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## Case Studies Of Nature-Based Preschool Models In The Midwest

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CASE STUDIES OF NATURE-BASED PRESCHOOL MODELS  
IN THE MIDWEST

by

Janelle Dawn Phillips

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

Hamline University

Saint Paul, Minnesota

December, 2017

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To the future children and families of a South Bend nature-based preschool

## ACKNOWLEDGEMENTS

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## CHAPTER ONE

### INTRODUCTION

I have daydreamed about opening a nature-based preschool since the fall of 2015, when I learned and wrote about the growing outdoor preschool movement in Europe and the United States as part of a graduate course. In the summer of 2016 my family relocated to South Bend, Indiana, which is located in a region with limited nature-based preschool options. As a byproduct of the move I decided to take a temporary break from the informal environmental education work I participated in for over six years. This career break, my increased interest in early childhood education, and the growing national concern about the nature-child connection led me to seriously consider the options for a nature-based preschool launch. While attending a national nature-based preschool conference I realized there is more than one type of nature-based preschool, and that among the first steps I would need to take in opening one would be to decide on a program model. This led me to consider the primary question of *what are the benefits and challenges of the four main program models for nature-based preschools?* In addition, my secondary research question is *how would those benefits and challenges be relevant to opening a diverse, nature-based preschool in South Bend, Indiana?*

A nature-based preschool is a school designed for three to five year old students with a focus on both environmental education and early childhood education (Bailie, 2010; Larimore, 2011). This type of preschool takes students outside at least half the day

while also utilizing an indoor early childhood curriculum (Sobel, 2016). Indoor classroom activities incorporate nature while outdoor activities may include group hikes and unstructured free play on natural playgrounds (Finch & Bailie, 2015, Sobel 2014). The main program models for nature-based preschools include public or private schools, nature centers, childcare centers, and family childcare homes.

From my own observations and in hearing from nature-based preschool educators or directors I do not perceive that the nature-based preschool student population in general is very diverse in race or class. The half-day model used by many nature-based preschools may deter families in need of full day early childhood programs, and I rarely see non-white students in pictures of nature-based preschools. Since I strongly believe in making early childhood nature education accessible to all children this study also considered diversity regarding race and class in nature-based preschools. This research used a qualitative multiple case study approach to examine the four major program models for nature-based preschools. This study involved nature-based preschool site visits and interviews with local early childhood experts to provide context for South Bend, Indiana.

In this chapter I explain the personal, professional, and graduate education experiences that created my desire to open a nature-based preschool. I also briefly explore the literature that indicates a need for diverse, nature-based preschools. Finally, I consider the role motherhood has played in developing this research topic.

### **Personal Childhood Experiences in Nature**

When I was five years old my parents informed my siblings and I that we would move from our home on a neighborhood street in Elkhart, Indiana to a small farm outside city limits. Although only two miles away, the new house and ten acres of land felt quite rural. The property included nine acres of woods bordered by farm fields and a river. I remember feeling excited about moving to a farm and dreamed I would learn to milk cows. We never did have milk cows, but we hosted plenty of animals at our new property over the years including chickens, rabbits, dairy goats, sheep, and a few dogs and cats.

The woods, fields, river, and barn became my realm of exploration, discovery, and reflection. Spring brought blooming redbud trees and a variety of baby animals. In the summer I loved catching lightning bugs in the yard or sitting on the front porch to watch the thunderstorms roll across the fields. Summer also presented a prime chance to visit the river, which was a good thinking spot or a place to take friends. Fall created piles of leaves to jump in and a chance to marvel at the color of the changing woods. During the winter my siblings and I skated in our boots on the small frozen ponds behind the house and swung on the long rope from the barn loft into piles of hay. My parents also had a large garden, and although I did not appreciate it at the time, my siblings and I helped with the cycle of the gardening season: planting, weeding, harvesting, and preparing food for canning and freezing. We were required to help with chores related to feeding and caring for the animals. My family did not take vacations to national parks or even weekend camping trips, but being close to the daily rhythms of the land and animals taught me lessons about where food comes from, the cycle of the seasons, and an understanding of life and death.

Many years later, when looking for a home to purchase for my own family, I hoped for a place similar to where I had grown up, with a natural environment where adults and children alike could explore, discover, and reflect. When I look back at my childhood I appreciate the freedom of play and exploration I experienced, which shaped a connection to the land that has continued to grow in my adult years. I desire a similar experience for my own children and feel strongly that every child, no matter where they live, should have the opportunity to connect to the natural world.

### **Professional Experiences**

#### **Teaching Experiences in Washington, DC**

About a year after completing an undergraduate degree in biology I entered the world of education with urban youth. My teaching experiences began through Americorps in a first grade classroom at a charter school in Washington, DC. This initial year introduced me to some of the challenges at-risk urban youth may face, including unstable family situations, under-resourced schools and neighborhoods, and less access to green space.

I continued teaching through environmental education programs at a non-profit organization in DC. I loved taking students out on boats on the local rivers to fish, examine plankton, or dissect clams as well as embarking on overnight camping trips. These experiences were unique and exciting for these students, a first for some, and a chance to explore nature without traveling to a distant location. While I believe these experiences were important and memorable, I began to crave more regular and deeper

environmental programming for students, both in terms of my own relationship with students and for their development in relationship to the natural world.

### **Preschool Experiences in West Michigan**

My introduction to early childhood education started in 2013 after I moved to Michigan and began teaching a weekly preschool nutrition lesson in Grand Rapids as part of my job for a large non-profit. I looked forward to these weekly sessions and over time realized I greatly enjoyed working with preschool aged children. I had the opportunity to teach in and subsequently observe three different classrooms at two preschools, each with varying demographics and class dynamics. I was disheartened to learn through this process that not all preschool classrooms with at-risk urban children are well managed and not all children are being equally prepared for kindergarten or life. I still cannot shake the feeling that despite good intentions we are failing in some cases to provide a high-quality preschool experience for children who may need it the most. Indeed, low-income and African-American children are enrolled more often in low-quality preschools and enrolled less often in high-quality preschools (U.S. Dept. of Education, 2015).

Research indicated that children enrolled in high-quality preschool programs have better results in health, social-emotional skills, and cognitive development when compared to children not enrolled (U.S. Dept. of Education, 2015). These benefits are especially important for students from low-income families, who typically start kindergarten lagging a year or more behind their classmates in language and pre-reading skills. Additionally, involvement in high-quality early childhood education can increase a

child's future educational outcomes and wages (U.S. Dept. of Education, 2015). Children enrolled in high-quality preschool programs have a greater chance of high school graduation, college participation, and career success, in contrast to peers who do not participate in these programs.

In the fall of 2013, I started working at a nature center in Holland, Michigan, which had just opened a nature-based preschool. I did not teach at the preschool but loved watching the children exuberantly play outside throughout the winter months or embark on hikes through the nature center. This nature experience was a sharp contrast to the experience of the urban preschoolers in Grand Rapids, who went to the gym on cold days and had much less interaction with nature. All of these professional experiences laid the groundwork for my interest in a diverse, nature-based preschool program.

## **Graduate Education**

### **Nature Education in Early Childhood**

At the same time I was teaching preschool students I took an elective course through Hamline University on nature education in early childhood. We read Louv's *Last Child in the Woods* (2005), which sparked a national dialogue about the importance for nature in childhood by laying out the benefits of and barriers to nature exposure and documenting the negative impacts stemming from said lack of exposure, including nature-deficit disorder. Louv coined the term nature-deficit disorder to describe "the human costs of alienation from nature, among them: diminished use of the senses, attention difficulties, and higher rates of physical and emotional illnesses" (p. 34). Based on my childhood it was easy for me to falsely believe that most rural/suburban children

had access to natural environments. Louv's book and the course caused me to contemplate broader trends in nature access for all children and to consider the impact I could make as an educator. In the class I read some of the most recent research related to early childhood nature play and learned best practices for teaching early learners. Overall, this course exposed me to the basic ideas and concepts of early childhood nature education.

Through the class I also read Rivkin (2014), who asserted that outdoor play gives children more freedom to move and take risks. Outdoor play also provides hands-on experiences for children to learn about, connect with, and respect nature. Other benefits of nature play for children, according to a literature review by Chawla (2012), included greater concentration, increased motor coordination, and social play that is more imaginative and cooperative. Additionally, being able to see or be close to nature improves resilience and helps children resist impulses. Kuo (2010) summarized rigorous scientific studies which document the benefits of exposure to nature or green spaces. Greener settings are linked to better overall mental health, increased generosity, a greater longing to connect with others, more physical activity, and a stronger immune system. On the other hand less exposure to green environments is connected to greater aggression, higher childhood obesity, aggravated ADHD, and increased depression and anxiety. These numerous benefits of outdoor play are connected to physical, social, and psychological health.

Despite these benefits, children in the United States today most likely play outside less often than any prior generation according to Tandon, Zhou, and Christakis (2012).



These researchers found that approximately half of preschoolers in their sample did not go outside daily with their parents to play. Some of these children may go outside in childcare settings, but the researchers doubted they participated in the suggested hour of moderate-to-vigorous physical activity while in early childhood programs. Rivkin (2014) pointed to some barriers to outdoor play, including safety concerns (of traffic or strangers), less play space, air pollution, busy family schedules, and increased screen time. A nature-based preschool could help overcome some of the barriers by spending at least half of each school session outdoors.

In the fall of 2015, I chose to write a paper for a different graduate course on the forest kindergarten movement in Europe and the United States. Forest kindergartens put an even greater emphasis on outdoor time for students than nature-based preschools, spending seventy-five to one hundred percent of the school day outside (Sobel, 2016). These schools are also more focused on student social-emotional and physical development. Reading about this movement inspired me and created a desire to develop my own outdoor school. Based on the climate of my region and the trend of increased academics in preschool, I decided over time the nature-based preschool model would be more appropriate than a forest kindergarten. In February 2016, my family moved to South Bend, Indiana. This relocation provided the opportunity for me to seriously consider opening a nature-based preschool.

