

Photovoice step 5: Community sharing. By sharing the final products with the community leaders and decision-makers, the photovoice project can then help the community learn and grow. By sharing the books, the teachers and families could have a better understanding of how the children were engaged with Preserve Preschool and this new

understanding could help the adults better support these and future young learners in this unique preschool setting.

One of the goals of this project was to provide data for a continuous improvement model at the school. To meet this goal, the books were shared with the teachers after school hours. One of the benefits of photovoice as identified by Wang and Burris (1997) is that "it provides a way to reaffirm or redefine program philosophy, structure, approach, goals and values" (p. 385). The photos and the final projects were shown to the teachers, who used them as data to inform future curriculum projects and to provide evidence as to whether or not the classroom curriculum and structure were meeting the overall program goals of the preschool. The teachers were able to look through all the books and discuss how they wanted to replicate this activity across the entire school year. Photo documentation of learning activities was used by teachers in the past at Preserve Preschool. One of the teachers usually carried a camera during hikes and other activities, however, this was the first time the children had been able to take the photos and decide on the photos to use in a documentation project. The teachers were interested in learning more about how children viewed their school experience across the school year.

The school year ended in May with a family picnic. At the picnic, I thanked the children and parents for their help in the research project. At this time, I returned the books to the children. This public distribution provided time for public sharing of the work. The children were able to share their books with their families and look at each other's books. This gave the children an opportunity to showcase what they valued at Preserve Preschool to primary stakeholders in the school curriculum and structure – teachers and parents. In this way, the children had the ability to influence decisions regarding the school in future sessions. This benefitted younger children in the program who would return in the following year and future

children who would attend Preserve Preschool. It gave power to the children to influence their own educational environment. While children are the primary benefactors of the educational settings, children, especially very young children, are rarely involved in real decision making in the structure of a traditional school day.

Other Data Sources

While the main source of data in the study were the books, there were two additional data collections tools – the total collection of photos taken by each child and a researcher reflexive field journal. I maintained copies of all the photos taken by each child in order to do a basic analysis of the location and portion of the classroom day of each photo. I kept a researcher reflexive field journal throughout the entrance to the setting, data collection, child analysis, and researcher analysis portions of this study. In these field notes, I maintained basic notes about each child, notes about changes or observations about the research process, observations on photovoice implementation issues with very young children, and notes about my own influence and potential bias in the project. These field notes provided a research audit trail for the project and provided evidence to the transferability and confirmability of the study (Lincoln & Guba, 1985; Rodgers & Cowles, 1993). I discuss these concepts in depth in the next section.

Trustworthiness

When using a constructivist epistemology in the research design and data analysis, trustworthiness is a key factor in validating the research findings (Lincoln, 1995). Lincoln and Guba (1985) establish four criteria for determining trustworthiness of a study:

- Credibility – the confidence that the findings are a true representation of the experience;
- Transferability – evidence that the findings can be applied to other settings;

- Dependability – the consistency and potential repeatability of the findings;
- Confirmability – the degree which the findings represent the experiences of the respondents rather than the influence or bias of the researcher.

Evidence for credibility in this study include utilizing an extended engagement in the research site, peer debriefing (Lincoln & Guba, 1985), and engaging the children as data collectors and primary analyzers in the process. I spent over 3 months working with the children and got to know the children, teachers, and families very well over the course of the study. After analyzing the data, I shared the raw data and my preliminary analysis with two researcher colleagues through a peer debriefing process. Neither had any experience with the research setting. This allowed for challenges to my thinking, uncovering any biases or assumptions on my part. For example, both individuals challenged whether the number of photos in each setting (inside vs. outside) affected the final number of inside and outside photos selected for the final books. I was then able to return to my analysis and make an additional comparison of the data. But the most important evidence of credibility was the engagement of the children as primary data collectors and preliminary data analyzers. This removes the researcher as the primary decider in what was the reality of the experience for these children.

While this study was not designed to be generalizable to a wide range of settings, I aimed to provide a thick description (Geertz, 1973) of the setting and the study to help readers to situate these finding within their own educational contexts. Readers will determine whether there are enough parallels between this setting and other specific educational settings to determine if the results are transferable to those other settings.

Dependability of this analysis was determined through an inquiry audit (Lincoln & Guba, 1985). I shared data and preliminary results with researchers and teachers (including one of the

Preserve Preschool teachers) through a researcher-roundtable discussion at the Nature Preschool Conference. This group gave me feedback on my findings, both in support of some findings and challenging of others. One example was a challenge in comparing how much the children valued different portions of the day over others. I was able to return to my data and complete another quantitative comparison. This new analysis supported my preliminary findings.

The final criteria of trustworthiness as outlined by Lincoln and Guba (1985) is confirmability. I established confirmability through the research reflexive field journal to explore researcher issues of adult or personal bias during the research process, documenting my potential biases and values in this dissertation, and sharing the final analysis with the Preserve Preschool teachers. The teachers assured that I have not misinterpreted an aspect of their school day and reviewed the analysis from their perspective as members of the classroom.

Data Analysis

Photovoice project. Wang and Burris (1997) identify three steps in the participatory analysis process: selecting, contextualizing, and codifying. The children engaged in the first two steps of this process: selecting the photos to use in the books and contextualizing by providing captions for each photo that gave meaning to the images. However, due to their age and apparent disinterest in looking at the photos as a group, I chose not to involve the children in the final analysis stage: codifying. Developmentally, children ages 3-5 are typically only capable of recognizing simple patterns (Copley, 2010) and codifying would have required an ability to look for complex patterns over a large number of photographs. For this reason, I chose to involve the children only in the first two steps of the participatory analysis process, since only these two steps were developmentally appropriate for this age group.

I completed the final step of the photovoice data analysis process (codifying) without the participation of the children. I analyzed each image and caption combination in each book using an open coding process (Strauss & Corbin, 1998), where each conceptual unit of the caption was tagged with a descriptive code (Saldana, 2009). These descriptive codes were then processed through in a second cycle of coding that condensed the codes into pattern codes (Patton, 1990). I repeated this process to look for patterns, until I did not find any additional patterns. The field journal was also coded in this same two-cycle process.

Using this model, I built code categories that emerged from the data rather than making them fit into any pre-determined categories. Since the children were not part of this final stage of analysis, I did not want to force their work into my own fixed *a priori* conceptions. Using emergent codes helped me to try to preserve the essence of the children's work without an overlay of my adult assumptions. In the coding process, I attempted to use descriptive, objective codes, rather than conceptual or abstract ones. This choice aimed to preserve the children's voices in the data analysis process as much as possible. I repeated the coding process until I could not find any additional descriptive patterns. Through this iterative process, I coded each image/caption combination in the books through four separate cycles:

1. location of the image,
    a. categories – inside or outside
2. subject of the image (a photo could have more than one subject),
    a. categories - plants & animals, people, self, preschool activity, preschool material, preschool playground, parking lot, or ground/sky.
3. caption's statement as to the orientation of the subject to the child photographer (a caption could have more than one orientation),

a. categories – affinity, descriptions, dislike, or not applicable

4. and whether or not the caption exhibited scientific knowledge/language.

a. categories – scientific knowledge/language present or not present

After completing this level of analysis, I shared these data and coding categories with the two preschool teachers from the classroom in the study as an inquiry audit (Lincoln & Guba, 1985) to evaluate whether the coding and analysis were supported by the raw data. Using these internal evaluators, who were part of the study and who knew the children well, served as an alternative to member checking. Neither teacher had any recommended changes to the coding categories or analysis.

I did not attempt member checking with the children because access to all of the children was difficult and the process would have been challenging for the memory constraints for this age group. I analyzed the data 9-12 months after the study concluded. At that time, some of the children had graduated from the school and would have been difficult to track down. Additionally, autobiographical memory (Tulving, 2002), the ability to recall the time and place of past life events, is just beginning to develop during the preschools years (Fivush & Nelson, 2004; Friedman, 1993), which would have posed a considerable cognitive challenge for these preschool children to recall past events and to interpret a multi-layered pattern system.

In the final layer of analysis, I examined the books to see if there were any pattern differences between sexes or among the different ages. This analysis included summaries of the subject and orientation category patterns for each child's book, number of total photos taken, number of photos used in the book, and percentage of total photos used in each book.

Analysis of all photos taken by the children. In addition to sharing the raw data and analysis with the Preserve Preschool teachers, I also shared the data and analysis at the Nature

Preschool Conference. Through a roundtable discussion, other nature preschool teachers and researchers evaluated and challenged my findings. One major critique was that the prevalence of photos for a period of the classroom may have been due to the number of photos taken during that time rather than showing the perceived value of that portion of the day. In order to substantiate my findings, I conducted an analysis of all of the photographs taken by the children, including both photos used in the books and those not used in the books. This analysis aimed to evaluate two specific findings. I coded all of the photos into those two findings categories:

1. Inside or outside subject matter.
2. Portion of the school day when the photo was taken.

Analysis of researcher reflexive field journal. The final goal of the research was documenting the photovoice process with young children. I collected data to meet this goal through the researcher reflexive field journal. I coded the journal through a two-cycle open coding process (Strauss & Corbin, 1998). In the first cycle, I tagged each conceptual unit of the notes with a descriptive code (Saldana, 2009). I then condensed the initial descriptive codes into pattern codes (Patton, 1990). Examples of initial descriptive codes included "returning cameras," "talking about photos," "taking videos," and "struggling to sort." These codes then fed into larger pattern codes such as "process for keeping track of cameras," "durability of cameras," and "engaging trusted adults in final projects." I used these patterns codes to develop my reflections and recommendations on using photovoice with preschool children.

Summary

Children at Preserve Preschool, ages three to six, engaged in a photovoice process to document their experiences at a nature preschool. The children served as collaborators in the research process by collecting data (taking photos during the school day) and completing the first

round of data analysis (selecting the most important images and creating captions for these images). As the researcher, I completed the final round of pattern analysis of the data using a two-cycle open coding process. To verify the trustworthiness of the findings, I completed a member checking process with the classroom teachers and shared the data and preliminary analysis with other researchers for their critique and feedback. While subjectivity is an inherent part of qualitative research, I attempted to reduce my influence by using a PAR model and by keeping a reflexive journal to document potential issues of subjectivity. The children proved to be capable and willing collaborators in the photovoice process, with 14 out of 15 children completing the project.

Chapter 4

Results

Overview

This chapter revisits the research questions and describes the data analysis results in the context of these questions. Data include a thematic analysis of locations, subjects, orientations of photos to the photographer, use of scientific language, and portion of classroom schedule of all photos/captions selected by the children for use in the photo books. Additional data analysis included an analysis of the children's participation in the photovoice project, basic coding of all photos taken by the children, and researcher observations of the photovoice process with preschool children. Table 7 aligns the data sources, analysis, and findings for each research question. This alignment shows the aspects of the analysis conducted by the children and those conducted by the researcher. The outcomes listed in Table 7 are discussed in depth in this chapter.

Table 7

Research Question Alignment with Data Sources, Analysis, and Findings

Research Question	Data Source	Analysis	Outcomes
How do young children attending a U.S. nature preschool describe their school experience?	Images and captions in photo books	Data selection and contextualizing completed by the children and final two-part open-coding process by the adult researcher	Five observations on the most valued parts of the preschool day from the perspective of the children at Preserve Preschool.
	All photos collected by children	Basic pattern analysis of location and portion of the school day by the adult researcher	

Research Question	Data Source	Analysis	Outcomes
What are the characteristics of the child-nature relationship for young children attending a U.S. nature preschool?	Images and captions in photo books	Data selection and contextualizing completed by the children and final two-part open-coding process by the adult researcher	Three observations describing the characteristics of the child-nature relationship for children at Preserve Preschool.
What are the best practices for working with preschool children in a photovoice process?	Images and captions in photo books	Data selection and contextualizing completed by the children and final two-part open-coding process by the adult researcher	Thirteen best practice recommendations for working with children ages 3-6 in a photovoice process.
	Researcher reflexive field journal	Two-part open-coding process by the adult researcher	

In this chapter, I review the three research questions and present the data analysis results correlated to each question. I begin this discussion with a general overview of the children's level of participation in the photovoice project to give context for the data collected and the final analysis. Following this overview, I address each research question and resulting observations in depth.

Children's Collaboration in the Photovoice Project

All 15 children in the classroom worked on the project and 14 out of these 15 children completed the entire project. While all children took photographs, the number of photos taken and the number of days taking photos were highly variable. Two children took photos on all four days, while most only chose to take photos on one to three of the days. The number of photos taken also varied widely within the group. Number of total photos (including those used and those not used in the photo books) taken by each child ranged from 16 to 786. Counting only the

14 children who completed the project, they took 2588 total photos over the four photography days and 148 of these photos were included in the story of preschool books. The percentage of photos used in each final book ranged from 3 to 28%. I was not able to discern any sex or age related patterns in these participation numbers. Table 8 provides a summary of the photography activity levels.

Table 8

Summary of Children's Photography Activity Levels

Child	**Age**	**Sex**	**Number of Days Child Took Photos (Maximum of 4)**	**Total Number of Photos Taken**	**Number of Photos Used in Book**	**Percentage of Total Photos Used in Book**
Matilda	3	F	3	375	10	3
Mia	3	F	2	211	22	10
Jack	3	M	3	144	20	14
Amelia	4	F	2	17	3	18
Eliza	4	F	1	124	8	6
Mollie	4	F	1	20	5	25
Opal	4	F	2	98	9	9
Teresa	4	F	2	53	15	28
Caleb	4	M	2	16	5	25
Henry	4	M	4	232	13	6
Avery	5	F	3	290	15	5
Olivia	5	F	2	34	6	18
Kai	5	M	3	188	8	5
Celeste	6	F	4	786	9	1
* Jewell	4	F	3	295	0	0

*Did not finish the project.