### **Nature-Based Preschool Conference**

In August 2016, I attended the Nature-Based Preschool National Conference hosted by the Natural Start Alliance. This conference inspired me, reaffirmed my interest

in starting a nature-based preschool, and provided me with a better understanding of the different program models available, including programs through public or private schools, nature centers, childcare centers, and family childcare homes. My research considers the benefits and challenges of these different models and applies them to the local context in South Bend, Indiana.

Some presenters at the conference discussed the desire to diversify their student population. Indeed, a nature-based preschool may be more beneficial to non-white students in terms of access to outside play, since Asian, black, and Hispanic mothers have lower odds of supervising daily outside play as compared to white mothers (Tandon et al., 2012). However, I noted many of these preschools are structured in a way that can make it challenging for families in need of full-time early childhood programs to attend. For example, nationally recognized nature-based preschools such as Dodge Nature Preschool in St. Paul, Minnesota, Nature's Way Preschool in Kalamazoo, Michigan, and Schlitz Audubon Nature Preschool in Milwaukee, Wisconsin offer half-day programming (Dodge Nature Center, n.d.; Kalamazoo Nature Center, n.d.; Schlitz Audubon Nature Center, n.d.). While this model serves a greater number of students, it may also work against the enrollment of black and Hispanic students, who are more likely to attend a full day preschool program than their white counterparts (National Center for Education Statistics, 2016). A part-time model may also be challenging for families where all parents work full-time, either by economic necessity or choice. A nationwide survey of nature preschools and forest kindergartens indicated only forty-six percent of respondents offered full day programs (North American Association for Environmental Education,

2017). The same survey noted these programs are less diverse compared to the general population. Eighty-three percent of children enrolled in a program included in the study were white, while only seven percent were Hispanic and three percent were African American. By comparison twenty-five percent of children under age five in the United States are Hispanic and fifteen percent are African American. These demographics are reflected in the website pictures of the nature-based preschools mentioned above.

I believe it is a greater challenge to diversify a program after it has started than to set up a program with diversity as a goal from the beginning. Diversity as a goal impacts decisions in location, program cost, scholarship availability, length of program, availability of before or after care, transportation, staffing, recruitment of students, and available food options. The literature review includes examples of nature-based preschool programs that promote diversity. My research question not only impacts potential future children and families of a nature-based preschool program, but may encourage other people interested in starting nature-based preschools to consider program choices which encourage diversity.

The diversity aspect of a nature-based preschool is important to me personally because my own life is richer for knowing people who differ from me in race or economic status. I want students, even at young ages, to play and learn beside classmates who may experience life differently. I also desire for more students and families in my region to feel they have an opportunity to attend a welcoming nature-based preschool if that is the right choice for them. The graduate education experiences described above

introduced me more fully to nature-based preschools and created a desire to open my own program.

### **Motherhood**

I would be remiss if I failed to mention the impact motherhood and raising a young son has had on the development of this research project. My husband and I were thrilled in November 2014 to welcome our son Jonah into our lives. I started giving Jonah nature experiences at our home in the woods in Holland, Michigan as soon as the weather warmed in the spring of 2015. I took many walks with him through the woods, let him sit, crawl or toddle around me with his own digging toys while I worked in the landscaping, took countless trips to the beach at nearby Lake Michigan to play in sand and water, and allowed him to explore rocks, mulch, sticks, leaves, flowers, and ferns in our backyard. We visited a nearby county park for sled rides in the winter and short hikes in the summer. Jonah learned to watch the birds (and squirrels) that frequented our feeders.

My son loved being outdoors, and I noticed from the time he was only a few months old that taking him outside decreased his fussing and boredom, creating a joy rarely matched by manufactured toys. He experienced great delight in exploring with natural items, such as when he realized acorns would bounce when thrown down the front porch stairs. As noted above, Chalwa (2012) reported outdoor play increases motor coordination, which we saw firsthand in June 2016. Our family spent a week hiking and camping around Michigan, and Jonah had many opportunities to hike trails and practice stepping over tree roots or up on rocks. His ability to navigate trail obstacles improved dramatically over the course of the week, and it was not long after we returned from this

trip that he started walking up and down stairs. These outdoor experiences felt so natural to our family and it was easy to forget that not everyone has the same access to natural resources.

In July 2016, my family relocated to South Bend, Indiana, where we lived in a rental home with little landscaping on a quiet neighborhood street. Jonah and I still spent time outside almost every day, but the quality of our outdoor experience had changed. We traded dirt trails with loose boundaries for paved sidewalks bordered by lawns and landscaping that was off limits for a curious boy. We spent more time on plastic and wooden play structures than we did walking through the woods or digging in the mulch. There were more balls and toys in our green grass backyard than sticks, flowers, or ferns. Our backyard was fenced, which is helpful for keeping a small child contained, but I wondered how it impacted Jonah's sense of exploration. We still visited the beach and the woods when we could, but these felt more like special occasions than part of our daily experience.

I realized the more structured and straightforward outdoor play Jonah experienced in the rental home is more of the norm in the United States today than what I experienced in my childhood or what Jonah experienced when we lived in Michigan. Even our basic outdoor play was more than I observed in our neighborhood, as I rarely saw other children playing in backyards or even riding their bikes on the sidewalks. I am thankful my husband and I then purchased a home in June 2017 with a partially wooded backyard and across the road from a nature preserve. This has allowed Jonah many nature play experiences in our new home. However, many children live in homes without direct

access to the natural world. Being Jonah's mother has made parenting and early childhood education much more personal, which has caused me reflect differently on books such as *Last Child in the Woods* (Louv, 2005), to think more about the type of education I hope is available to Jonah and other children, and to desire the benefits I see from his nature play made available to all of our children, regardless of race or class.

### **Chapter Summary**

A variety of personal, professional, and graduate education experiences led me to consider: *what are the benefits and challenges of the four main program models for nature-based preschools? How would those benefits and challenges be relevant to opening a diverse, nature-based preschool in South Bend, Indiana?*

My own nature-rich childhood, professional experiences teaching environmental education, early childhood graduate courses and conferences, motherhood, and recent relocation have all combined to create this relevant question. Through this qualitative multiple case study I sought to more fully understand four major nature-based preschool models in order to further my knowledge of which model may be best suited for turning my dream of a diverse, nature-based preschool into a reality.

In chapter two I review the literature around four major themes. The first theme focuses on traditional preschool and presents an overview, the need for preschool, literature on the effectiveness of various types, and preschool quality and teacher compensation. Next the need for nature-based preschool is discussed, including theories behind outdoor nature play and the benefits, decline, and barriers to said play for children. An overview of nature-based preschool is the third theme. This section defines

nature-based preschools and the various models, provides a brief history, and presents concerns related to these programs. The final theme describes diversity in preschools as related to race and class and specifically examines barriers to diversity, socio-economically mixed classrooms, and promising nature-based preschool models for encouraging diversity.

## CHAPTER TWO

### LITERATURE REVIEW

As described in chapter one, a variety of personal, professional, and graduate education experiences combined to create an interest in opening a diverse, nature-based preschool. However, there are multiple program models of nature-based preschools to consider and not much information available regarding the different models. This study sought to answer the questions of *what are the benefits and challenges of the four main program models for nature-based preschools? How would those benefits and challenges be relevant to opening a diverse, nature-based preschool in South Bend, Indiana?* Diversity in this study focused on race and class. Using a qualitative, multiple case study approach, this study examined four program models for nature-based preschools and considers the early childhood context in South Bend.

Chapter two reviews the literature around four main themes, including traditional preschool, the need for nature-based preschool, an overview of nature-based preschool, and preschool diversity. The first theme of traditional preschool provides an overview and notes recent preschool growth in the United States, describes the need for preschool, especially as it relates to low-income students, examines the literature on the effectiveness of three different preschool types, and discusses preschool quality and teacher compensation. The necessity of nature-based preschool is the second theme. Theories behind outdoor nature play, including biophilia, are explored as well as the



physical, cognitive, social/emotional, and creative benefits of outdoor nature play for children. Unfortunately, children's outdoor nature play is declining in both homes and early childhood programs, which leads to a variety of adverse impacts. The barriers of crime and safety concerns, lack of access to natural play spaces, decreased unstructured time, screen time, and the role of socio-economic status and race are also discussed. The third theme is an overview of nature-based preschool and includes explanations of nature-based preschools and the different program models, a brief history, and concerns of academic research, standards, kindergarten readiness, and safety related to nature-based preschools. Diversity in preschool related to race and class is the final theme. Current preschool demographics are explored along with barriers to preschool faced by low-income students and barriers to nature-based preschool diversity. The benefits of socio-economically mixed classrooms are discussed and promising nature-based preschool models for encouraging diversity are described.

### **Traditional Preschool**

In the United States forty-two percent of three year olds and sixty-six percent of four year olds across all income levels are enrolled in preschool (U.S. Dept. of Health and Human Services & U.S. Dept. of Education, 2016). This section discusses the literature related to traditional preschool programs. A overview of preschool is presented, as well as the need for preschool, especially for low-income children. The effectiveness of preschool types is also described and preschool quality and teacher compensation is briefly examined.

### **Overview of Preschool**

This subsection presents the main goals of preschool and briefly overviews preschool in both the United States and the state of Indiana. There are three main goals of early childhood education, including gaining cognitive skills, being prepared for kindergarten, and the development of social and emotional skills (Currie, 2001). For school readiness the ability to communicate needs and wants, showing interest in new activities, and being able to take turns, sit still, and pay attention may be just as or more important than specific academic skills. The development of self-control is also a particularly important social/emotional skill for children to learn, and may be important for more formal cognitive ability to develop (Currie, 2001).

The amount of funding, number of programs, and preschool enrollment in the United States is growing. For example, investments in preschool among states increased between 2002 and 2014, which doubled the number of four year olds in preschool programs. Despite these gains, the United States still lags in preschool enrollment when compared to other developed countries and ranks twenty-sixth in the world. In comparison, Japan, the United Kingdom, Mexico, and France have almost one hundred percent preschool enrollment for four year olds (Wong, 2014).

Nationally, states offer different amounts of access to publicly funded preschool (U.S. Dept. of Education, 2015). In the 2012-2013 school year, forty states and the District of Columbia had optional state funded preschool programs for children. However, the number of children in these programs varies, as Florida, Oklahoma, Vermont, and the District of Columbia enrolled over seventy percent of four year olds in state funded preschool while eleven states enrolled less than ten percent. During this

same school year Indiana had 87,734 four year olds. While fifteen percent attended federally funded Head Start or special education preschool, none were enrolled in state funded preschool (U.S. Dept. of Education, 2015).

The preschool landscape in Indiana is slowly changing, however (McInerny, 2016). In 2014, the state funded a preschool pilot program called On My Way Pre-K. Scholarships were provided to four hundred low-income children in five counties in the first year. Although initial money for this program ended in 2016, Indiana Governor Eric Holcomb has since approved an additional twenty-two million dollars that expands the program to fifteen more counties in the state (Sheckler, 2017). St. Joseph County, where South Bend is located, was selected for this new funding and will be included in an initial program implementation in January 2018, with a larger rollout in August 2018. Although Indiana currently offers little support for state funded preschool, this new program helps the state move into a new stage of preschool assistance.

Preschool programs in the United States and Indiana are growing. In the United States sixty-four percent of children ages six and under live in homes where all parents are employed, and many of these children need care outside the home (U.S. Dept. of Health and Human Services & U.S. Dept. of Education, 2016). The next subsection will address why preschool is important for these children as opposed to more basic early childhood programs.

### **Why Preschool is Needed**

This subsection examines why preschool is necessary and specifically looks at low-income children. Development between conception and kindergarten unfolds at a

pace far faster than any other period of life (Committee on Integrating the Science of Early Childhood Development, 2000). In fact, the first five years of life “have the greatest potential for setting a strong foundation for lifelong learning and health” (U.S. Dept. of Health and Human Services & U.S. Dept. of Education, 2016, p. 2).

Development during this time period is of great importance and includes language and cognitive skills, as well as emotional, social, self-regulation, and moral learning. These facets of development are connected and need specific attention (Committee on Integrating the Science of Early Childhood Development, 2000). Because this development is crucial, it is important for children to be in high-quality early learning situations (U.S. Dept. of Health and Human Services & U.S. Dept. of Education, 2016).

A child’s social and economic environment is highly correlated to large differences in knowledge and skills among children that can be seen prior to kindergarten (Committee on Integrating the Science of Early Childhood Development, 2000). These differences also predict future academic achievement. Unfortunately, living in a low-income household during childhood raises the chances a child will “be exposed to environments and experiences that impose significant burdens on his or her well-being, thereby shifting the odds toward more adverse developmental outcomes” (Committee on Integrating the Science of Early Childhood Development, 2000, p. 9).

While all children receive benefits from high-quality preschool, low-income children gain the most (U.S. Dept. of Health and Human Services & U.S. Dept. of Education, 2016). Early childhood programs are beneficial for disadvantaged children because the programs allow them to experience a rich learning environment that does not

exist at home. Preschool helps these children develop a wide vocabulary and overall language skills (Wong, 2014). In 2014, the Washington State Institute for Public Policy conducted a review of literature on early childhood education programs for low-income children, including state and district pre-kindergarten programs, Head Start and model programs such as the Perry Preschool Project. Several of these programs are described below. The review concluded that early childhood education for low-income children had a positive impact on both academic and social/emotional skills. All three types of preschools positively impacted test scores directly after preschool, and a smaller group of studies pointed to positive long-term impacts, such as increased high school graduation and decreased crime, special education, and teen births (Washington State Institute for Public Policy, 2014).

If preschool has such positive results should it be made available to all children through publicly funded programs? Oklahoma and Florida have universal preschool programs, but not all experts agree this is the best course of action. Unfortunately, the federal government and many states do not have enough money to pay for preschool for all children and expanding programs to serve more children could weaken the quality and impact of programs that currently exist. Additionally, it is not clear that middle-class children benefit as much from preschool as low-income children (Wong, 2014). However, as will be discussed below, a mixed socio-economic class may be quite beneficial for low-income children. Every state has to make individual decisions on what to fund, but preschool supports a period of critical development for young children and is especially beneficial for low-income children.

## **Do All Preschool Programs Work?**

Preschools improve academic outcomes and social and emotional development, but do all programs produce the same results? In order to answer that question this subsection examines three types of preschools and their reported outcomes, including the model Perry Preschool Project, Tennessee's Voluntary Pre-Kindergarten Program, and Head Start. Calls for additional preschool research will also be discussed.

**Perry Preschool Project.** The Perry Preschool Project is a well-known model preschool program. Model programs used in studies have small treatment and control groups, ample funding, and highly educated staff. Among model early childhood education programs the Carolina Abecedarian Project and the Chicago Child-Parent Centers are frequently mentioned alongside the Perry Preschool Project (Currie, 2001). However, since both of those studies include interventions either before or after the typical preschool age of three to five, they are not as applicable to this literature review.

The Perry Preschool Project took place during the 1960s and specifically enrolled low-income African American children with a large school failure risk in a randomized control trial (Schweinhart, 2003). Fifty-eight children were involved in the preschool treatment and sixty-five were not (Currie, 2001). The treatment included a half-day preschool Monday to Friday and a ninety minute home visit once per week. This occurred eight months of the year over two years. The teacher to student ratio was one to six and each teacher had a master's degree and child development training (Currie, 2001). Additionally, the program used the HighScope curriculum (Schweinhart, 2003). Researchers gathered information about the study participants throughout their schooling

and into adulthood, with little attrition. The results indicated that the program positively impacted school readiness, educational achievement, economic success, and a reduction in arrests. One interesting finding is that children in the treatment group performed better on intelligence and language tests starting after the first year of preschool and continuing until age seven. However, after age seven they did not perform better than their peers who had not completed preschool. This fading of impacts has been observed in other studies as well. This effect continued approximately until high school, when the treatment group performed better on school achievement tests and on a literacy test at age nineteen. The treatment group has continued to demonstrate a variety of other long-term effects of the program noted above. A causal model created from the study data indicated that the Perry Preschool Project increased the child's intelligence. This raised the child's motivation for school, decreased the likelihood of special education services, and increased literacy. A higher level of school motivation in turn also led to more years of schooling, which paid dividends in adulthood in the form of greater earnings and less crime (Schweinhart, 2003). The results of the Perry Preschool Project are remarkable and demonstrate the types of results possible from a high-quality preschool experience. Unfortunately, today it would cost \$20,000 for one child to attend a year in the Perry Preschool (Lipsey et al., 2015), and would be challenging to take this type of model program to scale.

**Tennessee's Voluntary Pre-Kindergarten Program.** As mentioned in the overview of preschool, states are increasing funding and programming for state funded preschools. Because of this growth, state funded pre-kindergarten programs enroll far

more four year old students than Head Start (Reid & Ready, 2013). One such state is Tennessee, which started the Voluntary Pre-Kindergarten Program in 1996 and scaled up in 2005 to 935 classrooms in all counties, with an over \$85 million price tag (Farran & Lipsey, 2015). The program is for four year children and first fills with low-income children, after which spots are offered to other children who are at risk, including those with disabilities or English Language Learners. Lipsey, Farran, and Hofer (2015) conducted a study of this program, which was the first randomized control study of a state funded pre-kindergarten program directed at children in need. The study consisted of 1,076 children and examined results from pre-kindergarten to third grade. Another study will follow these children until at least seventh grade. At least sixty percent of the children in the control group stayed at home with their parents during the year, while others attended Head Start, a childcare center or had other care arrangements (Lipsey et al., 2015).

The study results after children finished the pre-kindergarten program showed that the treatment group had higher test scores. When starting kindergarten the treatment group was also rated higher by teachers in relating to peers, being ready for kindergarten work, and classroom learning. These impacts were the greatest for English Language Learners and for children whose mothers had not completed high school. However, at the end of kindergarten and the end of first grade there was no difference in test scores between the treatment and control groups, and first grade teachers rated the treatment group lower for measures of school preparedness and classroom work skills. By second grade the treatment group which attended preschool started to score lower on tests than



the control group which had not attended preschool, an impact that continued into third grade (Lipsey et al., 2015).

As the study's authors pointed out, this research was not only about pre-kindergarten, but pre-kindergarten through third grade. The program did improve immediate outcomes for the treatment group, but these children did not continue to make gains once they entered elementary school, which points to an interaction between pre-kindergarten and elementary school that is not understood (Farran & Lipsey, 2015). This is not the first study to show a fading of test scores once children enter elementary school (Schweinhart, 2003), but the fact that the control group outperformed the treatment group by second grade is troubling. The study results question the idea that state funded pre-kindergarten can improve outcomes for low-income children over the long term (Farran & Lipsey, 2015). This also raises the question of whether or not programs implemented at the statewide level can provide the anticipated benefits. Model programs, such as the Perry Preschool Project, promote positive outcomes. However, model programs have aspects that are challenging to replicate on a state level. The question of whether less intense state funded programs with less funding and lower quality will improve outcomes over time still remains (Lipsey et al., 2015). Additional randomized control studies should be conducted on state funded preschool programs.