Children's Experiences at a Nature Preschool

This section presents the details and pattern analysis of the children's stories of preschool. Covered in this section are the first two research questions and eight related observations.

Research Question #1: How do young children attending a U.S. nature preschool describe their school experience?

While there was a very large data set of photos that included all of the photos taken by the children, the smaller data set of photos with captions selected by the children for the photo books was the most important data source in a meeting this goal. The first level of analysis conducted by the children, selecting photos and writing captions, showed and explained to me what were the most important parts of their preschool day from the children's perspective. After the children conducted this level of analysis, I used a two-part open-coding model to conduct the next level of thematic analysis, striving to use objective, observable coding categories that described the photo/caption combination rather than placing my adult interpretation on the child's work. This process yielded 5 thematic categories:

1. location of the image,
2. subject of the image,
3. portion of the classroom day when the photo was taken,
4. caption's statement as to the orientation of the subject to the child photographer,
5. presence of scientific knowledge/language in the caption.

Location analysis. The location category of the final analysis designated whether the subject of the photo was located inside or outside. A unique aspect of this preschool is that two-thirds of the day is spent outside, making it the opposite of most preschools, which spend a majority of their day inside. This analysis looked at the relative value the children placed on the inside and outside portions of the day. Figures 6 and 7 give examples of indoor photos, while Figures 8 and 9 give examples of the outdoor category.

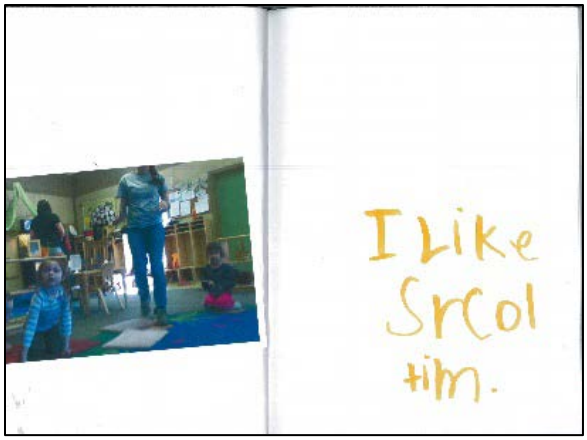

Figure 6. Indoor photo by Celeste, age 6. Caption – "I like school time."

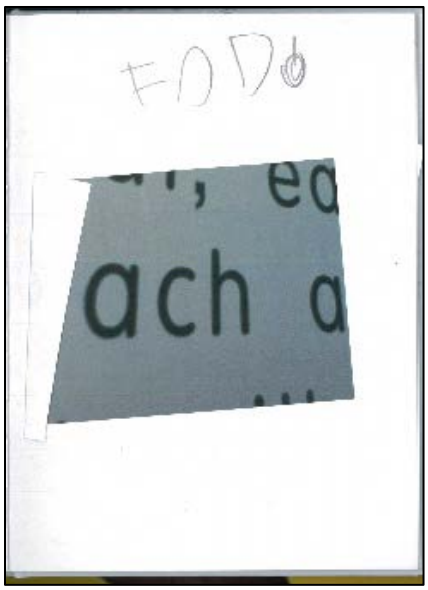

Figure 7. Indoor photo by Avery, age 5. Caption – "Food!"

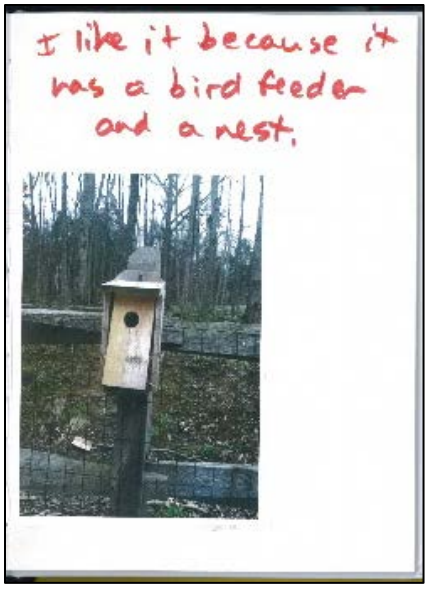

Figure 8. Outdoor photo by Olivia, age 5. Caption – "I like it because it has a birdfeeder and a nest."

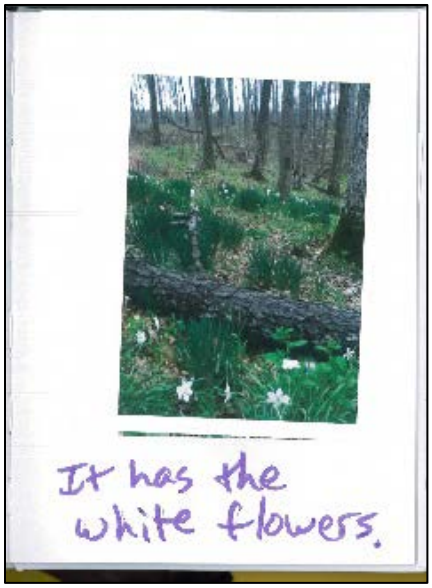

Figure 9. Outdoor photo by Teresa, age 4. Caption – "It has the white flowers."

Only four of the 14 children used any indoor photos in their books, even though half of the children had taken indoor photos. Table 9 provides an overall count of the inside and outside photos taken by the children and a count of the inside and outside photos used in the books. Children who did not take any indoor photos are not included in the table.

Table 9

Number of Photos Taken Inside and Outside and the Number used in the Final Books

Child	Inside in Book	Outside in Book	Inside Total	Outside Total
Matilda	0	10	52	323
Mia	0	22	3	208
Eliza	0	8	1	123
Opal	4	5	5	93
Avery	3	12	13	277
Kai	2	6	6	182
Celeste	5	4	142	644
TOTAL	**14**	**134**	**222**	**2366**

Observation #1: Nature preschool is not a traditional classroom experience. The location data in Table 9 show that the children took fewer photos overall (9% of total) during the indoor portion of their school day and used this same proportion (9%) in their story of preschool books. So while the indoor portion of the schedule accounts for 30% of the day, the children used indoor photos in less than 10% of the photos in their books. Only two of the children, Opal and Celeste, showed a fairly even balance of indoor and outdoor photos. Since the goal of the books was to tell the story of preschool, the use of limited indoor photos by most of the children may indicate that the children did not find this portion of the school day to be as important as the outdoor portion of the day. A challenge to this interpretation is that the children may have taken fewer overall photos of the inside, but used a higher percentage of them in the books. However, in the overall analysis of all photos taken by the children, only 9% were taken inside, the same

ratio as the children used indoor photos in the final books. These data show that nature preschool was not a classroom experience for these children. Rather, they overwhelmingly viewed nature preschool as an outdoor experience.

Subject analysis. I divided the subject category of the final analysis into eight possible subjects. These subjects were determined primarily using the captions created by the children. While many objects may have been present in the photo, the caption indicated the subject of the photo. If the caption did not give clear indication of the subject, then I made a general observation of the primary subject of the photo. The captions were essential in understanding the subject matter that each child intended for the photo. Figure 10 and 11 are examples of two very similar photos, where the captions indicate very different subjects. Without the captions, I would not have been able to understand that these two children assigned very different meanings to these photos. Both photos show the pavement with a child's boot at the edge. For Eliza, this was a photo of her boot, so this indicated that the subject would fall in the "self" category. While Jack said this was a photo of the ground, so this indicated that the subject of Jack's photo was "ground/sky."

Figure 10. Example image with caption from Eliza, age 4. Caption – "My boot."

Figure 11. Example image with caption from Jack, age 3. Caption – "The ground."

There were eight thematic categories used for the subject of the photo/caption combinations:

1. plants & animals – photo focused on plants or animals
2. people – photo focused on other people (i.e. classmates, teachers, and parents, etc.)
3. self – selfie or photo that a child directed someone else to take of themselves with that child's camera
4. preschool activity – photo of a specific preschool activity (i.e. hike, eating snack, drawing, etc.)
5. preschool material – photo of specific preschool material (i.e. iPod Touches, climbing tunnel, name tags, etc.)
6. preschool playscape – photo of the playscape connected to the preschool building
7. parking lot – photo of parking lot next to preschool building
8. ground/sky – photo taken of the sky or the ground.

In my analysis protocol, a photo/caption combination could be coded for more than one subject. Figure 12 shows an example of this. I coded this image from Opal as having two subjects: people and preschool activity (hike). Her comment that "everyone is there" indicates the importance of the people in this experience and the subject of the hike (preschool activity) indicates the value of the hike in her story of preschool.

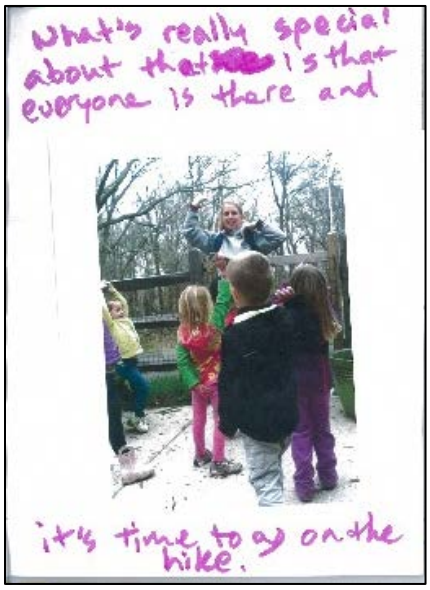

Figure 12. Example multiple subject image with caption from Opal, age 4. Caption – "What's really special about that is that everyone is there and it's time to go on the hike."

The subject analysis overwhelming revealed that the two most important subject matters were 1) plants & animals and 2) people. Of the 148 photos used in the books, 63 images were of plants and animals and 52 were of people. Table 10 shows that after these two categories, the remaining categories drop considerably in number, indicating a declining value to those subjects for the children in telling the story of their preschool experience.

Table 10

Subjects of Photos Used in the Story of Preschool Books

Subject	Number of times present in books
Plants & Animals	63
People	52
Self	16
Ground/Sky	9
Preschool Activity	6
Preschool Material	6
Preschool Playscape	6
Parking Lot	3

Observation #2: Nature preschool is a nature experience. In reviewing the subject analysis (Table 10), it reveals that 43% of the 148 images used in the book were of plants and animals. Many of the photos were of spring wildflowers, but other subjects included trees, a snake, insects, worms, a lichen, and a birds' nest. Some children identified the wildflowers by name, while others commented on the color or how pretty the flowers were. While a lichen, an algal-fungal complex, is not technically a plant or animal, I included in this category, as it is a living object that young children, and even most adults, would identify as a plant.

Henry, age 5, used only photos of flowers in his book and identified most of them by name. This child was a budding naturalist and could identify many wildlife by name including butterflies, wildflowers, trees, and birdcalls. His teachers informed me that he learned much of this identification knowledge at home with his parents, but that the teachers reinforced this learning at school. His emphasis on plants and animals was not surprising as he interacted little

with other children in the class and preferred to spend time alone or with adults. While he spent time alone, he always appeared to be happy and very engaged in the class activities.

The photo taking days were during the spring season, March and April. This may have skewed the data since the wildflowers were plentiful and captivating to the children. Different seasons may have yielded different results. But these data show that, at a minimum, during the spring season the plants and animals were the most important part of nature preschool to the children. It was also the end of the school year, when they were highly accustomed to each other and the school schedule. Data may have also been different if it were from earlier in the school year. Figures 13. 14, and 15 are examples plants and animals photos used by the children in their books. All three images and captions demonstrate the fascination the children had with the plants and animals they found as they explored outside. For these children, the books demonstrated that nature preschool is a nature experience.

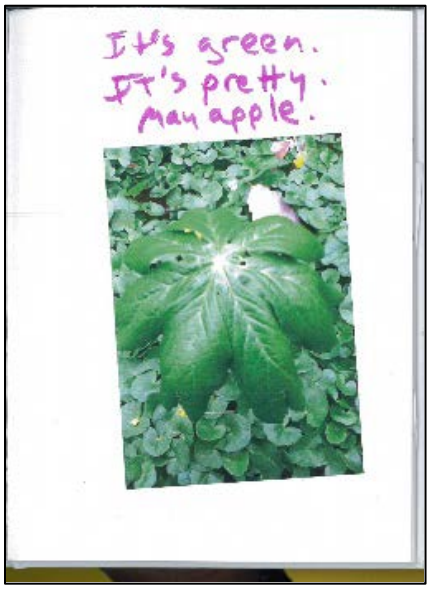

Figure 13. Photo of a mayapple by Henry, age 4. Caption – "It's green. It's pretty. Mayapple."

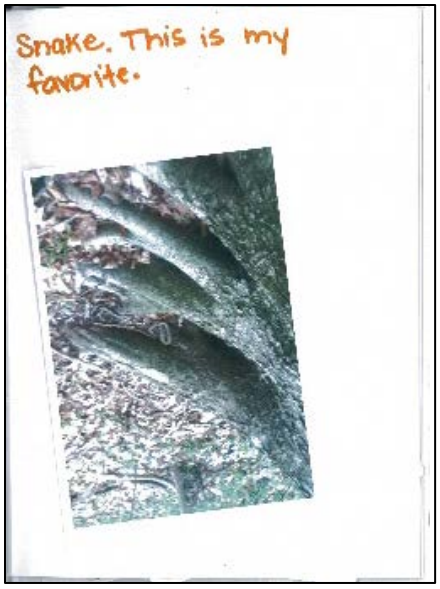

Figure 14. Photo of a garter snake by Jack, age 3. Caption – "Snake. This is my favorite."

Figure 15. Photo of a mayapple and wild blue phlox by Mia, age 3. Caption – "Cause it's so important."