**Head Start.** Head Start is a mostly part-day preschool program for three and four year old disadvantaged children. The goal of Head Start is to increase children's skills so they are ready to start school (Currie, 2001). Head Start is designed as a whole child model and includes health care, nutrition, and child development resources for parents

while being sensitive to a child's ethnic, cultural, and language background (Puma et al., 2012).

While there have been a variety of academic studies on Head Start, this review will touch on two. Schanzenbach and Bauer (2016) examined the long-term impacts of Head Start using data from the National Longitudinal Survey of Youth (NLSY), which started in 1979 with 13,000 men and women and now includes a second and third generation. The study compared children who attended Head Start against their siblings who attended another preschool or did not attend preschool at all. This design removed family characteristic variables, which can be difficult to control for in a study. The results indicated that Head Start increased long-term education outcomes, including high school graduation rates, college attendance, and the completion of a post high school program. Specifically for high school graduation Head Start improved rates for children whose mothers had not completed high school. Head Start also assisted in social and emotional development, as seen in adult outcomes for self-control and parenting skills (Schanzenbach & Bauer 2016).

The other study that should be mentioned is the large randomized control study by the United States Department of Health and Human Services for 5,000 three and four year old children who were eligible to begin Head Start in 2002 (Puma et al., 2012). Children were assigned to a treatment group that participated in Head Start or a control group that did not. However, since it is not ethical to ban families from seeking other early childcare services, about sixty percent of the control group participated in other types of child care or early education. This is an important point, as the study does not

look at Head Start versus no Head Start, but at how Head Start impacts students compared to other early education programs or care available to low-income students (Puma et al., 2012).

The study followed the children from the time the treatment group entered Head Start through third grade. The results found the Head Start programs were of higher quality than other early education programs low-income children attended and “statistically significant differences between the Head Start group and the control group on every measure of children’s preschool experiences in the first year of the study” (Puma et al., 2012, p. iv). However, these differences between the treatment and control group faded when children entered elementary school. With literacy scores in particular, it should be noted that both the treatment and control group had lower scores than average for children their age (Puma et al., 2012), which means that Head Start is not closing the achievement gap between low-income students and their more advantaged peers, at least through third grade. The cause behind the phenomena of fading scores is not well understood. Given that study subjects are not yet adults it is unclear if positive impacts will be seen later or not (Puma et al., 2012) and future study results will be valuable. As demonstrated in the review of these two studies, results on the effectiveness of Head Start vary and more research should be conducted.

**Calls for additional research.** Unfortunately, the current research on long-term impacts of preschool is limited (Wong, 2014). Research needs to focus on what exactly is needed to increase positive impacts for young children in a cost effective way (Committee on Integrating the Science of Early Childhood Development, 2000).

In particular, state funded preschool programs have grown faster than the evaluation research (Farran & Lipsey, 2015). More research is needed on how to expand and implement new state funded pre-kindergarten programs for public schools, as the current programs have little evidence this type of delivery is productive. As Farran and Lipsey wrote,

The benefits of pre-K intervention are being pushed without taking time to define what pre-K really means and, worse, to determine whether what has been implemented has produced the promised outcomes. It is time to take a step back and to figure out what really can and should be scaled up and then how to make that vision happen with consistency and the desired results. (2015, Conclusion section, para. 1)

A high-quality preschool can produce impressive short and long-term outcomes, but preschool programs that do not benefit children should be amended.

This subsection considered the question of what types of preschools work. While preschools do have the ability to improve outcomes for children (Committee on Integrating the Science of Early Childhood Development, 2000), not all programs are equal and additional research needs to be conducted to understand what exactly helps improve positive outcomes. The next subsection will consider what is already known to impact preschool quality.

### **Preschool Quality**

This subsection discusses preschool quality and compensation for preschool teachers. The quality of preschool programs is highly varied. For example,

LoCasale-Crouch and colleagues (2007) conducted a study in which 676 state-funded pre-kindergarten classrooms in eleven states were observed for quality. Only fifteen percent of the classrooms achieved the highest rating for instructional and emotional support, while children in nineteen percent of classrooms “...were exposed to minimal practices associated with social, emotional, and academic gains” (LoCasale-Crouch et al., 2007, p. 14). The authors noted these lowest performing classrooms likely did not contribute to the development of those children. The remaining schools fell into three additional categories between the top and bottom tiers. This study clearly demonstrated the wide range of preschool quality.

What composes a quality preschool? To answer this question a few different scales were designed to evaluate preschool quality, including the Early Childhood Environment Rating Scale (Currie, 2001). These evaluations factor in both structure and classroom process. Structure includes class size, teacher experience, and child to teacher ratios while classroom process includes the classroom layout, how the teacher and children relate, and appropriateness of activities to children’s developmental stage. Teacher to child interaction is likely the most important component of quality in an early childhood education program. Indeed, improved training for teachers and small group size encouraged positive interaction between teachers and children (Currie, 2001).

In addition the National Association for Education of the Young Child has created ten Early Learning Program Standards for high-quality programs (NAEYC, n.d.).

1. Relationships: Good relationships among children and adults.

2. Curriculum: Research-based curriculum aligned with program goals that includes all learning domains through both individual and group learning.
3. Teaching: Developmentally appropriate teaching that uses multiple strategies, including both structured and unstructured opportunities and adult and child led.
4. Assessment of Child Progress: Both formal and informal assessment occurs in order to understand where children are currently at and to plan ways to improve the program.
5. Health: Encourages health and nutrition of children and guards against illness and injury.
6. Staff Competencies, Preparation, and Support: Teachers and administrators are qualified with training in early childhood education and engage in professional development.
7. Families: The program builds relationships with families.
8. Community Relationships: The program builds relationships with the community and takes advantage of local resources.
9. Physical Environment: Includes both inside and outside areas that are safe and healthy.
10. Leadership and Management: Policies and systems of the program encourage stable teachers, good financial management, program accountability, and communication.

The goal of these standards is to promote quality experiences in programs serving young children and to encourage child learning and development (NAEYC, n.d.).

Unfortunately, preschool teachers are underpaid for their important work (U.S. Dept. of Health and Human Services & U.S. Dept. of Education, 2016). In Indiana the average annual salary for a preschool teacher is \$24,530, while a kindergarten teacher earns \$44,970. In comparison, a parking lot attendant in Indiana earns \$18,490 a year, while a word processors or typist makes \$29,380 annually. The annual salary for the preschool teacher is at this low level despite required credentials and education for this position, which can require a bachelor's degree. Additionally, wages are not equal among different early childhood settings. For the same education credentials a preschool program within a public school usually pays more than a program in a community early childhood program. The wages these community programs pay depends on fees from parents, which are kept low to make the program affordable (U.S. Dept. of Health and Human Services & U.S. Dept. of Education, 2016).

Low pay makes it hard to recruit and keep staff with more education and experience. This in turn can impact staff turnover, which raises the cost of the program and affects the children. The time has come to find a better way to fund early childhood education programs in the United States (U.S. Dept. of Health and Human Services & U.S. Dept. of Education, 2016). The Committee on Integrating the Science of Early Childhood Development (2000) argued that relationships outside the home are important for children and society needs to do more to recognize and compensate the people who provide early childhood services in order to increase quality and stability. Additionally, a report from United States Department of Health and Human Services and the United States Department of Education stated,

As long as large pay disparities persist, it will be difficult to promote effective training and professional development, reduce workforce turnover, and establish sustainable high-quality early learning programs –all of which undermines the quality of early learning experiences we can offer our youngest learners. (2016, p. 14)

Teachers in preschool programs have a large impact on program quality, and one way to increase the quality of programming for all children is to find the means to increase compensation.

This section discussed an overview of preschool, described the need for preschool, explored the varying effectiveness of different types of preschools, and examined preschool quality and teacher compensation. In summary, effective preschool can provide important contributions to a young child’s life, especially if they live in low-income families. However, it is important to consider preschool in its appropriate context as one part of a child’s education. Events in early childhood do not unequivocally determine a child’s future, but set a solid or shaky foundation. A child can still be influenced in both positive or negative ways throughout their childhood and into their adult life (Committee on Integrating the Science of Early Childhood Development, 2000). As Schweinhart wrote, “High-quality preschool education should be part of a multifaceted effort to solve our social problems; it is far from the only solution” (2003, p.8). A strong preschool experience, however, can position a child well for their future.

### **The Need for Nature-Based Preschools**



This section makes a case for the necessity of nature-based preschools as one solution for providing preschool aged children with more opportunity for outdoor nature play. While children's play is spontaneous and fun it also serves as an important avenue for brain development. Play is important in many aspects of a child's life, including physical, social, emotional, and cognitive functioning (Burdette & Whitaker, 2005). Play allows children to learn to control their bodies as they develop motor skills and promotes the development of skills, language, creative thinking, and problem-solving. Play additionally assists children in regulating their emotions and helps children discover the world, themselves, and others (Little & Wyver, 2008).

Specifically focusing on nature play, Ernst (2012) defined nature play as "...unstructured outdoor play in natural areas that involves playing with nature or interactions with nature" (p. 13). To further examine this definition unstructured play is also known as free play and involves exploration and imagination motivated by the child. Additionally, the location for nature play is important, as this takes place in an outdoor area that is not maintained, including forests, fields, or the unmaintained areas around backyards or playgrounds that contain abundant natural items without a specified play purpose. Playgrounds, grassy fields or courts used for sports, and landscaped backyards are not locations where nature play happens per this definition. Finally, in order for nature play to occur children need to interact directly with nature, as opposed to only child to child interactions (Ernst, 2012). It is important to note under this definition outdoor play activities such as sports, play on traditional playgrounds, and other outdoor recreational activities cannot be classified as nature play. In this section theories behind

outdoor nature play will be discussed, as well as the benefits, decline, and barriers to outdoor nature play for children.

### **Relevant Theories**

First of all, the idea of why children play needs to be examined. In reviewing the literature, Lester and Maudsley (2006) contended that children have a biological instinct to play. Citing Hughes, these authors advanced the idea that play helps children interact with their surrounding environment as a way to learn about the ecological conditions that surround them. From an evolutionary perspective, knowledge gained through play is then used for survival (Lester & Maudsley, 2006).

Additionally, the question of why children are attracted to playing in natural areas should be explored. The biophilia theory of Wilson helps to address this question. Wilson defined biophilia as “The innate tendency to focus on life and lifelike processes” (1984, p. 1). He explained that from the time children are young they classify the living from nonliving and are drawn towards living entities. Wilson (1984) noted that biophilia can be seen all around in the ways humans respond to nature beginning in early childhood. It is also observed in the culture of almost all societies and in how quickly people learn about plants and animals.

Wilson (1984) argued areas of the world that are unknown or diverse are especially interesting to humans, which is what drew the old explorers to distant islands and jungles, and draws individuals even now to explore outer space. There is so much diversity in the life forms of the world. Humans have not discovered it all, but there is great natural desire to explore deeper.

Our sense of wonder grows exponentially: the greater the knowledge, the deeper the mystery and the more we seek knowledge to create new mystery. The catalytic reaction, seemingly an inborn human trait, draws us perpetually forward in a search for new places and new life. (Wilson, 1984, p. 10)

Chawla (2006) supported the biophilia hypothesis when she wrote that the natural world captures the attention of children because they are adapted to the natural world and “...children have a connection as ancient as the chemistry of their cells” (p. 70). The biophilia hypothesis is also reinforced through the value humans give to nature, the human desire to connect with animals, positive feelings that arise when individuals are close to nature, and the use of nature as symbols in language (Lester & Maudsley, 2006). From an evolutionary lens Kahn Jr. (2002) noted that survival for ancient humans meant being attracted to clean water and fearing venomous snakes. Therefore, genes that created both negative and positive associations with nature helped humans survive and were passed along. In addition, as the natural environment has been a primary location for children to engage with throughout the many years of human evolution it is not far fetched to propose that interacting directly and indirectly with nature was and still is a significant part of human development (Kahn & Kellert, 2002).

However, critics contend the biophilia hypothesis is focused too much on an evolutionary background and does not take into account the role of culture and how it interacts with human evolution. It should be noted that while these critics want to expand the hypothesis, they do not disagree with its basic premise (Lester & Maudsley, 2006). For example, while Kahn Jr. (2002) agreed that understanding a child’s connection to

nature needs to take human evolution into account he also argued that free will and cultural practices should be considered, as humans can still make poor choices leading to extinction. He stated, “We also need to recognize that children construct knowledge and values not only through interaction with a physical world (with nature) but through interaction with a social world and with social discourse” (2002, pp. 113-114). This view is reinforced by Kellert (2002), who created nine basic values of the natural environment that form the underlying biological or genetic attractions to the natural world and together compose biophilia. These values are aesthetic, dominionistic, humanistic, moralistic, naturalistic, negativistic, scientific, symbolic, and utilitarian and appear at different stages of child development. As developing these values improve a person’s fitness they have been passed down over time, and an individual without these values may have deficiencies in intelligence and emotional functioning (Kellert, 2005). Kellert clearly noted that giving value to nature is a weak genetic trait, but can be developed with experiences, knowledge, and support from culture (2005).

Beyond biophilia, nature is fascinating for children because there is always something new to see or explore (Chawla, 2006). Each bird, insect, rotting log, or section of stream is unique and nature provides endless possibilities for exploration. When children play in nature it encourages future nature play, since the natural world “... provides all the conditions for events that hold children’s attention”, including immediate cause and effect and many natural items for building and experimenting (Chawla, 2006, p. 68). As children are naturally attracted to both play and the living world, outdoor nature play appears to be an inherent response.

## **Benefits of Outdoor Nature Play for Children**

It is becoming increasingly clear through the literature that outdoor nature play provides many benefits for children. This subsection examines the physical, cognitive, social/emotional, and creative benefits of outdoor nature play and explains why these benefits are enhanced by the natural environment.

**Physical benefits of outdoor nature play.** Outdoor play provides many physical benefits, including supporting muscle development, encouraging growth of the heart and lungs, and improving digestive functioning and appetite (Clements, 2004). Playing outside also specifically promotes sight, vitamin D levels, and development of motor skills (Tandon et al, 2012). Traditional playgrounds offer one opportunity for outdoor play. However, Lester and Maudsley (2006) noted playgrounds only provide a small range of physical movement options, as opposed to the more spontaneous play available in a diverse natural location. In fact, playground structures can be deemed as “boring” by children after one use. The standard arrangement of playground equipment does not provide children with movement challenges (Lester & Maudsley, 2006). Conversely, outdoor natural areas are filled with a variety of opportunities to freely move and explore through physical activity. The outdoor environment provides many different open-ended play opportunities which cannot always be predicted (Little & Wyver, 2008). Hanscom (2016) echoed this idea when she wrote that children will develop better motor skills in natural play spaces because the environment is varied, unpredictable, and presents obstacles with many movement opportunities, including climbing, hanging, or digging. Children also are able to move across a changing terrain outdoors, which differs from a

playroom or gym. These varied movements develop many different muscles in the body and help to strengthen bones (Hanscom, 2016).

Outdoor nature play is also important for sensory integration, which is the process of receiving and organizing information from the senses (Hanscom, 2016). All of a child's senses are activated through interaction with natural items (Bailie, 2012). Sensory integration must be developed and some children struggle with this process (Hanscom, 2016). To promote sensory integration children should frequently experience many different types of senses. Sensory bins are a popular response to this need but do not go far enough. For example, using a sensory bin with sand and shells in an indoor environment is a fun activity, but playing on the beach provides integrated full body sensations of sun, water, wind, and sand. Nature is an excellent setting for sensory integration, as it produces a calm state of mind and provides a steady stream of sensory input. However, nature does not create sensory overload (Hanscom, 2016).

Finally, outdoor nature play may lead to the development of stronger immune systems for children. The hygiene hypothesis refers to the idea that regular outdoor experiences expose children to low levels of bacteria that help their bodies produce antibodies (Finch, 2016; Hanscom, 2016). When children are not frequently exposed to these bacteria through outdoor play their immune systems can over respond to harmless substances. It is possible this is a contributing factor to the rising global rates of allergies and asthma in children (Hanscom, 2016). Overall, outdoor nature play can help children develop strong, capable, and healthy bodies.

**Cognitive benefits of outdoor nature play.** Outdoor nature play also provides cognitive benefits. The brains of young children are activated by their surroundings (Finch, 2016). Because the natural world is more diverse and less structured than indoor areas children's brains are activated more often and they have more chances to make decisions that require problem solving and creativity (Burdette & Whitaker, 2016b; Finch, 2016). The natural world also creates the context for children to investigate and ask questions (Bailie, 2012). Additionally, the ability to move more and see farther outside opens up opportunities for children, which lends itself to curiosity (Burdette & Whitaker, 2005b). Executive functioning, which helps children develop independence, may also be enhanced by outdoor play. Executive functioning is defined as “a higher-level skill that integrates attention and other cognitive functions such as planning, organizing, sequencing, and decision making” (Burdette & Whitaker, 2005b, p. 48).

Specifically, nature can promote the cognitive function of attention. The Attention Restoration Theory developed by Kaplan stated that restorative spaces are needed to overcome mental fatigue (Lester & Maudsley, 2006). Restorative space can occur in a variety of settings, but a natural environment uniquely fills the requirements of a restorative space. A study by Faber Taylor, Kuo, and Sullivan (2001) gave credibility to this idea. The researchers utilized parent surveys to determine how well children diagnosed with attention deficit disorder (ADD) or attention deficit hyperactive disorder (ADHD) paid attention after completing activities in spaces labeled as “green”, “not green”, or “ambiguous”. The study found that children do pay better attention after completing activities in more green settings, such as camping or playing soccer.

Additionally, when children played in areas designated as more “green” their parents rated their attention deficit symptoms as less severe. This research is important since for nine out of ten children medication for treating attention disorders does not improve long-term social or academic outcomes (Faber Taylor, Kuo, & Sullivan, 2001).

Additionally, the cognitive functions of knowledge formation and comprehension can be positively impacted by experiences in nature (Kellert, 2002). Knowledge formation includes making categories and classifying objects, as well as knowing basic facts and names. Nature has particularly diverse and interesting items to name and classify, which assists in the maturing of cognitive function. For example, preschool literature related to counting, naming, or classifying frequently utilizes natural items, such as animals. Furthermore, the natural world is a wonderful setting for the development of comprehension, as children create categories, understand living versus nonliving, observe eating, daily survival tasks, and dying. Children begin with identifying and classifying and then move on to making predictions regarding what will happen in a nature setting. As Kellert wrote, “Even in a modern world of pervasive human domination and artificial construction, nature continues to provide young people with an unrivaled source of attraction, stimulation, and challenge relevant in both intellectual and emotional development” (2002, p. 123). Cognitive growth is important for all children, and outdoor nature play provides a positive setting for its development.

**Social-emotional benefits of outdoor nature play.** Children need social and emotional skills in order to cooperate with others and to form and maintain friendships (Burdette & Whitaker, 2005b). Social skills are necessary for playing with others, since



children need to agree on the rules of play and how play will proceed. This process involves cooperation and compromise, which helps develop empathy, flexibility, self-awareness, and self-regulation (Burdette & Whitaker, 2005b). The natural world helps facilitate social interaction by providing open space that allows for free and spontaneous interaction between children (Little & Wyver, 2008). Additionally, nature play promotes more positive feelings between playmates and may also reduce or eliminate bullying (Strife & Downey, 2009). Hanscom (2016) also noted that nature provides a calm sensory setting for children to practice their social skills. Children are able to deeply play in nature, which provides many chances for social interaction.