Observation #3: Nature preschool is a social experience. The subject data revealed that other people were the second most common topic in the books with 35% of the photos displaying other people as the subject. Other people included a wide range of people such as teachers,

volunteers, parents, classmates, siblings, and the researcher. Ten of the 14 children used images of other people in their story of preschool books. Figures 16, 17, 18, and 19 show a range of the types of people used as subjects in the photos. These images all show the value the children place on the other people as part of the experience of nature preschool. Therefore, while nature is most important overall, the social experience is also highly valued. In some of the people photos, children only identified the person in the photo, but in others, they said that they loved the person or that the person was their friend. These data on positive social experiences align with NAEYC program standards, which indicate that quality early childhood programs should cultivate positive relationships between the all children and between the children and the teachers in the classroom (NAEYC, 2018).

Figure 16. Other people photo by Kai, age 5. Caption – "Teresa [classmate]."

Figure 17. Other people photo by Matilda, age 4. Caption – "Miss [teacher]. She always thinks about trees. She loves rocks. Because I love her."

Figure 18. Other people photo by Mia, age 3. Caption – "That's Jewell [classmate]. She's my friend."

Figure 19. Other people photo by Caleb, age 4. Caption – "I was trying to take a picture of something else, but Mollie [twin sister who also attends Preserve Preschool] was in the way."

Observation #4: The hike is the most important part of the schedule. To better understand the experience of the children at Preserve Preschool I wanted to look at which portions of the day they utilized the most in telling their story of preschool. Table 11 shows the distribution of photos in the books across the five portions of the school day.

Table 11

Portion of the School Day when Children Took Photos

Portion of Day	Number of Photos Present in Books
Drop-off & Playscape	37
Opening Circle	1
Hike	97
Inside Free Play & Snack	13
Closing Circle	1

These data indicate that the hike was the most important part of the day. The children used photos taken during the hike for 66% of the images in the story of preschool books. Figures 20, 21, and 22 illustrate the importance of the hike to the children.

Figure 20. Hike photo taken by Kai, age 5. Caption – "Going on a hike…"

Figure 21. Hike photo taken by Matilda, age 3. Caption – "Nature means hiking." (Photo shows her foot on the ground.)

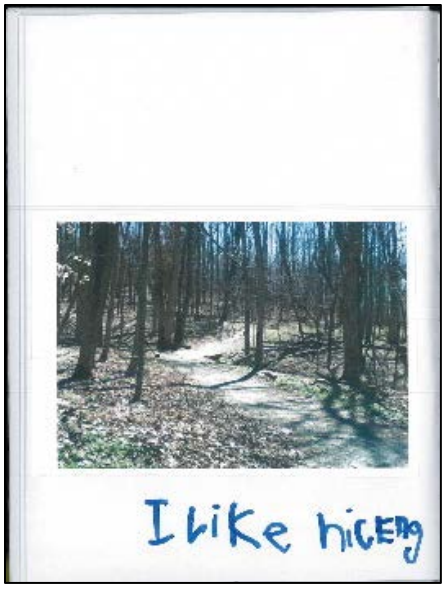

Figure 22. Hike photo by Celeste, age 6. Caption – "I like hiking."

However, not all photos taken during the hike specifically referenced the hike. Figures 23, 24, and 25 highlight a variety of photos taken during the hike. The wildflowers during the hike held great fascination for the children and they took many photos of wildflowers. A struggle for the children was resisting picking the flowers. A rule at Preserve Preschool is not to pick any plants, so this was a constant classroom management challenge for the teachers and self-regulation challenge for the children. Other hike photo subjects included classmates, teachers, volunteers, selfies, the researcher, the cameras, a garter snake, insects, the hiking path, and trees.

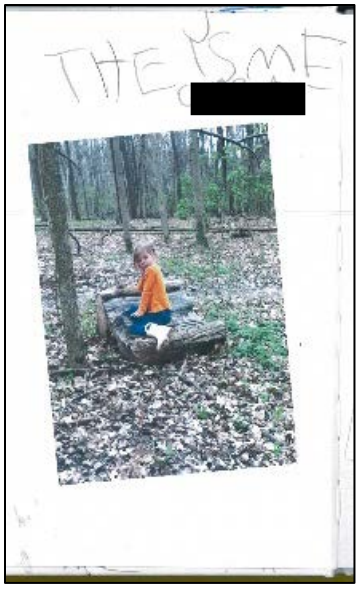

Figure 23. Hike photo taken by Avery, age 5. Caption – "That is me Avery." (Avery posed for the photo and directed an adult to take the photo.)

Figure 24. Hike photo by Jack, age 3. Caption – "It's nice. I love it."

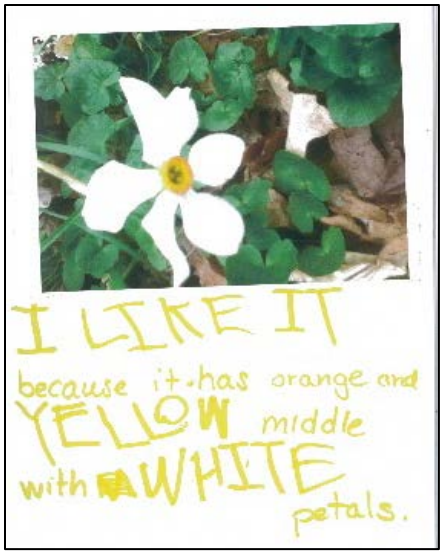

Figure 25. Hike photo by Mollie, age 4. Caption – "I like it because it has orange and yellow middle with white petals."

Observation #5: The hike is more important outdoor time than free play in the playscape. While earlier data indicated that outdoor time was most important to the children, I was interested in comparing the value placed on the two large outdoor activities, the playscape and the hike. The data indicate that the second most important part of the schedule was the drop-off and free play time in the playscape. Children used photos from this portion of the day 25% of the time. Ten of the 14 children included photos from this portion of the day; however, most of these photos were of themselves, classmates, teachers, or family members. Of the 37 photos taken during this portion of the schedule, 36 were of people. Only one photo (Figure 26) used in the books was taken of the playscape itself. This may indicate that the true value of this portion of the day was not in the access to the playscape, but in the informal social time it provided with friends, teachers, and family. During this free play portion of the day, many parents and other family members would stay for a while and talk with the teacher or play with the children. Figures 27, 28, and 29 show examples of these social photos taken during this drop-off and playscape portion of the day. While most children did not include photos of the playscape in

their books, this does not necessarily mean that they did not enjoy playing on the playscape. It may indicate that this portion of the day was not the most important aspect to include in an individual child's story of preschool. As an observer, I saw the children playing each week in the playscape and heard their laughter and saw their smiles while playing there.

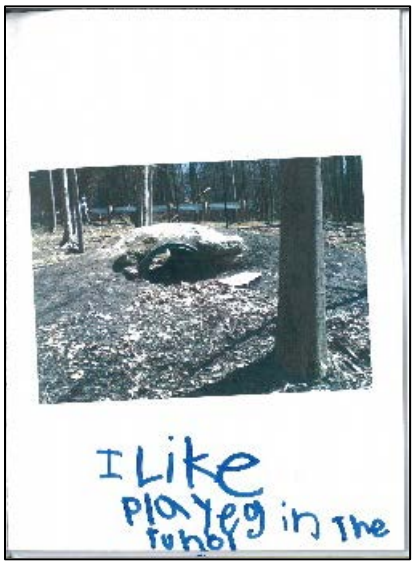

Figure 26. Only photo in the books taken on the playscape. Taken by Celeste, age 6. Caption – "I like playing in the tunnel."

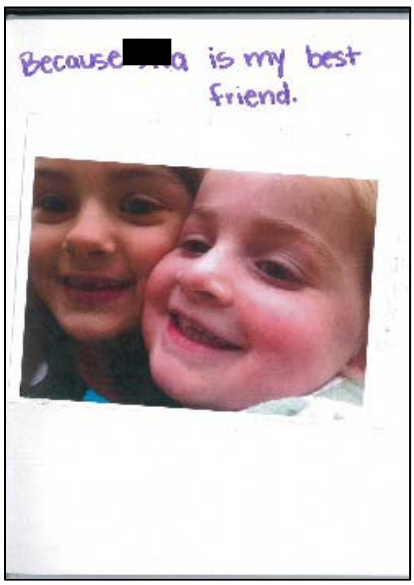

Figure 27. Social photo taken during drop-off. Taken by Amelia, age 4. Caption – "Because [my sister] is my best friend." (Sister was not an attendant at Preserve Preschool. She was there helping to drop off her sister.)

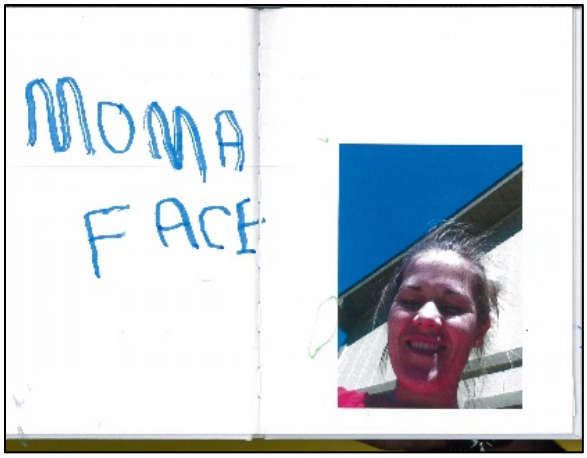

Figure 28. Social photo taken during drop-off. Taken by Kai, age 5. Caption – "Mama face."

Figure 29. Social photo taken during drop-off. Taken by Eliza, age 4. Caption – "It has Mia [classmate] in it."

Research Question #2: What are the characteristics of the child-nature relationship for young children attending a U.S. nature preschool?

Once I had analyzed the data describing the children's experiences at Preserve Preschool, I shifted to the second research question, which focuses on describing the relationship of the Preserve Preschool children with nature, the land, plants, and animals. After coding the book data, I made three observations on how these children interacted with nature:

1) Seeing and identifying plants and animals is important.

2) Being in nature is a very positive experience and not scary experience.

3) Preschool children use scientific language to describe or identify elements in nature.

The next section explains these observations in more detail.

Observation #6: Seeing and identifying plants and animals is an important part of being in nature. As discussed earlier in this chapter (Table 10), the most common photo subject used in the books was plants and animals. This focus on plants and animals, seen primarily on the hike, demonstrates the important of the relationship of the children with plants and animals. Other examples of outdoor natural elements that were rarely (or never) prioritized by the children would be the ground, sky, rocks, or water. Hikes during the photo period included traveling by creeks and ponds, but neither of these elements appears as a subject in any of the books. Table 10 shows that the ground and sky only account for 6% of the photos used in the books. Additionally, plants, fish, and a very popular pet corn snake lived in the classroom, but none of these indoor plants or animals were featured in the books. So while a variety of natural elements could have been chosen by the children as subjects, the children overwhelmingly chose to showcase photos of outdoor plants and animals in the books. The plant and animal photos typically described the image and used the name of the plant or animal if the child knew the name. Many children also wrote captions describing that they "liked" of "loved" the plant or animal photo. This supports the observation that seeing plants and animals and learning their names was a very important part of the children's relationship with nature. Figure 30, 31, 32, and 33 are examples of plant and animals photos, showing the valued relationship the children had with these natural elements. Many more photos of plants (58 photos) were used than animals (5 photos), but this is not surprising as it is easier to find (and photograph) plants in

nature than animals. The time of year may have also affected these data. Spring wildflowers can be a very captivating time to be in the woods. Data collected over a variety of seasons may have shifted the value placed on the plants seen on the hikes.

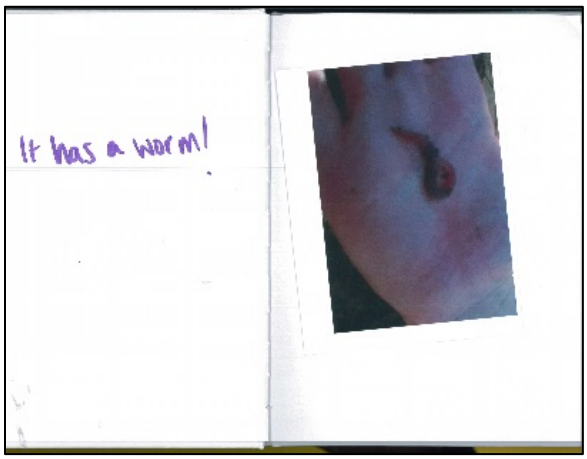

Figure 30. Animal photo taken by Teresa, age 4. Caption – "It has a worm!"

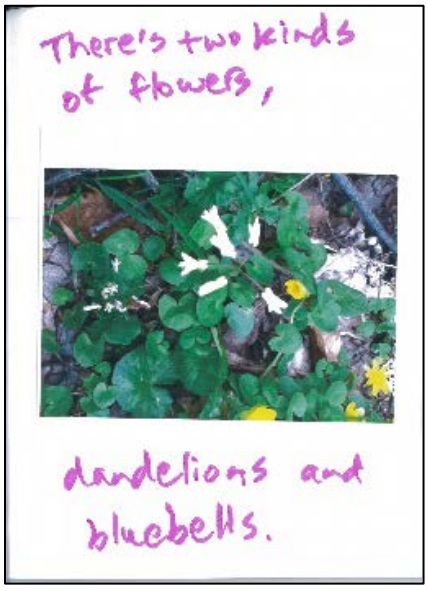

Figure 31. Plant photo by Opal, age 4. Caption – "There's two kinds of flowers – dandelions and bluebells."