Outdoor nature play additionally helps children emotionally connect to nature (Larimore, 2011). Studies show that an early connection with nature has an impact on how adults relate to the environment later in life. As Pyle stated, "...kids who encounter wildness may become people who care" (2002, p. 324). One study by Chawla (2006) compared previous interviews of thirty environmentalists from Kentucky and twenty-six environmentalists from Norway. The interviews asked participants about what inspired them to activism. The top two responses were the same for both locations, positive interactions with nature as a child or adolescent and a family member who also displayed environmental interest and care. Chawla (2006) noted that first-hand experience is critical to the process of forming attachments and creating the desire to protect a particular place. Additionally, Wells and Lekies (2006) found that involvement with nature before the age of eleven was significantly connected to adult environmental attitudes and behavior. The study used data from interviews of approximately two thousand urban adults ages

eighteen to ninety in the United States and tested the data using a structural equation model. The results indicated interaction with “wild” nature, including forest play, camping, or fishing had a stronger impact on environmental attitudes and behaviors, although “domesticated” nature experiences, such as gardening, still had a positive relationship. As Wells and Lekies wrote, “When children become truly engaged with the natural world at a young age, the experience is likely to stay with them in a powerful way—shaping their subsequent environmental path” (2006, pp. 13-14). It should be noted this study also indicated, contrary to other research, the environmental attitudes and behavior decreased when the childhood time in nature was spent with other people. The significance of solo nature play versus nature play with others should be studied further, as it may impact the benefits of nature-based preschools. Additionally, more studies should be conducted regarding the optimal age of childhood exposure to nature in order to produce positive environmental attitudes and benefits. Are the memories of nature play in preschool powerful enough to impact adult decision making? Of course, the multitude of other benefits listed here resulting from nature-based play are more immediate, making nature-based play worthwhile even if it does not impact adult environmental action.

**Creative benefits of outdoor nature play.** Creativity has been declining in children in the United States since the 1980s. Play in nature can combat this trend, as nature play is more imaginative and creative than play in other locations (Finch, 2016; Strife & Downey, 2009). Creativity is an important aspect of divergent thinking, which is the ability to identify more than one solution to a problem (Larimore, 2011). Imaginative play confers many positives, including impacts on “...social cognition, inventiveness,

language development, the use of symbols, comprehension skills, and the number of opportunities for children to imitate and interpret adult behavior” (Clements, 2004, p. 73).

There may be a few different reasons why nature play is more creative and imaginative. Hanscom (2016) argued that each object indoors has a purpose and toys are often perceived as having one role, which limits the potential for play. However, outside objects do not have a specific play purpose, which inspires creativity and imagination in children (Hanscom, 2016). In addition, outdoor environments provide many spaces and ideas for children’s imagination (Finch, 2016). This is related to the idea of “loose parts” available in nature as compared to human built locations (Lester & Maudsley, 2006). Loose parts refer to the number of individual items in an area that can be manipulated. Examples in nature include sticks, leaves, pine cones, rocks, or nuts. Finally, contact with nature feeds into a child’s natural desire for beauty and creativity (Lester & Maudsley, 2006). Nature play awakens imagination and creativity, which should be a defining feature of childhood.

There are many benefits for children who engage in outdoor nature play, including physical, cognitive, social/emotional, and creative benefits, and nature-based preschools can promote these positive outcomes. Unfortunately, as outdoor nature play declines for children there is a risk these benefits will be lost.

### **Decline in Outdoor Nature Play for Children**

As Finch and Bailie (2015) wrote, “...nature is relinquishing its long-standing role as a common and beloved component of children’s lives” (The Opportunity section, para. 4). This subsection examines the decline in the amount of time children are

spending in outdoor nature play in home or community environments. It also looks at how much nature and outdoor play is occurring in early childhood programs and considers the impacts of declining outdoor play. Nature-based preschools can help stem this decline by providing access to daily outdoor nature play.

**Decline in outdoor play in home or community environments.** It is recommended for preschool age children to receive a minimum of sixty minutes of physical activity and several hours of unstructured play every day (Tandon et al., 2012). However, Tandon and colleagues (2012) noted that almost half of preschoolers are not achieving these recommendations. Several studies have explored the decline in outdoor play in home or community environments outside of early childhood programs. These studies did not designate outdoor play time as either nature play or not nature play, but since nature play occurs outside one can assume the decline of outdoor play and outdoor nature play are connected. There is a need for more research to be conducted on the amount of outdoor nature play for children in home or community environments.

A nationwide survey of 830 mothers with children ages three to twelve examined how much children in the United States play outside today, compared to their mother's recollection of their own outside play (Clements, 2004). Seventy percent of mothers indicated daily outdoor play in their childhood, but only thirty-one percent of their children played outside daily. The mothers also reported a higher level of imaginative play in their childhood than they observed with their own children. This study is backed up by data from Hofferth and Sandberg (2000) who used time diaries to document how children in the United States under the age of thirteen spend their time. In 1997, fifty-five

percent of a typical child's time during a week was used for eating, sleeping, and personal care, while fifteen percent was devoted to school or child care. The remaining thirty percent was discretionary time. Of this discretionary time fifteen hours were used on a variety of free play activities and twelve hours were used to watch television. Only one-half hour was spent outside. Other activities included sports, church, and visiting (Hofferth & Sandberg, 2001). In a later study with data from 2003 Hofferth (2009) found additional declines in time spent outside among six to twelve year olds. This change was the result of a decrease in the number of children going outside at all, as opposed to the amount of time spent by those that did go outdoors. Similar results were also reported by Tandon and colleagues (2012). Using the Early Childhood Longitudinal Study–Birth Cohort data these researchers examined how often parents took their preschool aged children outside to play. Approximately half of the preschoolers in the study did not play daily outside with a parent. Fifteen percent of mothers and thirty percent of fathers did not even offer an outdoor play or walking opportunity a few times per week, even though a majority of parents in the survey thought their neighborhoods were safe. Girls and Asian, Black, and Hispanic children were less likely to play outside every day (Tandon et al, 2012). Considering the benefits of outdoor play described above, this documented decline in outdoor play is concerning.

**Nature and outdoor play in early childhood programs.** With a decline in outdoor play occurring for children in their home and community settings, outdoor play in early childhood programs becomes even more important. As referenced by Copeland, Khoury, and Kalkwarf (2016), fifty-six percent of preschoolers in the United States

utilize childcare centers. Several studies have looked at the amount of outdoor play children participate in while at child care. Recommendations for childcare centers include sixty to ninety minutes of daily outdoor play (Copeland et al., 2016). For children without safe play locations at home or who spend a lot of time in child care, physical activity in childcare settings is essential.

Ernst (2012) conducted a survey of eighty-one licensed childcare locations in Minnesota, including home-based care, Head Start, center-based care, and preschools. The study focused on preschool aged children in these locations and looked at both outdoor play and outdoor nature play opportunities. Ninety-two percent of those surveyed reported that most outdoor play happens on either playground equipment or maintained and developed spaces. Little, if any, outdoor nature play was occurring at the programs who participated in the survey. Additionally, only half of providers in the study were allowing for sixty minutes or more of daily outdoor play, and that number decreased during inclement weather. Copeland and colleagues (2016) similarly found that not all childcare centers observed in their study in Cincinnati, Ohio provided enough opportunity for outdoor play. This study did not include home-based care settings. Outdoor play did not happen as often as it was scheduled and a quarter of the centers and a third of preschoolers in the study did not have any opportunity for outdoor play during the observed day. Additionally, the allotted sixty minutes of outdoor play was not regularly kept during cold or rainy weather (Copeland et al, 2016). These two studies indicated that not all early childhood programs are providing enough opportunities for outdoor play.

**Impacts of decline in outdoor and nature play for children.** The decline in outdoor and nature play in children is contributing to a variety of negative impacts, including weight issues, mental and cognitive disorders, and a disconnection from the natural world. Obesity in children is now a global epidemic, given the rise internationally in overweight and obese children during the last thirty years (Flynn et al., 2006). Unfortunately, weight issues do not only impact childhood but also contribute to the likelihood that overweight children will be obese as adults. Risk factors for cardiovascular disease have been found in overweight five year olds and obesity is also linked to the rise in Type 2 diabetes in children. Additionally, there are mental health impacts for a lifetime of obesity (Flynn et al., 2006).

Preschool aged children in the United States are not an exception to this problem. Data from the 2011 to 2012 National Health and Nutrition Examination Survey indicated that 22.8 percent of two to five year olds are overweight, while 8.4 percent are obese (Ogden, Carroll, Kit, & Flegal, 2014). Thankfully, obesity levels in this age group are decreasing from past years. Anderson and Whitaker (2009) specifically looked at levels of obesity for four year olds among racial and ethnic groups. American Indian and Native Alaskan children had the highest rates of obesity while Hispanic and non-Hispanic black children had intermediate rates. Non-Hispanic white and Asian children had the lowest rates of obesity, however, approximately one in five non-Hispanic white children are still overweight or obese (Anderson & Whitaker, 2009).

A study by Kimbro, Brooks-Gunn, and McLanahan (2001) added to the research indicating that children who play outside more have a lower body mass index (BMI).