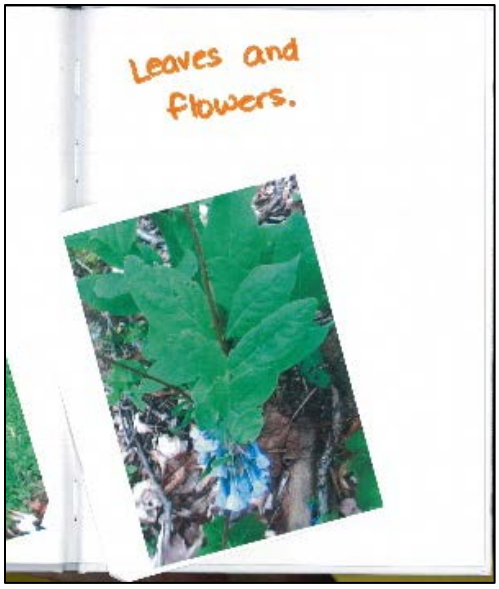

Figure 32. Plant photo by Jack, age 3. Caption – "Leaves and flowers."

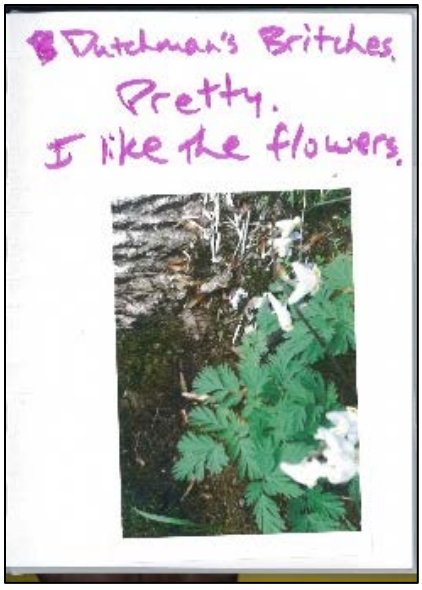

Figure 33. Plant photo by Henry, age 4. Caption – "Dutchman's britches. Pretty. I like flowers."

Observation #7: Being in nature is a very positive experience and not a scary one. In additional to subject categorization, I also coded the photos in the books by the child's orientation to the subject. The captions provided guidance on how the photographer felt about

the subject matter. The categories in the level of analysis included: description, affinity, dislike, and aesthetics. Table 12 shows the number of photos in each orientation category.

Table 12

Photographer Orientation to the Photo Subject used in the Final Books

Orientation	Number of times present in books
Description	85
Affinity	63
Aesthetics	22
Dislike	2

Only one of the photos did not fit into one of these categories. The child did not provide a caption for the photo, so I was unable to determine the child's perspective on that subject. In my analysis, I determined that a photo/caption combination could represent more the one orientation. An example of this is Figure 34, where Matilda both describes the individuals in the photo and expresses her affinity for her mother.

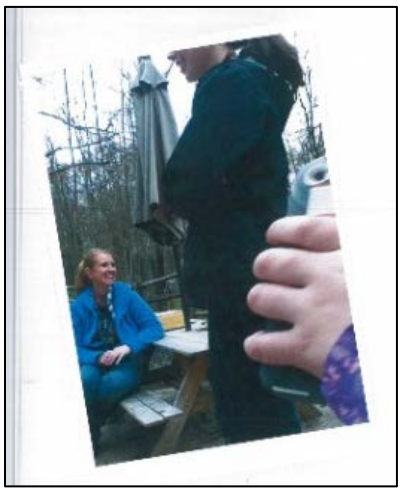

Figure 34. Example of a photo with two orientation categories by Matilda, age 3. Caption – "Mom and Miss [teacher]. I love Mama."

The most common photographer orientation to the subject was a simple description of the subject. Examples of this included describing the object in the photo in simple and objective ways or identifying a person, plant, or animal by name. The description orientation was used in 57% of the photos on the story of preschool books. Figure 35 is an example of a simple description of a photo and Figure 36 is an example of a more specific identification of the subject. While one is a more general description and the second is more specific, both were included in the description category.

Figure 35. Description photo by Opal, age 4. Caption – "It's the morning class towers that they built out of blocks."

Figure 36. Description photo by Avery, age 5. Caption – "My friend Celeste and me Avery."

The next most common photographer orientation was affinity for the subject matter. In 43% of the photos, the children expressed positive feelings about the subject. Common language for affinity included “like”, “love”, “pretty”, “friend”, and “best friend.” The affinity orientation was present in 43% of the photos, while in contrast the dislike orientation was present in only 1% of the photos used in the books. The two dislike photos were both used in Avery’s book. No other child used a dislike orientation for a photo in his or her book. This provides evidence to the observation that the children found being in nature to be a positive experience and not a scary one. Figures 37 and 38 are examples of the affinity orientation and Figure 39 is example of the dislike orientation. A potential challenge to this interpretation may be that in photography, the children’s natural inclination may have been to take photos of things they liked rather than things they disliked.

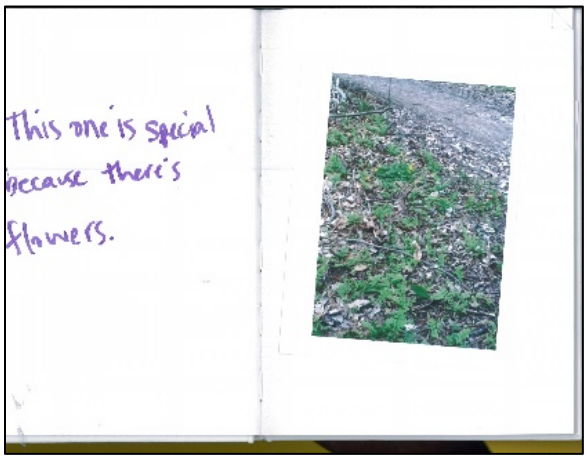

Figure 37. Affinity orientation photo by Teresa, age 4. Caption – “This one is special because there’s flowers.”

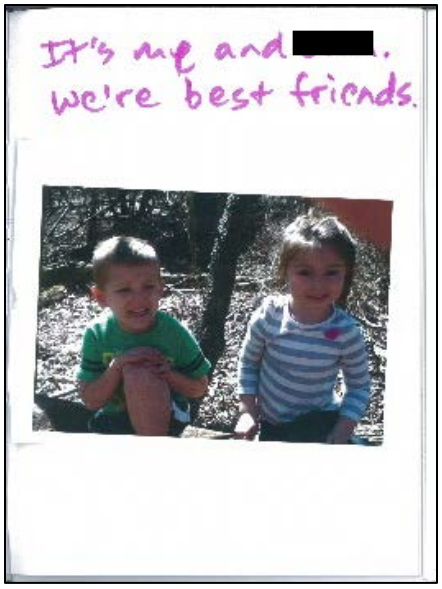

Figure 38. Affinity photo taken by Opal, age 4. Caption – "It's me and Kai. We're best friends." (Posed photo that was taken by an adult at the request of the child photographer.)

Figure 39. Dislike photo taken by Avery, age 5. Caption – "AAAA!" (Photo of a beetle on a log and caption read in scared voice by Avery.)

Observation #8: Preschool children use scientific language and knowledge to describe or identify elements in nature. The final layer of pattern analysis of the photos used in the books was whether the children used scientific language in the caption or not. I defined

scientific language as using appropriate scientific labels for natural elements, such as “leaf” or “petal,” or using a formal name for a natural element, such as “mayapple” or “Virginia bluebell.” I identified scientific knowledge to be representation of the understanding of scientific concepts such as the meaning of nature or conservation. Captions for the photos in the books showed the use of scientific language or knowledge 22 times (15% of photos in the books).

Using scientific language and knowledge is evidence of an engagement with the natural world. These children invested effort to learn the names of plants and animals in their local ecosystem. In many photos, their use of scientific language also directly related to the children stating their affinity for nature. Figures 40 and 41 are examples of photo captions where children shared their love of nature while using scientific language. Figure 42 is an example of a caption that shows more conceptual scientific knowledge.

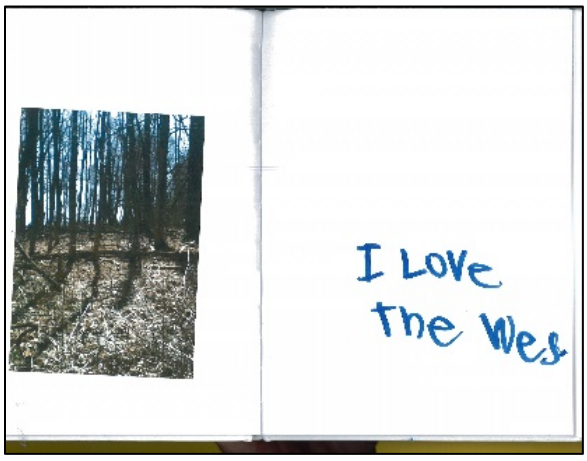

Figure 40. Scientific language photo by Celeste, age 6. Caption – “I love the woods.”

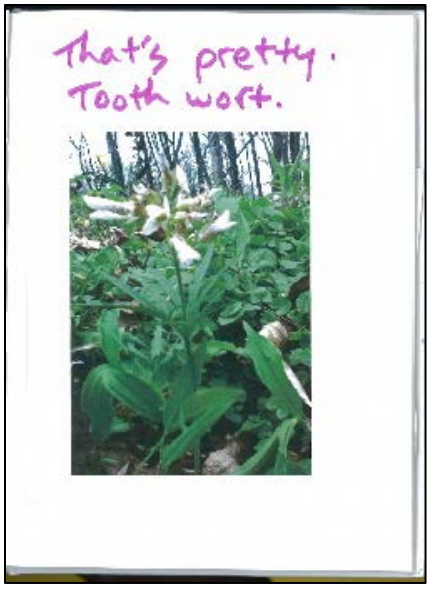

Figure 41. Scientific language photo by Henry, age 4. Caption – "That's pretty. Toothwort."

Figure 42. Scientific knowledge photo by Matilda, age 3. Caption – "Nature means hiking."

This concludes the discussion of the research results related to describing the experience of children at a nature preschool. In the next section, I transition to reviewing data results regarding the third research goal of the study – describing the process of using a photovoice protocol with preschool children.

Research Question #3: What are best practices for working with preschool children in a photovoice process?

By combining the data analysis of the story of preschool books with my observations in the researcher reflective field journal, I developed a series of recommendations for implementing a photovoice protocol with children ages 3-6.

Recommendation #1: Children ages 3-6 are capable agents in a photovoice process, i.e., taking photos, narrowing selections, and contextualizing photos. With 14 out of 15 children finishing the photovoice project, it is evident that children ages 3-6 are capable of participating in a photovoice process – taking photos, narrowing selections, and contextualizing photos. As discussed in Chapter 2, other research using photovoice with preschool children utilized adults as the photographers and/or as data contextualizers (Alexander et al., 2009; Ampartzaki et al., 2013; Erwin et al., 2012; Garwick & Seppelt, 2010; and Lemelin et al., 2013). In contrast, this research shows that preschool children are very capable of being active data collectors and initial data analyzers in the photovoice research process. More importantly, it found not only that preschool children are capable of carrying out these tasks, but also that their voices are crucial in understanding their experience. The selection and organization of the photographs demonstrate that children are capable of telling their story of preschool. However, the format used by the children did not follow a chronological order, which may have been a more adult way of organizing the data into a story. This finding further emphasizes the need for children to be involved in telling their own stories, as it may be very different from one told by an adult.

Recommendation #2: It is essential to engage children in the initial coding process of photovoice in order to understand priorities of the data the children collected. My adult

selections of photos would have been very different from the choices made by the children.

As I printed the photos and prepared them to deliver to the children, I found myself seeing patterns in the photographs and making guesses on how the children would prioritize the photos as they created their books. For example, in looking at all the photos taken by Mia, my adult patterning skills would have prioritized a photo of the children climbing on a fallen tree that Mia took 15 pictures of. While I found these images of the children climbing on the fallen tree to be very compelling and I remember how much the children enjoyed the activity, Mia did not choose any of these images for her book. My adult assumption would have been that when a child took multiple photos of one subject, that it represented a very important item to the child. However, when it came time to make final decisions on what was important in their stories, these repeated images did not always make the cut.

Another example is from Matilda, age 3. Of her 375 total photos, she took 52 photos inside; however, she chose none of these inside photos for her story of preschool book. Since these indoor photos accounted for 14% of all the photos she took, I would have assumed that the indoor portion of the classroom day had a level of importance to her. However, her selections for her story of preschool book indicate that the indoor time was not an important element to her story. Due to this mismatch between the children's selections and my adult expectations on which photos were the most important, I found it essential to use the images selected by the children, rather than my own analysis of the photos, in understanding the children's experience at Preserve Preschool. If I had made the photo selections myself, I would have projected my own adult bias on their experience in a nature preschool. Also, to reduce my adult influence, I never asked the children about any photos that they did not select. I did not want to make them feel like they had made "wrong" choices. In order to truly understand the experience of the children,

I recommend including them in the data collection and analysis process as much as it is developmentally appropriate to do so.

Recommendation #3: Captions written by children are essential to understanding the context of the photos and the experiences and perspectives of the children. What an adult sees in a photo may be very different from what it means to a child. As discussed earlier in the subject analysis section, I found the captions essential to understanding why the child chose a particular photo and why it was important to the story of preschool. If I had allowed the children to pick the photos, but then did the contextualizing myself, I would have made erroneous assumptions about what those images meant to the children. An example of this is from the photo collection of Oliva. She had taken multiple images of a flower and three were properly exposed and one was very underexposed. My adult sensibilities of aesthetics would have chosen one of the properly exposed photos from this set, but she chose the underexposed one (Figure 43). Her caption is essential in understanding her selection. She wrote, "I think it's really pretty because it's dark and it's mysterious." Not only would I have chosen a different photo, but also I would have never understood this complex aesthetic choice made by Olivia.