Their research used data from a large study of urban children to examine how outdoor play and television viewing of five year olds relates to BMI and how their housing context is related to these activities. The results showed that for the typical child each hour of play outside led to a decrease in BMI by half a percentage point. Additionally, more television watching was linked to increased BMI (Kimbrow et al., 2001). However, data from Burdette and Whitaker (2005a) did not significantly correlate playing outside to BMI. This study used a survey of mothers and BMI measurements of 3,141 three year olds in twenty large United States cities to test the hypothesis that preschool children who reside in neighborhoods their mothers think are unsafe watch more television, spend less time outside, and have higher rates of obesity. Results did not confirm this hypothesis, but the authors noted that outdoor play could happen elsewhere, such as an early childhood program, that outdoor play is not an exact measure of physical activity, and that watching television is only one kind of sedentary activity. The researchers called for further research in understanding the context in which childhood obesity occurs (Burdette & Whitaker, 2005a). Childhood obesity remains a significant problem and outdoor play cannot be discounted as one part of the solution.

Beyond obesity, the decline in outdoor nature play for children is also being linked to a variety of other cognitive and mental conditions, including childhood depression, learning disabilities, hyperactive disorders, and difficulty concentrating (Strife & Downey, 2009). Two million children in the United States were diagnosed with ADHD between 2003 and 2011 (Hanscom, 2016). Additionally, twenty-five percent of



children are now diagnosed with anxiety disorders. Many children are less creative and more distracted than ever.

A decreased connection with nature in early childhood may also impact an individual's lifelong view of the natural world and eventually environmental health. If children are not exposed to the environment on a regular basis they may begin to fear or dislike the outdoors (Strife & Downey, 2009). This lack of experience can also lead to less attachment with nature and feelings of alienation (Lester & Maudsley, 2006). Pyle (2002) described the apathy and degradation that results from the loss of children's natural experiences. When people are connected to nature then they appreciate it and desire to preserve it. But when experiences in nature are lacking no one notices or cares when species begin to disappear, leading to further loss of natural diversity. As Pyle wrote, "...collective ignorance leads inexorably to collective indifference; and from there, it is not many more steps to ecological depreciation and collapse" (2002, p. 312). Furthermore, the impacts of this lack of experience are particularly strong for people who cannot easily gain access to areas beyond their neighborhood, such as low-income families, people with disabilities, or young children and the elderly.

Childhood outdoor play and nature play in the United States is declining, and many preschool children are not participating in enough outdoor play in either their home and community environments or at early childhood programs. This decline is linked to a variety of negative impacts. It is possible that the amount of outdoor play at early childhood programs, although not sufficient, has remained stable. But what factors are

contributing to the decline in outdoor and nature play outside of school or child care? The following subsection will consider these obstacles.

### **Barriers to Outdoor Nature Play for Children**

Children's access to the natural world is dependent on a variety of factors, including gender, ethnicity, family culture, and local place (Lester & Maudsley, 2006). These factors can contribute to an increasing number of barriers that prevent children from engaging in outdoor nature play outside of school or early childhood programs, including concerns about crime and safety, lack of access to natural play spaces, decreased unstructured time, screen time, and the role of socio-economic status and race. The literature indicated these barriers most likely work together in a variety of ways. While many ideas are needed, nature-based preschools can help reduce these barriers for children in early childhood by providing safe, supervised access to nature.

**Concerns about crime and safety.** When asked to identify reasons why children play outside less than their mothers did as children, eighty-two percent of surveyed mothers cited concerns over crime and safety (Clements, 2004). Louv (2005) agreed that fears of traffic, crime, and strangers keeps children from playing outside. He argued that the boundaries on children are growing tighter. Children cannot go as far away from home by themselves as they used to and are less likely to walk or bike to school alone. Louv believed this reaction is in part due to over-hyped claims of kidnapping by strangers, when in fact the number of kidnappings by strangers has remained stable since 1990. Hanscom (2016) noted that the world is not less safe now than it was during the 1970s or 1980s, and it may even be safer. However, the idea of child kidnapping by

strangers now generates more fear due to a general increase in social anxiety and intense media focus on this issue (Louv, 2005).

However, not all studies have found a connection between perceptions of neighborhood safety and outdoor play. In the Burdette and Whitaker (2005a) study referenced above regarding safety, obesity, television viewing, and outdoor play, the researchers found that outdoor play time was not different for preschool children between the least safe and most safe neighborhoods. Kimbro and colleagues (2001) found mixed results from their study on neighborhood characteristics, outdoor play, television viewing, and body mass index in young, urban children. Mothers who viewed their neighborhoods more positively in a social sense had preschool children who played outside more, watched less television, and took more trips to a park or playground. However, mother's fear about outside safety were not significantly connected to outdoor play time and children with a higher degree of physical disorder outside the home actually spent more time playing outside. The study did not indicate whether this play was supervised or unsupervised, and it is possible that non-working mothers have more time to supervise outdoor play for children (Kimbro et al., 2001). More research should be conducted with this population to fully understand the relationship between safety and outdoor play opportunities for children.

Besides crime and strangers, parents are worried about other safety risks as well. Traffic, injury from bicycle or skateboard use, bug bites, wild animals, and poisonous plants were all mentioned as causes for concern (Hansom, 2016; Little & Wyver, 2009). Injury resulting from playground use was also a fear for parents (Little & Wyver, 2008).

Children also internalize these worries, as Lester and Maudsley (2006) noted that children identity fears of being outside associated with traffic, strangers, getting lost, and bullying. Of course, it is interesting to note that getting lost and bullying appear to be concerns related mostly to a child's perspective.

Unfortunately, keeping children inside or under parental control in order to keep them safe decreases their opportunities to build confidence and discernment (Louv, 2005). It may also lead to a disconnect from nature.

The increasing exclusion of children from accessing and living in diverse spaces, largely through risk and fear, and the substitution of this through distinct, single function and isolated sites may give rise to an increased sense of isolation, frustration and alienation with their local environments. (Lester & Maudsley, 2006, p. 55)

Louv (2005) pointed out parents do still have choices in how they will respond to fears related to their children's play. There are steps parents can take to help protect their children even as they engage in nature play, including knowing the neighbors, ensuring that children always play with a friend in nature, and providing children with cell phones to take along on play excursions (Louv, 2005). Parental concerns about crime and safety do exist, and more discussion should occur on how to reasonably respond to these concerns without eliminating outdoor nature play.

**Access to natural play spaces.** Even for children and families who may happily engage in outdoor nature play, access to such spaces may not always be available. In urban areas there may be decreasing play space as demand for housing increases,

especially as city planners are not required to include play spaces (Clements, 2004; Little & Wyver, 2009). As Pyle wrote, “Lucky is the child of the city or suburbs who still has a richly inhabited ditch, creek, field, or forest within walking distance of home” (2002, p. 319). Parks are too formal for children seeking adventure and nature reserves do not allow free exploration. Special places, even second hand ones, are necessary for children to freely play, climb trees, leave the trail, and experience water and mud. All children, not only ones with privilege, have a need to play this way (Pyle, 2002). Unfortunately, these places are increasingly hard to find.

**Decrease in unstructured time.** The decrease in unstructured time that could be filled with outdoor nature play is a problem for both children and parents. Children today have less unstructured time than children had in the past. Between 1981 and 1997 discretionary time for children decreased as they spent more time in early childhood programs since more mothers worked outside the home (Hofferth, 2009). During this period time spent in structured activities, such as sports or art, increased while unstructured play and television watching decreased in families with both working or non-working mothers. After examining additional data in 2003, the study concluded overall discretionary time for children continued to drop, from fifty-seven hours of discretionary time per week in 1981 to forty-eight hours of discretionary time per week in 2003 (Hofferth, 2009). This idea is corroborated by Clement’s study, where mothers reported an increase in outdoor organized sports for their children over their own childhood, which left less time for unstructured play (2004). A rise in structured activities for children is also noted in other literature (Lester and Maudsley, 2006, Louv, 2005,

Strife & Downey, 2009). In addition, adults are more likely now to go everywhere with their children. Children have increasing adult supervision, which decreases the time a child has to self-direct and leads to more direction from parents of the child's choices (Lester & Maudsley, 2006).

Because parents are afraid for their children's safety and want to supervise outdoor play, a parent's schedule also needs to be considered (Little & Wyver, 2009). Seventy-seven percent of the mothers in Clement's study cited not having enough time to be outside with their children as a reason for their children's decreased outdoor play (2004). This may also be related to the growing idea that children's safety is the primary responsibility of the immediate family, with a shift away from community responsibility (Lester & Maudsley, 2006). Parents need to be cognizant of providing time for their children to experience nature, whether supervised or not.

It takes time, loose, unstructured dreamtime, to experience nature in a meaningful way. Unless parents are vigilant, such time becomes a scarce resource, not because they intend it to shrink, but because time is consumed by multiple, invisible forces, because our culture currently places so little value on natural play. (Louv, 2005, p. 117)

The amount of free time children have to play is declining. Is what is left being taken over by electronic devices?

**Screen time.** A national survey found that eighty-three percent of children ages six months to six years spend time with some form of screen media during the average day, including television, videos or DVDs, computer, or video games. Among four to six

year olds, forty-three percent spent two or more hours with screen media while thirty-two percent spent one to two hours (Kaiser Family Foundation, 2006). The literature is mixed as to whether screen time is displacing outdoor play. The view that screen time does compete with outdoor play is common (Sobel, 2016, Strife & Downey, 2009) and is backed up by Clement's study, where eighty-five percent of mothers reported television viewing and computer games as the number one barrier to their children's outdoor play (2004). It should be noted this study surveyed mothers of three to twelve year olds, a group that includes preschool aged children but extends into the elementary school age range as well. Conversely, the study by Tandon and colleagues (2012) of preschool aged children did not find that screen time is replacing outdoor activity. In addition, the study by Burdette and Whitaker (2005a) found similar results, as increased television watching by preschool children who lived in neighborhoods perceived as unsafe was not connected to less outside play time. These results may be partially explained by Kimbro and colleagues (2001), who were surprised to discover that preschool children living in public housing had both significantly more time playing outside and television watching when compared to other children. The authors surmised these low-income children may have more unstructured time that allows for both more outdoor play and television viewing than other children. This does not negate the idea, however, that screen time may be displacing outdoor play, since as Hofferth (2009) noted, spending time on one activity means spending less time on another. It may be possible though that the conflict between screen time and outdoor play is stronger for children who have less free time overall.