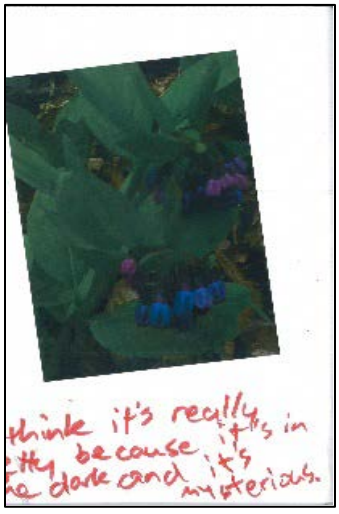

Figure 43. Example of how captions aid researcher understanding. Photo by Olivia, age 5. Caption – "I think it's really pretty because it's dark and it's mysterious."

Another example of needing the captions to provide context to the photos are the photos of the same garter snake that two different children selected. Avery's caption (Figure 44) makes it clear that she is a bit scared of the snake, while Jack really likes the snake (Figure 45). While the photos are of the exact same animal and are nearly identical, the experience of the two children is very different. Since I was with the children for many days that winter and spring and was with them every day they took photos, I felt I had an understanding for their preschool experience. However, seeing the photos they chose and reading their captions reinforced for me that to truly understand their experience, I needed them to share their perspectives with me. My observation of them at preschool was not enough to understand their perspectives on the experience. The photo books were an age-appropriate way for the children to reflect on their school experiences and share their perspectives with me and with the adults in their school community. The context from the photos could have also been learned through a photo elicitation process (Clark-Ibáñez, 2004), where the children talked about each photo with the researcher. This process would have placed equal weight on all photos taken by the children. However, I chose the storybook captioning process, because it placed more power in the hands of the children in the research process, by having them conduct the first level of analysis and decide on the most important photos to include in the data analysis.

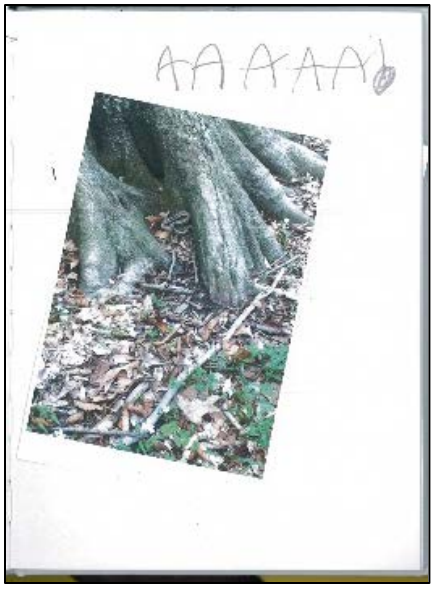

Figure 44. Snake photo by Avery, age 5. Caption – "AAAAA!" (Read by Avery in a scared voice.)

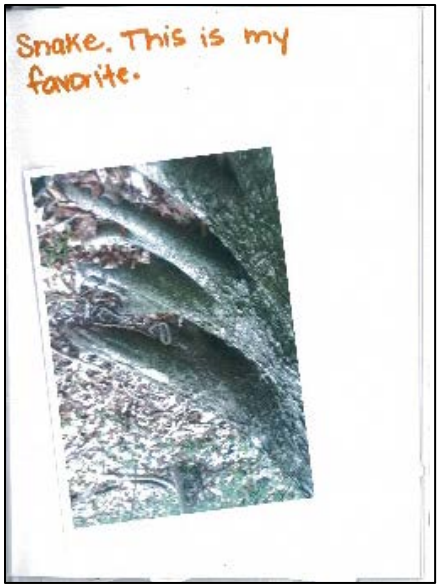

Figure 45. Snake photo by Jack, age 3. Caption – "Snake. This is my favorite."

A final example of how a child's written captions provided depth to researcher understanding is from Eliza (Figure 46). In this photo's foreground is the picnic table where the class gathered with the teacher at the beginning of each class session. A number of children took photos of this picnic table, both empty and with people at it. However, in her caption, Eliza

indicates that the subject of the photo was the car in the background. The car in the background is her mother's car. Eliza struggled with being separated from her mother during preschool. Sometimes Eliza struggled so much in the transition that her mother would stay with the class for the whole session or would take Eliza home early. If her mother left Eliza at school, she often stayed in the car during the whole class session. This caption shows that this photo is not about the preschool gathering place, but about her mother and may indicate that part of her preschool experience is this difficult experience of transitioning to being at school alone. My adult perspective would have placed emphasis on the picnic table in the foreground and may have disregarded the car in the background altogether.

Figure 46. Example of how captions give insight on the child's preschool experience. Photo by Eliza, age 4. Caption – "It has the car."

Recommendation #4: Children ages 3-6 can produce photos for documentation purposes. In early childhood education, photo documentation is a recommended practice for assessment and sharing child development and growth with families (NAEYC, 2012). Many times teachers take and arrange these documentation photos. Evaluative research with this age group also tends to use adults – teachers or parents – as the photographers, contextualizers, and codifiers (Alexander et al., 2009; Ampartzaki et al., 2013; Erwin et al., 2012; Garwick &

Seppelt, 2010; and Lemelin et al., 2013). This study demonstrates that preschool children can be the drivers of documentation projects by taking the photos, selecting the most important ones, and developing the captions to explain the photos. These data are evidence that children can be collaborators in the research process and active agents in the documentation and assessment of their own learning. The Preserve Preschool teachers are considering engaging the children as partners in the documentation of their learning as part of the school's continuous improvement process. This aligns with NAEYC recommendations to use technology to "help children save, document, revisit, and share their real-life experiences through images, stories, and sounds" (NAEYC, 2012). These data support this model of engaging preschool children in photo documentation as part of the assessment of their learning in educational settings.

Recommendation #5: Children ages 3-6 can produce photos for artistic purposes. An unexpected result of this study were the photos chosen by the children for aesthetic or artistic purposes. Of the 148 photos selected for the story of preschool books, 22 photos had captions that indicated the photos were chosen for their aesthetic value. Figures 47, 48, 49, and 50 are examples of image/captions combinations that I coded as having an aesthetic orientation for the photographer.

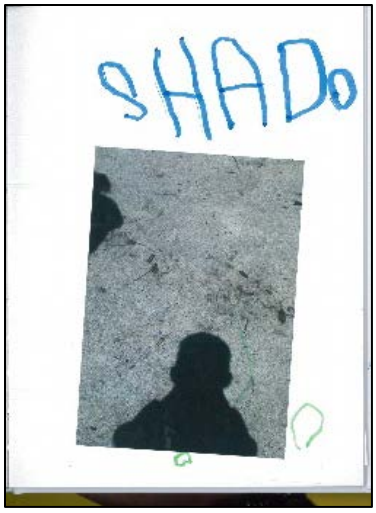

Figure 47. Aesthetic Orientation Photo by Kai, age 5. Caption – "Shadow"

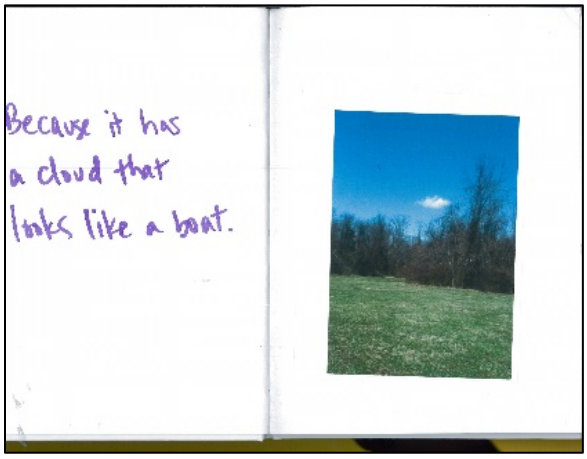

Figure 48. Aesthetic Orientation Photo by Teresa, age 4. Caption – "Because it has a cloud that looks like a boat."

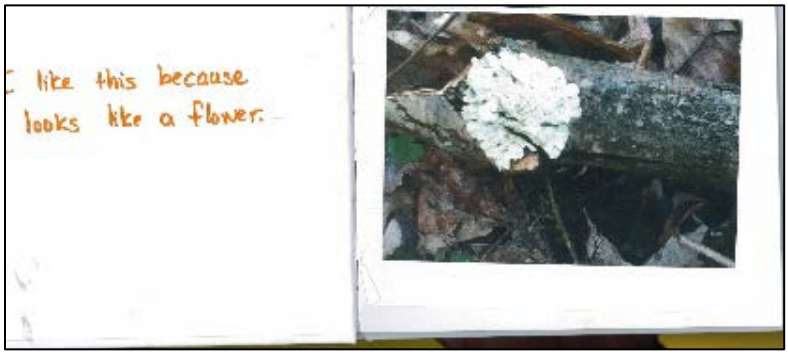

Figure 49. Aesthetic Orientation Photo by Caleb, age 4. Caption – "I like this because it looks like a flower."

Figure 50. Aesthetic Orientation Photo by Mia, age 3. Caption – "Cause I just love the view from it."

These photo/caption combinations show the aesthetic appreciation that the children had for some of their photos. This artistic value was high enough for the children to choose them for their books. If a researcher or teacher wanted to avoid aesthetic choices, a photo elicitation interview process (Clark-Ibáñez, 2004) may help in sifting these photos apart from photos more connected to the research goal or assessment prompt. However, I chose not to exclude these images, because they were the ones selected as part of the children's initial coding and contextualizing process. They may also speak to the awe and wonder that can be elicited by nature. This aesthetic experience is an important choice for why many adults may visit majestic national parks or head outside to catch sunset. Similarly, the children may be telling us that the beauty of nature is a valued part of the story of Preserve Preschool.

Recommendation #6: Children use the cameras sporadically throughout the day, so make sure they are handy for children to return and reclaim. The children were typically very excited to use the cameras, but the children were also engaged in many other activities during the day. Most children would claim their cameras as soon as they arrived at preschool. However, as

they engaged in other activities, they did not always want to carry the cameras. For this reason, I always carried a bag with me, so that the children could return or reclaim the cameras as they chose. I did not want children to feel burdened by the cameras or to leave them behind – either accidentally or because they did not want to carry them throughout the entire activity. Especially during the hike, a child may have returned and reclaimed his or her camera from me a half dozen times. This process was so important to Mia, age 3, that she chose to document it in her book through two different photos of me with my camera bag (Figures 51 and 52).

Figure 51. Photo of researcher with camera bag by Mia, age 3. Caption – "Cause I love the picture of you in it."

Figure 52. Photo of camera bag by Mia, age 3. Caption – "I just love the picture of your bag in it with the cameras."

If a teacher or researcher wants to engage children in photo or video documentation, it is essential to make the process easy for the children. The messenger bag I carried was especially helpful as it was at the child's eye level, so many times a child would return or reclaim his or her camera out of the bag without any assistance from me. This placed additional power in the hands of the child in deciding when and how to engage in photography. An alternative to carrying a camera bag everywhere would be to design lanyards where the children could hang the cameras around their necks or wrists. However, this could pose a danger to the child or camera during water play/exploration or climbing activities.

I believe this return/reclaim process also kept any cameras from being lost. Since the children had the option of returning it, they would immediately give it back to me, instead of getting distracted by another activity and accidentally leaving the camera behind. I also watched the children throughout the hikes to make sure the cameras were not left behind. If I saw a child walk away from her camera, I would ask her if she was still using it or if she would like me to carry it in my bag for her. I used this language to let the children know it was their decision whether they wanted to use the camera some more or not.

Recommendation #7: As children are taking photos, periodically remind them of the goal of the project/research. Some children took hundreds of photos in as single day as part of this project. At times, these children would take photos almost non-stop. For example, on one day Celeste took 267 photos in 1 hour and 40 minutes. During each day, it was important to remind them of the goals of the project. Reminders also helped children remember to purpose of the activity from week to week, as they may not remember the exact goal from session to session. This project had a fairly open-ended goal, but for activities with more refined goals, reminders would help the children from taking multiple photos outside the scope of the project.

This would then also keep the teacher/researcher from having to impose edits on photos outside the scope, thus reducing the children's power in producing the final work.

Recommendation #8: If you want to learn about negative experiences, you would need to make this a specific prompt for the children. In the final books, only two of the image/caption combinations displayed a dislike orientation by the photographer. Both were taken by Avery and displayed fear/dislike of a beetle and of a snake. There may have been a natural skewing toward positive or preferred images. I did not regularly remind the children to take both positive and negative images. There may have been an inclination to use positive images to tell the story of preschool.

If a researcher or teacher wanted to gain insight on negative aspects experienced by the children, regular reminders to take this kind of photo would be required as the results of this study show that children may not take this kind of photo naturally. It may also work best if negative images were the sole goal of the project or of a particular photo taking session.

Recommendation #9: Children may take many, many photos. Be prepared to help them sort through the photos methodically at regular intervals. It was not uncommon for children to take 100 or more photos in a single day. In this study, the children reviewed all of the photos at one time. For children that had hundreds of photos to review, this sorting task could be difficult and one child chose not to complete this step. For children who were not sure how to sort through the photos, I encouraged these children to sort them into two piles first – those that were important to telling the story of preschool and those that were not important. Repeating this strategy seemed to work for most children.

Some children, however, were able to sort through even large numbers of photos quickly. A potential risk to this may have been that the children did not deliberate on their choices and

made them too quickly. If the children had sorted through the photos at regular intervals, it may have led to different choices from both the children who struggled with the sorting process and those who flew through the process.

Recommendation #10: Be prepared to engage teachers or parents as scribes for shy children. While I spent several months in the classroom with the children, not all of the prewriting children were comfortable dictating their photo captions to me. While all of the children were used to dictating stories and captions for artwork to teachers as part of the classroom curriculum, not all of them had a close enough relationship with me to feel comfortable sharing their thoughts with me. It was quickly apparent that I would need to engage other trusted adults in this process. If a child did not want to work with me, I would see if the child wanted to work with a teacher. If that did not work, I then engaged the child's parent. As discussed in the Chapter 3, I reviewed the protocol for reminding the children of the prompt and being an objective scribe with these additional adults. I also observed the process from a distance to ensure that other adults followed the protocol correctly. The teachers and parents were happy to be engaged with the project and having a trusted adult to work with helped a number of children successfully complete the project. Some children also chose to write some of their own captions, and then engaged an adult scribe for the rest of their photo captions. Table 13 summarizes how the children completed the captioning process.

Table 13

Number of Children Using the Variety of Caption Writing Methods

Caption Writer	Number Children Using this Method
Child	2
Researcher	5
Teacher	3
Parent	1
Teacher & Child	1
Parent & Child	1
Teacher & Researcher	1

This table shows that half of the children utilized an adult, other than the researcher, in writing captions for at least some of the images. Without engaging other trusted adults in this stage of the book creation process, I would have had only seven of the original 15 children complete the project. Adding these adults to the process was a critical element in the high completion rate by the children. I would advise researchers working with the age group to be prepared to enlist these additional scribes as part of the planning process.

Recommendation #11: iPod Touches with Otterbox cases are good tools for preschoolers in Photovoice. The children collected photo data in March and April, including both wet and dry weather. The children used the cameras throughout their school day, including on extended hikes in the woods. During the study period, I observed cameras being dropped, stepped on, tossed around, and get wet. While children appeared to try to use the cameras gently and respectfully as reviewed in the initial training, the developing body control and self-regulation skills in preschool children means they were tough on the materials whether they

intended to be or not. Even with some rougher treatment and wet weather, none of the iPod Touches suffered damage during the project. I believe this was mainly due to the protective Otterbox cases that were purchased for the iPods. The Otterbox cases provided cushioning from fall and water protection. The iPod Touches were a small enough size that made them very manageable for small hands to hold with a central button that made picture taking easy. The rubbery cases also made the iPods easy for young hands to grip, which may have decreased the limited number of drops that occurred. I could also easily add labels to the cases with the children's names on them so it was easy for the children to find their own camera each afternoon. The Otterbox cases were a great tool to protect the iPods from the risky aspects of preschool usage and outdoor weather. From my observations in this study, I would recommend iPod Touches with Otterbox cases as appropriate tools for preschool children to use for photo or video projects and research.

Recommendation #12: Delete or hide as many apps as possible off the devices.

Children may be very familiar with the Apple operating system. When we entered the training portion of the project, it was clear that all of the children had prior experiences with smart phones and most had experience with iPhones. This made it easy for the children to get started in taking photos, but it also meant that the children knew about other features common on Apple iOS devices. Children asked about whether they could make calls, get on the Internet, or play games on the iPod Touches. I had to explain to the children that the iPods were only able to take photos. Before giving the iPods to the children, I had deleted all possible apps in order to minimize any distractions on the devices. Only the Camera and Photos apps were available on the home screens of the devices. The Camera app allowed children to take photos and the Photos app allowed children to review their photos and potentially delete photos they did not want to

keep. I was able to delete some pre-loaded apps, such Facebook and Twitter, but other Apple apps could not be deleted such as Safari and FaceTime. I hid these from children by placing them in a folder and moving that folder to the second home screen on the iPods. This meant children had to slide over to the second home screen and then open the folder to find these apps. A few children did complete these two steps. I would then remind them that the iPods were not able to make calls or connect to the Internet and that the iPods were just for taking pictures. To reinforce this purpose, I only called the devices "cameras" with the children instead of "iPods." Ideally, I would have deleted all apps except the Camera and Photos apps, but with the constraints Apple places on the devices, the hiding process did help to keep children focused on using the devices as cameras. This may be less of an issue if a researcher is working with a population where the children are less adroit at using smartphones and iPhones.

Recommendation #13: Children like taking videos also. Consider how these data will be used in or excluded from a project. Since the children were very familiar with Apple iOS devices, some of them knew that the Camera app could take still photos and videos. If I saw a child taking videos, I reminded them that the purpose of the project was to take photos and that we were going use their photos in creating books about preschool. For the purpose of this project, the videos printed as a single still image from the iPods. I included those images for the children in their initial selection process. However, other researchers may choose to include videos as part of their data collection process. Since the ability to take videos is embedded in the camera function of these devices, researchers should plan on how they will use or not use any video data collected by the children. The iPods would serve well as video cameras for this age group as this research shows that iPod Touches are easy for preschool children to use and hold.

Summary

The following is a summary of the results discussed in this chapter:

- Research Question #1: How do young children attending a U.S. nature preschool describe their school experience?
    1. Nature Preschool is not a traditional classroom experience.
    2. Nature Preschool is a nature experience.
    3. Nature Preschool is a social experience.
    4. The hike is the most important part of the classroom schedule.
    5. The hike is more important outdoor time than free play in the playscape.
- Research Question #2: What are the characteristics of the child-nature relationship for young children attending a U.S. nature preschool?
    6. Seeing and identifying plants and animals is important.
    7. Being in nature is a very positive experience and not scary.
    8. Young children use scientific language to describe elements in nature.
- Research Question #3: What are best practices for working with preschool children in a photovoice process?
    1. Children ages 3-6 are capable of participating in a classic photovoice process, i.e., taking photos, narrowing selections, and contextualizing photos.
    2. It is essential to engage children in the initial coding process of photovoice in order to understand the context and priorities of the data the children collected. My adult selections of photos would have been very different from the choices made by the children.
    3. Captions written by children are essential to understanding the context of

the photos and the experiences and perspectives of the children. What an adult sees in a photo may be very different from what it means to a child.

4. Children ages 3-6 can produce photos for documentation purposes.
5. Children ages 3-6 can produce photos for artistic purposes.
6. Children use the cameras sporadically throughout the day, so make sure they are handy for children to return and reclaim.
7. As children are taking photos, periodically remind them of the goal of the project/research.
8. If you want to learn about negative experiences, you would need to make this a specific prompt for the children.
9. Children may take many, many photos. Be prepared to help them sort through the photos methodically at regular intervals.
10. Be prepared to engage teachers or parents as scribes for shy children.
11. iPod Touches with Otterbox cases are good tools for preschoolers involved in photovoice or photo documentation activities.
12. Delete or hide as many apps as possible off the devices. Children may be very familiar with the Apple operating system.
13. Children like taking videos also. Consider how these data will be used in or excluded from a project.

This concludes the discussion of the results of this study. The results provide evidence that the children in Preserve Preschool find nature to be a positive experience and they value learning scientific terms and the names of plants and animals. The children viewed Preserve Preschool as a social and outdoor experience. The most important part of the day was the hike

outside. Photovoice also proved to be an effective tool for children ages 3-6 to engage as collaborators in qualitative research. In the next chapter, I will review the implications for these results for nature preschool development and curriculum and the use of photovoice methodologies with children ages 3-6.

Chapter 5

Discussion

This study positioned children as collaborators in the research process to understand the experiences of children at a nature preschool in the Midwestern United States. Through photovoice, children told the story of nature preschool from their own perspective and shared those observations with their teachers and families. Additionally, these observations were used as an evaluation tool to help the preschool teachers reflect on the current curriculum and potential adaptations.

This chapter reflects on the study results in the context of the research questions and the Preserve Preschool experience. Also in this chapter are discussion of implications for researchers and for teachers and a review of limitations of the study. I start the chapter with an analysis of the results as aligned with the research goals in context with the current research literature.

Research Question #1: How do young children attending a U.S. nature preschool describe their school experience?

This study illustrates that nature preschool is a highly valued, outdoor, and social experience from the perspective of the child participant. The children at Preserve Preschool enjoy the experience and value time outside, time with their friends and adults, and being able to see and learn the names of plants and animals. When sharing their stories of nature preschool, children placed the most importance on the hike and do not place importance on indoor play, formal instructional times, or time on the playscape. This is evidenced by the predominant use of hike photos in the books and the almost complete absence of photos on the playscape or during the indoor, opening circle or closing circle. While these children appeared to greatly

enjoy indoor play, opening and closing circles, and time on the playscape, these experiences did not become part of the essential core of their stories.

The woodland landscape offers many variables and options – affordances – for play (Fjørtoft & Sageie, 2000; Gibson, 1979). Children may have valued the hike over the constructed playscape, because the untamed natural world found on the hikes provided more affordances. Therefore, while the playscape offered many play options similar to the woods, the hike may have proved to be more compelling as the destinations of each hike changed and more versatile experiences and affordances were available on the hike. The playscape may have been a more static environment that elicited less interest from the children in storytelling, as the activities there may have been more repetitive and less exciting. This aligns with previous playground research that shows children can get bored in fixed play areas (Hyndman & Telford, 2015). The ever-changing affordances found on the hike, such as climbing trees or crossing a path of rocks in a creek, may have offered risky play opportunities not available in more static environments such as the playscape or the indoor classroom. The physical accomplishments provided by affordances can also allow different children to excel compared to children who may excel in more typical educational environments where only cognitive accomplishments are lauded.

While the hike was the most common setting for photos in the story of preschool books, this may not be an indication that children disliked other portions of the day. Strathern (2004) cautions that ethnographic tools, such as photovoice, may not document all aspects of a complex social experience. The credibility in ethnography is in its recognition that it is only able to provide partial glimpses of a lived experience (Strathern, 2004). Like any story, the storyteller decides on the most important elements of the story and will leave out less important details.

This doesn't mean that those details didn't exist or that the storyteller didn't like those details – it may just mean that those details did not add to the story the individual was choosing to tell. Since the prompt in this study asked children to choose the most important photos to tell the story of preschool, this positioned children to prioritize the images that were the most captivating, rather than to give a chronological presentation of a classroom day. While other portions of the day, such as the indoor time, were not deemed as important to telling the story, those portions of the day may still have been enjoyable to children. As an observer in the class, I saw evidence of all of the children enjoying a number of activities every day that did not get showcased in the books. These seemingly popular, but unrepresented, activities included the outdoor playscape and indoor activities such as snack, the art center, the block center, the library center, and the indoor climber/treehouse. Other evidence of the enjoyability of the indoor portion of the day is that at the end of the hike, the children all appeared ready to go inside. During my observation period, I did not see any children who resisted going inside or asked to go back out after transitioning inside. So the absence of an activity from the books does not necessarily indicate dislike or negative experiences with those portions of the class day. For this reason, I do not think my study results should be fodder for eliminating all indoor activities from a nature preschool curriculum. However, for the Preserve Preschool children, this portion of the day was less of a priority in telling their stories of their preschool experience.

An important domain of learning in preschool is socio-emotional development. This study provides evidence that the nature-based model for preschool education provides a significant social experience for children. This finding aligns with previous research on nature preschools and forest kindergartens which has found that children develop social skills in these outdoor educational settings (Bailie, 2012; Kirkham, 2005; Lindemann-Matties & Knecht, 2011;

Murray & O'Brien, 2005; O'Brien, 2009; O'Brien & Murray, 2007; Ridgers et al., 2012; Slade et al., 2013). In this study, children documented and wrote about developing friendships and affection for their teachers and adult volunteers. This shows that the social dynamics valued in preschool education are not lost when you move learning outside. This also aligns with NAEYC Early Learning Standards for early childhood programs for relationships and social development. In this standard, the program should facilitate strong and positive relationships between children and between children and adults and should utilize a curriculum that supports all aspects of development, including social development (NAEYC, 2018). My results confirm that Preserve Preschool, while having a nature-based pedagogy at the center of its curriculum, is still meeting the best practices recommended by NAEYC for supporting healthy socio-emotional development in young children.

Research Question #2: What are the characteristics of the child-nature relationship for young children attending a U.S. nature preschool?

There were less data available to address this research question than the first question. However, there are results that demonstrate that children at Preserved Preschool are developing positive relationships with nature. As discussed in Chapter 4, the plants and animals category was the most popular subject for photos selected for the books. This is an indication that the children at Preserve Preschool developed a connection with the plants and animals they encountered in their outdoor explorations on the hike and in the playscape. The children used emotional language to describe the plants and animals such as how pretty the flower was or how much they loved the trees, but they also used more scientific language, such as calling the plant or animal by a formal name. It is impossible to tell by the data in this study whether formal names were learned at home or at Preserve Preschool, but at a minimum, the outdoor time at

Preserve Preschool reinforced the use of formal names and gave children practice at identifying wildlife. In this study, the children did not make any reference to other elements of nature such as water, soil, or rocks. The short period and season of this study may have limited child exploration in these other areas of nature.

The relationship children had with the plants and animals showcased in their books was overwhelmingly positive. The children regularly used words such "like," "love," "pretty," and "favorite" in their captions of photos with plants and animals. The children also used formal names in identifying plants and animals. This combination of affinity plus use of formal names may be evidence of the children beginning to develop a respectful and caring relationship with nature. These results support earlier research that demonstrates that nature preschools can support the development of positive child-nature relationships (Bailie, 2012: Lindemann-Matties & Knecht, 2011; MacEachren, 2013; Murray & O'Brien, 2005; Ridgers et al., 2012).

While there was limited evidence of connection to the land, the data do show some evidence of conservation and environmental values that the children were learning through Preserve Preschool. This finding supports Bailie's (2012) research on the power of nature preschools to nurture conservation and environmental values in preschool children. Examples of these values are Mia's (age 3) photo of spring wildflowers that she captioned as "Cause it's so important" and Matilda (age 3) who defined the meaning of nature as "hiking." Future research may be able to target this learning outcome specifically to learn more about the development of the children's conservation attitudes at Preserve Preschool.

Additionally, time in nature was important for children as a shared experience. Opal (age 4) documented this desire to share the experience of being in nature with others in one photo caption as "What's really special about that is that everyone is there and it's time to go on the

hike." Children included photos of each other and their teachers as part of their documentation of the hike experience. These photo selections demonstrate that children at Preserve Preschool are developing a relationship with nature as part of a community experience. Acar & Torquati (2015) found that the social aspect of a nature preschool promote can promote both respect for people and for nature. This corresponds with Vygotsky's (1978) theory of social constructivism, which posits that children learn best through interactions with more experienced members of the community. In this way, the children at Preserve Preschool are learning about attitudes toward nature as part of a community with their classmates and teachers.

Implications for Continuous Improvement at Preserve Preschool

This study was designed to give the children a voice in the continuous improvement process of Preserve Preschool. During this study the school was in its third year, and the teachers were interested in the children's perspective on the preschool experience. The teachers reviewed the books created by the children and provided a level of member-checking on my preliminary data analysis. The final analysis and descriptions of the preschool used in this dissertation were also shared with the teachers to ensure accuracy of all descriptions and conclusions. During all of these stages of data sharing, a number of continuous improvement implications for Preserve Preschool were discussed.

A primary implication discussed was the relative value of the hike and the playscape from the children's perspective. This study supports the program policy to go outside for the hike in all weather. Since the hike dramatically overshadowed all other portions of the preschool day in importance, this provides evidence for the teachers if they need to defend the decision to go outside to parents, administrators, or state education officials. The preschool is currently in its sixth year and it has still never missed a day hiking outside.

The diminished importance of the playscape matched anecdotal observations of the teachers regarding play in this area. They have found that while this area has many wild elements, it is still a relatively static environment and the children can get bored more quickly in this area. To combat this issue, new affordances have been introduced to the area and teachers are trying to rotate new natural affordance materials and nature exploration tools (e.g. shovels, magnifying glasses, etc.) into the space on a regular basis. Additional research would be needed to see if these changes have shifted the value placed on the time on the playscape when compared to time on the hike.

Also shared with the teachers was the strong evidence that children valued the social experience with other children, teachers, and their families provided through the Preserve Preschool daily structure. This gives the teachers evidence that this non-traditional school environment still promotes essential socio-emotional development. This demonstrates that Preserve Preschool is meeting the NAEYC program standard to foster positive relationships among children and all members of the school community (NAEYC, 2018).

A concern shared by teachers is that these data may show that the opening and closing circles and the indoor free-play time may not have value to the children. The indoor portions of the day and circle times are when children participate in more traditional preschool activities such as art, building, writing, storytime, etc. I would argue that these data simply show that the hike is the most important part of the story of preschool. I do not think that this necessarily means that the children did not enjoy other portions of the day, just that those portions were not the most important parts in telling their personal story of preschool. Photovoice could be used to better understand the children's perspective of other portions of the school day, but it may require that the children create a story for each portion of the school day. Additionally if the

teachers/researchers wanted to know what children disliked about Preserve Preschool, the prompt may need to be changed to just focus on areas of dislike. These methodological adaptations would provide better insight into the children's perspectives on all portions of the school day.

Another implication discussed were data on conservation or environmental values being learned by children at Preserve Preschool. The story of preschool books created provided several examples of children learning environmental values, such as the importance of plants, the value of learning the names of plants and animals in the environment, and viewing nature as a positive and not a scary place to be. These data are evidence that Preserve Preschool is meeting its goals to foster the initial development of lifelong relationships between children and nature. More specifics about these and potentially other environmental values learned at Preserve Preschool could be further explored by additional research.

A final area of discussion was the ability of young children to be involved in the documentation of their own learning experiences. The teachers regularly carry cameras to document the children's learning and this project showed that children can take a more active part in this process. The teachers expressed an interest in sharing the power in the documentation process with children. This project gave them an example of how children can be active partners in the documentation and program evaluation process and how the documentation created by children yields different insights than the observations created by adults.

Research Goal #3: What are best practices for working with preschool children in a photovoice process?

This study demonstrates that children ages 3-6 are capable of being collaborators in a participatory action research project on their personal experiences. Using photovoice protocols,

preschool children can collect photo data, select the most important pieces of photo data, and contextualize that data for additional analysis. By positioning young children as experts in their own experiences, researchers can avoid inadvertently projecting their own adult biases on the experience or developing misconceptions of how children are interacting with an educational environment.

An important result of this study is its demonstration that a new population of our society, children ages 3-6, is able to participate in a PAR/YPAR research model through photovoice. While it is more common to see photovoice used in research with adolescents and adults (Alaca et al., 2017; Catalani & Minkler, 2009; Rubkin & Davis, 2007), I was only able to find one other study which used preschool children as active agents in a photovoice process (Alaca et al., 2017). Additionally, I was able to find a number of studies on preschool experiences that used photovoice as a methodology, but these other studies had teachers or parents as the participants (Kaesberg, 2013; McAllister et al., 2005; Skrzypiec et al., 2013; Sood et al., 2018; Torres et al., 2013) or had the children only complete the photo-taking portion of the photovoice process while adults made all the decisions on the data analysis (Al-Bader, 2012; Bartie et al., 2016; Darbyshire et al., 2005; Lam, 2009). This dissertation study demonstrates that by using photovoice, a marginalized group, young children, are able to become active agents in change, decisions, and research on their lives.

My results mirror a number of the findings in the other study using photovoice with preschool children. Alaca et al. (2017) used photovoice with Canadian children ages 3 – 5 to understand the children's experiences in their communities. The children took photos over a weekend at home and chose the three most important photos to discuss with the researchers. Patterns in the photographs fell into two main categories: relational community (family and

friendships) and residential community (home, backyard, neighborhood, and nature). Just as the Preserve Preschool children valued pictures of a family and friends as part of the story of preschool, the children in Alaca et al.'s research placed family and friends at the heart of their community experience. In an evaluation of photovoice as a methodology with preschool children, the researchers found that the medium was inviting to children and that they needed the feedback of children to understand the meaning and value of a particular photograph. This dissertation project also found photovoice to be an effective tool to engage young children in research on their lived experiences.

In addition to validating the use of photovoice with young children, this study also developed a series of recommendations that can help other researchers looking to use this methodology with preschool children. In order to understand the photos, it was essential to have the children select the most important photos and write captions for these photos. Using another methodology, such as photo-elicitation interviews (Clark-Ibáñez, 2004; Epstein, Stevens, McKeever, & Baruchel, 2006), where children talk about each photo they took, would have placed equal value on all the photos and would have yielded very different patterns in the final analysis stage. As when any of us take photos, there are many we may decide to delete later. Not every photo we take is hung on the wall for display. Just as in this context, when a child took a particular photo, it does not mean that photo was important in explaining that child's experience. Had I analyzed all of the photos taken, it would have skewed the data to very different themes than what emerged from the photos selected by the children. Having children involved in decision making in the data analysis process was vital to understanding their cognitive constructions and perspectives on their preschool experience.

The captions also proved essential in understanding the meaning of each photo chosen by the children. These captions gave vital information about the subject of the photo and why it was important to the child. My adult interpretation would have been very different for many of the photos if I had not known why the child took that photo (Alaca et al., 2017; Alldred & Burman, 2005). Sometimes the subject was at the periphery of the image, which would have made it impossible for me to understand the true value of that photo. Similarly, the captions also yielded information about how the child felt about the subject of the photo, something that would have been impossible to know without the child's input. While it may have been possible to gain these insights through an interview, the book format was a familiar and comfortable communication method for the children. It also placed the children in control of the experience, instead of responding to questions created by a researcher. In a pilot version of this project, I used a photo-elicitation format, where preschool children told me about all of the outdoor photos that they took over a weekend at home. This format proved to be intimidating for the children as they were not comfortable with the extended interview format and I was unable to tell which photos were most important to the children. Taking the photos and creating the books were activities that the children wanted to participate in rather than something they had to do such as an extended interview.

Limitations

Since this study had a small sample size of 14 and only looked at one class at one nature preschool, it is important to note that it was not designed to be a highly generalizable study. However, I attempted to provide a thick description of the preschool and study to allow other researchers or teachers to determine whether the results may have any applicability in their specific settings. Additionally, close to 30% of the images used in the story of preschool books

are showcased in this dissertation, allowing other researchers to see a large portion of the data collected in this study.

In the Chapter 4, I discussed the potential limitations of the season the project was conducted in and the relative absence of any negative images. While the season may have shifted the data toward wildflower and positive images, it still shows that in the spring season, the plants were a very important part of their preschool experience. Even though the children appeared to be inclined to highlight positive images in their stories of preschool, the lack of negative images should not discount the positive experiences the children had. This propensity for positive images is paralleled in Guell and Ogilvie's (2015) study of adults documenting their commutes through photovoice. In this study, Guell and Ogilvie speculate that the amateur photographers may naturally favor positive images rather than negative ones. So while the story of preschool books may not tell the entire story of the children's experiences, including the less desirable aspects, the books still highlight what are the most valued aspects of the nature preschool experience for these children.

The sample had a number of factors that may limit the generalizability of the results. This study was conducted at a tuition-based preschool on a member-based private preserve. The children were all of Caucasian descent. Additionally, the parents of these children chose to pay for a nature preschool for these children, many of whom did not live nearby to the preschool. This may indicate that these families have existing positive values surrounding nature and the outdoors. Therefore, these children may have predispositions to value outdoor experiences over indoor experiences due to family values. These children may also have a wide variety of outdoor experiences that they participate in with their families. These elements of the sample may limit the generalizability of these results to diverse settings, but it does not negate these data as an

accurate representation of the preschool experience as documented and described by these children.

Other potential limitations may have existed around child engagement with the cameras. It is plausible that children may have forgotten to use the cameras when they were very engaged in an activity or they may have become bored with the cameras by the end of the day. This may mean that portions of the day with limited images, such as indoor classroom time, opening and closing circle, and the playscape, may not have indicated less value from the children, but instead may have indicated that they were too busy to consider using the cameras or were bored with using the cameras. However, I tried to assuage this possibility by reminding the children that the cameras were available during low usage portions of the day.

One final limitation in this study was the lack of member checking directly with the child photographers. Due to the extended time in final analysis of the data, many of the children had graduated from Preserve Preschool at the point when member checking could have occurred. I also believe that the extended time of two years from the point of data collection to the final analysis review would have been too large of a gap for young children to remember and connect to the original experience (Fivush & Nelson, 2004; Friedman, 1993). However, I attempted to ameliorate this issue by using the classroom teachers in the member checking process. While the teachers were not direct participants in the data collection, they were present during the project and were members of the classroom community. The teachers also participated in the project as scribes for a number of the children while creating the books.

Implications for Future Research

While this research provided a peek into the world of children's nature preschool experiences, the research period only covered the spring season. A study over the entire

academic year could yield more precise data about the important aspects of the nature preschool experience. If a study were conducted over the entire year, it would allow for more regular analysis and contextualization of photos by the children, more time to interact with the data before selecting final photos for the books, and data from multiple seasons. A yearlong project would also provide the option to create a shared class book rather than individual books. This would require children to discuss and negotiate on what were the most important aspects of the preschool story.

This study yielded very little data about things children did not like about nature preschool. The use of cameras as a medium and the prompt may have inclined the children toward positive images (Guell & Ogilvie, 2015). My prompt focused on the important aspects of the story of preschool, which may have encouraged children to highlight the aspects they enjoyed. It would be interesting to conduct a study, or a portion of a study, where the children focused on what they did not like about nature preschool. This could yield important continuous improvement data on the particular class and on outdoor preschools in general. Researchers would need to pay close attention to the language of the prompt to encourage children to take photos of things they disliked.

This study demonstrates that even young children are capable of being collaborators, data collectors, and initial data analyzers in research regarding children's experiences. Researchers from a variety of fields should investigate photovoice as a means to better understand the experiences of young children in educational and other settings. This methodology could yield important insights in understanding children's perspectives on family dynamics, hospital and medical settings, school environments, playgrounds, and other settings that have significant impacts on children's lives. While traditional observational methods and interviews with

caregivers still yield important data, the child-led focus of photovoice can guide the research questions used by more traditional research methods and can ensure data collected through those methods are not biased by adult perspectives. One challenge to the field would be to structure photovoice projects that engage young children in all stages of the analysis rather than just in the initial stages as in this project.

While using the iPod Touches was an engaging medium for children, a challenge to doing photovoice research or photo documentation with children is the cost of purchasing equipment (Alaca et al., 2017). This project was funded by a grant from the College of Education, Criminal Justice and Human Services at the University of Cincinnati. While refurbished iPods were purchased, the cost of the 16 iPods with the protective cases was over $2500. One way to bring this cost down would be to have children share devices, but the cost of equipment and the number of devices available would need to be an integral part of the planning process.

Implications for Practitioners

For programs looking to implement nature-based methods in their curriculum, the most important activity to incorporate is a hike in a natural area. Many schools and programs are currently looking for funding to develop playscapes, but this study found that these children valued an outdoor hike much more than time on a playscape. Implementing neighborhood hikes may be a cost-effective and high impact method to incorporate natural learning into the curriculum for any school. Rather than investing limited school resources in creating a new playscape, schools could take their first steps into outdoor education by engaging children in local environments. At Preserve Preschool, not all of the hikes were to dramatic forest environments, sometimes the destination was a simple open field or the children may have

followed a paved road along the edge of the woods for part of the hike. These kinds of experiences and environments may be available nearby to many schools, even in very urban settings. More than one image appeared in the story of preschool books that showed children hiking along the paved road, showing that even simple experiences outdoors have impact on young minds.

However, this research should not be interpreted as indicating that playscapes are not important play environments for young children. Previous research indicates that natural playscapes offer more affordances and access to loose parts than traditional playgrounds (Fjørtoft & Sageie, 2000; Mawson, 2014). Loose parts can lead to more complex and creative play (Nicholson, 1971) and affordances lead to increased variety of play (Gibson, 1979), dramatic play (Cloward Drown & Christensen, 2014) and physical fitness (Fjørtoft & Sageie, 2000). A traditional playground typically has limited loose parts such as balls, chalk, etc., while a natural playscape has a vast variety of loose parts such as sticks, dirt, rocks, leaves, bugs, seeds, pinecones, etc. In arguing for the importance of loose parts in a play environment, Nicholson (1971) states "in any environment both the degree of inventiveness and creativity, and the possibility of discovery, are directly proportional to the number and kind of variables in it" (p. 30). So while the present study indicates that children prefer hikes in natural environments over time on the natural playscape, this should not dissuade schools or communities looking to invest in developing new playscapes as dynamics play spaces for children.

Being able to engage with the natural world was important to the children at Preserve Preschool. This result indicates that an inexpensive way for schools to implement outdoor education is to hire teachers or utilize adult volunteers with knowledge of local plants and animals. These knowledgeable adults can help children to spot wildlife and identify plants and

animals by their formal names. Many of the natural elements that compelled the children were ones found in even urban outdoor settings, such as worms, daffodils, and dandelions. These everyday wonders of the natural world support the contention that even simple neighborhood hikes in populated areas can lead to child engagement with nature.

Similarly, the children did not find the indoor activities to be as important as the outdoor activities. This may also indicate that when starting a nature preschool, the most important activity to include is unstructured time in wild places. Large investments in traditional classroom building and materials may not need to be the foci of early investments at new nature preschools.

From a critical perspective, it is important to note that Preserve Preschool represents a more privileged population as families all pay tuition to attend the preschool. However, findings from the study support that even underfunded public or urban schools have opportunities to promote positive child-nature relationships. The hike was the most valued experience by the children and this activity requires little to no budget from schools, making it an accessible activity for underfunded public schools. As discussed earlier, hikes at Preserve Preschool are not always to dramatic, wild places, sometimes they are to an empty field or roadside area in the preserve. This may indicate that even the small parks, empty lots, or schoolyards in city neighborhoods could yield positive nature experiences for young children attending urban schools. A more significant challenge to underfunded or urban public schools, may be to find knowledgeable nature adults (teachers or volunteers) to lead the outdoor explorations. A solution to this may be to partner with the local parks district or to solicit volunteers from organizations such as the National Audubon Society, Leave no Child Inside Collaborative, or the Children & Nature Network. Additionally, teachers looking for ideas on incorporating nature

into the classroom can consult the Resources section of the Nature Start Alliance website (http://naturalstart.org/resources).

Simple and inexpensive materials that a teacher may consider to bring on a classroom hike are a first aid kit, sunscreen, bug spray, cell phone, camera, flashlight, magnifying glasses, and trowels. The first aid kit, sunscreen, bug spray, and cell phone provide for safety during the outing, while the camera, flashlight, magnifying glasses, and trowels are great tools for children to examine the natural world. Teachers can also build simple binoculars with children using paper towel or toilet paper tubes by taping two tubes together. While these do not provide any level of magnification, the homemade binoculars still help children to focus their viewing in the vast world of nature. Trash bags are also great to take on a hike to reinforce ideas of stewardship in nature as children can improve their local natural community through picking up outdoor trash. While none of these tools is essential, all are inexpensive ways to accentuate the learning on the neighborhood hike.

In addition to the nature findings, this study provides evidences that young children are capable of documenting their own learning experiences. Early childhood instructors could collaborate with children to create documentation panels that assessed the learning that occurred in specific learning activities, whether about outdoor or indoor activities. In this way, even preschool children are able to be actively and meaningfully involved in the assessment of their own learning environments. By involving children in the assessment of their own learning, teachers have the ability to better understand what children learned through a lesson or activity. Just as I found myself making assumptions through my observations regarding the children's experiences at Preserve Preschool, a teacher may make assumptions about what the children are taking away from a particular activity. Empowering children as collaborators in the assessment

of their own learning has the potential to provide information that is more authentic. This more authentic information could then be applied to continuous improvement models as it was at Preserve Preschool. If a school were striving to create a child-centered and emergent curriculum that stems from child interests and ideas, then it would follow suit to also place the children at the center of the assessment process. While this present study had a 1:1 child to camera ratio, schools with limited budgets could have groups of children share a camera and work collaboratively. An inexpensive way to bring cameras into the classroom would be to ask parents or donors to contribute old camera phones or smart phones to the classroom. The camera function still works on phones even when they are not connected to a cellular data plan or Wi-Fi network.

Previous research (Broom, 2017; Chawla, 1999; Thompson, Aspinall, & Montarzino, 2008; Wells & Lekies, 2006) indicates that positive attitudes developed toward nature in early childhood may have lifelong effects on attitudes regarding science, nature and conservation. This dissertation research shows which elements of nature preschool experiences were important for young children in this particular setting, which may help other teachers develop curriculum and experiences that can have potentially lifelong impact on the conservation attitudes for this generation of children as they grow into adulthood.

The social aspect of nature preschool and the relationship with teachers is a highly valued aspect of the program for the children. In this way, the preschool structure aligns with existing literature that having a relationship with a knowledgeable nature adult is key in childhood nature experiences (Chawla, 1999). While longitudinal data would be needed to verify this, the hope is that these early experiences in nature with their teachers may influence the children's environmental attitudes into adulthood. The children learned about nature in the outdoor

portions of the class, but also about environmental practices through everyday classroom activities such as using reusable materials at lunch and composting during the indoor portion of the class.

Conclusion

This study provides evidence that preschool age children are capable of being involved in participatory action research and photovoice. This opens up new avenues of research to better understand the everyday lives of young children and to engage these children in program evaluation and change in their communities. This study demonstrates that children as young as age three are capable of being active collaborators in photovoice. To my knowledge, this is only the second study to use photovoice with children this young. This pushes the conversation in early childhood education to not just value child-centered pedagogy, but also to value child-centered research. A child-centered research philosophy would engage young children as collaborators in research and evaluation. By engaging child as active collaborators in research that impacts their lives, the educational research community can ensure that children have a voice in matter that directly impact them. This puts the researchers in alignment with the UN Convention on the Rights of the Child that positions children as having a fundamental human right to have a voice in the institutions that affect their lives (United Nations, 1990).

While there are many ways to engage children in PAR/YPAR models, this research shows that photovoice is a methodology that is well suited to the developmental needs and interests of young children as digital cameras are an easy and stimulating tool for children to use. Photovoice also has the power to engage preschool children as it introduces a visual communication tool that taps into one of the hundred languages of children as described by Loris Malaguzzi, originator of the Reggio Emilia educational philosophy (Edwards, Gandini, &

Forman, 2012). The hundred languages of children concept is core to the Reggio Emilia philosophy and challenges teachers and caregivers to recognize that young children communicate in a wide variety of ways, not just through verbal or written communication. In this way, photovoice uses a communication means, photography, which may be a more comfortable communication vehicle than traditional interview methods of research.

We know that the outdoor world of children in the United States has changed dramatically over the last 50 years (Clements, 2004; Wridt, 2004). While we may not be able to change the complex family and social dynamics that have led to children spending less time outdoors and more specifically, less time in unstructured play outdoors, what we can more readily change are the outdoor educational experiences that children have in schools. The early school experiences found in nature preschools have the potential to influence adult attitudes about nature and conservation. In addition, when schools introduce outdoor education into the curriculum, it may model ways for families to engage children in neighborhood nature. By deepening our understanding of the learning in nature preschools, other more traditional preschools may be able to adopt methods developed in nature preschools. In this way, additional research in nature preschool has the ability to have wide-ranging influence on the field of early childhood education, early childhood development, and environmental education.

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Appendix A

Parental Consent Form

Parent Permission for Child to Participate in a Study

University of Cincinnati - College of Education, Criminal Justice and Human Services
School of Education - Curriculum & Instruction

Laura Dell, MEd, Assistant Professor, Educator & Doctoral Student
xxx-xxx-xxxx, laura.dell@uc.edu

Title of Study: A Window into a Nature-Based Preschool through the Eyes of Children

Introduction:
You are being asked to allow your child to take part in a study. Please read this paper carefully and ask questions about anything you do not understand.

Who is doing this study?
The person in charge of this study is Laura Dell of the University of Cincinnati, School of Education.

What is the purpose of this study?
The purpose of this study is to describe and document the experiences of children ages 3 to 5 attending a nature preschool.

Who will be in this study?
Fifteen children (all children in the Tuesday/Thursday afternoon [Preserve Preschool]) are being asked to participate in this study.

What will your child be asked to do in this study, and how long will it take?
The project is a normal part of the class activities and will continue through the end of the 2015 school year. Your child may choose to participate or not on any given day. All children will be able to participate in the photography classroom activity whether they participate in the research study or not. Your child will be able to decide on a daily basis whether he/she wants to participate or not.

During the study, I will be talking with the children about the photographs they take during the school day. I will take notes and videotape and audiotape to assure accuracy of the conversations when I am writing the research report. I will keep copies of the photos taken by the children in the study.

Are there any risks to being in this study?
I do not expect any risks with this study. Regular classroom health and safety guidelines will be

followed. Educational presentations or research articles developed from this research will protect the privacy of children by using pseudonyms. No children will be identified by their real names or any other identifying information.

Are there any benefits from being in this study?
Your child will probably not get any benefit from taking part in this study. But, being in this study may help educators understand children's outdoor experiences in a nature-based preschool.

Will your child have to pay anything to be in this study?
Your child will not have to pay anything to take part in this study.

What will your child receive for being in this study?
Your child will not be paid (or given anything) to take part in this study. Your family will receive a DVD of all the photos taken by your child during the study.

Does your child have choices about taking part in this study?
If you do not want your child to participate in this study, they may still participate in all regular activities with the other children.

How will your child's information be kept confidential?
Your child's information will be kept in a cabinet in the faculty member's campus office. Signed consent will be stored in a separate location. After 10 years all data will be shredded and deleted.

What are you and your child's legal rights in this study?
Nothing in this consent forms waives any legal rights you or your child may have. This consent form also does not release the investigator, the institution or its agents from liability for negligence.

What if you or your child has questions about this study?
If you or your child has any questions or concerns about this study, you may contact Laura Dell at xxx-xxx-xxxx or **laura.dell@uc.edu**.

Does your child HAVE to take part in this study?
No one has to be in this study. Refusing to take part will NOT cause any penalty or loss of benefits that you or your child would otherwise have. Your child will be asked if he or she wants to take part in this study. Even if you say yes, your child may still say no.

You may give your permission and then change your mind and take your child out of this study at any time. To take your child out of the study, you should tell Laura Dell at xxx-xxx-xxxx or **laura.dell@uc.edu**.

Agreement:
I have read this information and have received answers to any questions I asked. I will receive a copy of this signed and dated Parent Permission form to keep. I agree (or do not agree) to the following 3 items:

1. I give my permission for my child to participate in this study.
   _____ Yes _____ No

2. I give my permission to have photographs taken by my child used in educational presentations or journal articles by the researcher.
   _____ Yes _____ No

3. I give my permission to have photographs taken of my child (taken by my child or another child in the classroom) used in educational presentations or journal articles by the researcher.
   _____ Yes _____ No

Your child's name (please print)_____

Your Child's Date of Birth _____(Month/Day/Year)

Parent/Guardian Signature _____
Date_____

Appendix B

Research Information Letter Shared with Parents

Parents and Caregivers of CNC Nature Preschool,

My name is Laura Dell. I am an Assistant Professor in the School of Education at the University of Cincinnati. My specialty is environmental education in informal educational environments. I am also a doctoral student at UC. I have been volunteering at the [Preserve Preschool] once a week for the past month and plan to continue through the end of the school year.

This spring I am hoping to collect the data for my doctoral dissertation at the [Preserve Preschool]. The title of dissertation project is *A Window into a Nature-Based Preschool through the Eyes of Children.* Nature-based preschools have been studied throughout Europe and Scandinavia, but little educational research has occurred in the U.S. regarding this educational movement. While the [Preserve Preschool] is fairly unique in the [xxxx] area in its educational philosophy, it is part of a network of 40 nature-based preschools across the U.S. I am hoping my research will add important data in the field of education on what the nature-based preschool movement looks like in the U.S.

My philosophy as an educator and as a researcher is that I believe that children are experts in their own experiences. And as experts, my goal is to engage them in helping me learn about their school experiences. A technique for learning about a child's experiences and that is effective for this age group is photography. My plan is to bring iPod Touches into the classroom once per week for the children to use as cameras to document the important parts of their school day. This will yield many, many photos, so I will work with the children to determine the most important photos to them and then build a final presentation. This final presentation is where the children tell the story of their preschool day through their photos and captions that they will write. The presentation will take a form of the children's choosing, but options may be a poster presentation or a storybook format. This final presentation will be shared with the [Preserve Preschool] families and community.

The final project created by the children will also be used in the dissertation that I write as part of my doctoral program at UC. Select photos from the project will be used in articles I will write for educational research journals such as the *Early Childhood Research Quarterly* published by the National Association for the Education of Young Children and the *International Journal of Early Childhood Environmental Education* published by the North American Association for Environmental Education. Select photos will also be used in conference presentations at educational research associations such as these. In any articles or presentations regarding this research, no real names will be used for any children, only pseudonyms will be used. You will

also have the option to opt out of any photos of your child being used in a conference presentation or journal article. No photos of children taken in this project will be used on any website or promotional materials by [Preserve Preschool] or the University of Cincinnati.

This research process is meant to provide data to the educational research community about nature-based preschools and it is your (and your child's) option to participate or not. Since the cameras will be used during class time, your child(ren) will still be able to take photos and keep copies of their photos, even if they are not participating as part of the research process. I do not want any child to feel left out of the opportunity to take photos, which I have found to be a very exciting opportunity for preschool children. Also, you will not be held responsible if any damage occurs to the camera while your child is using it. I have planned in my budget that accidents will happen and have replacement units available.

I hope this letter has given you an introduction to me and my research goals, but I am sure you will have many more questions about this project and I want to make sure I am available to answer any of them. My contact information is below. I will distribute consent forms later in the month to families where you can indicate whether your child will participate in the research or not and how I can use the photos in presentations and research articles.

Thank you for the opportunity to learn from your children about the very special preschool experience at [Preserve Preschool],

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