**Socio-economic status and race.** In addition to the barriers listed above, low-income and ethnic minority families may also face unique obstacles to outdoor nature based play. Research shows that black and Hispanic children spend less time playing outside than white children (Hofferth, 2009; Kimbro et al., 2001; Tandon et al., 2012). One challenge for these groups is having access to appropriate play spaces. A study in Denver, Colorado examined park location in relationship to neighborhoods for children of various income and racial backgrounds (Rigolon & Flohr, 2014). Parks were also examined for formal and informal play opportunities. The results demonstrated that low-income neighborhoods had the least access to parks, while high-income neighborhoods had more access to parks overall and better access to parks with good support for play. Low-income neighborhoods particularly were low in the number of parks where children could engage in nature play. This is an environmental justice issue since parks are not evenly distributed or as equally accessible for play (Rigolon & Flohr, 2014). A literature review by Strife and Downey (2009) also found that low-income and ethnic minority children living in low-income neighborhoods have decreased access to natural areas such as greenways, trails, and parks as opposed to their white and higher income counterparts. Finally, Ernst (2012) discussed the significant relationship between an early childhood program's reported access to a natural environment (either on-site or within walking distance) and the socio-economic status of children in the program. The study results found higher reported access to natural environments for locations where most of the children had a higher socio-economic status (Ernst, 2012). These results are consistent with the other studies mentioned above.



Additionally, Hispanics and African Americans are not as likely as Anglo Americans to use parks, recreation areas, or nature centers (Strife & Downey, 2009). As Finney wrote, African Americans have a lower frequency of visiting outdoor recreation areas or engaging in recreation in those areas when compared to whites (2014). Indeed, a National Park Service Comprehensive Survey of the American Public in 2008 and 2009 found that only thirteen percent of African Americans reported visiting a national park in the previous two years, as opposed to thirty-six percent of whites.

Barriers for Hispanics and African Americans to park usage may include being unfamiliar with natural areas, cultural preferences, discrimination based on race, differences in language, lack of transportation, and fees. Minority families may not feel welcome in natural spaces if there is not cultural diversity among staff or other participants (Strife & Downey, 2009). Finney (2014) also discussed factors that may specifically create barriers for African Americans, including a history of slavery and racism. For example, before World War II, African Americans experienced violence when visiting outdoor areas deemed to be “white”. Even traveling to natural areas may induce fear for African Americans as they travel through unknown, rural areas that are white and possibly hostile. When looking at environmental attitudes African Americans are more likely than whites to fear the woods due to the danger or harm from animals or other humans. This may be in part due to the impact of collective African American memory of the violence that has occurred to African Americans in the woods or rural areas. “While most African Americans have never seen a lynching, the act of terror perpetrated on a black person in the woods is remembered both for the place where it

happened and the act itself’ (Finney, 2014, p. 55). Efforts to encourage African American engagement with the environment have been hampered on several fronts, including in the media and with mainstream environmental organizations. There is clearly much work to do in order to ensure all our children have access to and feel welcome in shared natural spaces.

Concerns about crime and safety, lack of access to natural play spaces, decreased unstructured time, screen time, and the role of socio-economic status and race can act as barriers to children engaging in outdoor nature play. It is also possible these barriers work in tandem.

Significant benefits result from outdoor nature play for children, including physical, cognitive, social/emotional, and creative benefits. Unfortunately, outdoor play and nature play for children in the United States is in decline and is connected to negative impacts. There are a variety of barriers that may be causing this decline. There is clearly a need for new ideas and solutions, and nature-based preschools provide one solution for restoring the nature-child connection.

### **Nature-Based Preschool Overview**

Imagine a preschool where the children go on joyful outdoor adventures every day, in all safe weather conditions, to explore acres of woods and wetlands—always under the careful watch of their teachers but free to learn from what they themselves discover and enjoy. And imagine a preschool where the children are superbly prepared for kindergarten through a daily commitment to

exploration, experimentation, discovery, creativity, sharing, and play. (Finch & Bailie, 2015, para. 1-2)

This type of preschool does exist, and it is called a nature-based preschool. This section defines nature-based preschools, provides a brief history, presents curricula used by nature-based programs, explores different models for nature-based preschools, and discusses concerns about this type of program.

### **Defining a Nature-Based Preschool**

This subsection defines a nature-based preschool and describes the important elements. Nature-based preschools meld environmental education and early childhood education together (Bailie, 2010; Larimore, 2011). Early childhood education is directed towards the time of immense growth that occurs during the first eight years of a child's life. This education includes cognitive, physical, social, and emotional development. Environmental education focuses on passing along skills, knowledge, and a connection to nature so individuals will act responsibly towards the natural world. Early childhood education and environmental education are each effective, but can be even stronger when combined (Larimore, 2011).

There are a number of features that define a nature-based preschool. The literature does not precisely agree on these features, so the following is a combination of several sources. First of all, a nature-based preschool's curriculum is nature-focused, often seasonal, and includes at least half of the class session outside in a natural area, barring dangerous weather such as lightning or extreme cold. Secondly, inside classrooms contain animals and natural materials and nature-based activities are used for indoor learning

(Bailie, 2016b, Larimore, 2011). Finally, nature-based preschools must follow best practices of both early childhood education and environmental education, which requires knowledge and experience in both areas to be present among staff. This will lead nature-based preschools to help children both meet age appropriate development standards and develop an environmental ethic (Finch & Bailie, 2015).

There are other additional features common to nature-based preschools. Many nature-based preschools are connected to a nature center or environmental organization, which provides access to land and resources (Bailie, 2016b). However, Larimore (2011) noted that preschools do not need to be linked to nature centers to be considered nature-based. Therefore, a connection to a nature center is common for nature-based preschools, but not required. Many nature-based preschools feature enclosed natural playgrounds which include places to dig, water, natural building materials, logs, gardening areas, and places to hide (Finch & Bailie, 2015). Unstructured, but supervised, free play generally occurs at the natural playground. Group hikes to visit other nearby natural features are also frequent. Additionally, indoor classrooms activities, which incorporate nature, are typical of preschool in general and consist of free play, stories, art, snack, and music (Finch & Bailie, 2015, Sobel 2014). This indoor component and the presence of specific letter and number work are some of the elements that distinguish nature-based preschools from forest kindergartens, which may spend the entirety of their class time outside. Nature-based preschools also make specific and intentional curriculum choices. This is due to nature-based preschools emphasis on cognitive readiness (Sobel, 2014). As Bailie wrote,

The goals of the nature curriculum often include developing curiosity about the natural world, observation skills, appreciation of the beauty of nature, willingness to use all the senses to make discoveries, understanding of self and relationship to the natural world, understanding natural phenomena and concepts, drive to experiment, and ability to communicate about nature. (2012, p. 79)

Nature-based preschools can take on many different forms along a continuum (Finch & Bailie, 2015). At the basic end of the continuum a nature preschool needs a natural playground for daily outdoor play as well as nature brought into the classroom. In the middle of the continuum preschools meet these basic requirements but also have access to a larger natural area and regularly occurring environmental programming. Finally, at the most developed end of the continuum is a nature-based preschool hosted by a nature center (Finch & Bailie, 2015).

The definition and components of a nature-based preschool may still be evolving, but at the heart the nature-based preschool includes a nature-focused curriculum that spans both indoor and outdoor environments and provides children with unstructured free play in natural settings in order to develop the whole child, including an environmental ethic.

### **A Brief History of Nature-Based Preschools**

As noted above, nature-based preschools combine both early childhood and environmental education (Larimore, 2011). Froebel created the first kindergarten in Germany in the mid-1800s and nature experiences were an important part of the original concept (Sobel, 2016). Kindergartens spread to North America in the 1870s and 1880s

and were an entrenched part of the education scene in the United States by the 1900s. Through the years other prominent educators have also highlighted the necessity of including the natural world in early childhood education, including Montessori, Steiner, and Emilia (Bailie, 2016b). Montessori thought nature mirrors a child's natural state and that children should be outside and in the garden (as cited in Bailie, 2016b). She also believed education about nature should be an integrated part of child development. Steiner, who developed Waldorf education, included natural play materials inside classrooms (as cited in Bailie, 2016b). He thought these materials would help students appreciate the earth and build a basis for science. Finally, Emilia's philosophy includes the idea that children want to learn about the environment and are adept and strong (as cited in Bailie, 2016b). He believed nature gives children a foundation for exploration and experimentation and that children should be exposed to the natural and non-natural world. The influence of these theories can be seen in today's nature-based preschools.

Environmental education began with the nature study movement of the late 1800s and early 1900s, as well as the emerging discipline of interpretation (Bailie, 2016b). Years later in the 1960s and 1970s many nature centers were created. Additionally, Cornell created experiential environmental education programs that focused on using the senses, instead of fact based programs. Much of environmental education today uses a facts based approach, but nature-based preschools continue to highlight experiences. Environmental education and early childhood education both "have an approach to education that addresses the whole child, provide opportunities for sensory-based learning, include authentic experiences, and integrate subjects across the curriculum"

(Bailie, 2016b, p. 54). The use of nature in early childhood education is generally used for the goal of child development, while environmental education seeks to promote environmental care. Nature-based preschools try to bring both aspects together (Bailie, 2016b).

While forest kindergartens have their roots in similar European programs, nature-based preschools are specific to North America and the nature center and environmental education scene (Sobel, 2014). The first nature-based preschool in the United States was the New Canaan Nature Center Preschool in New Canaan, Connecticut, which started in 1967 (Larimore, 2011). In the early 1990s there were less than six nature-based preschools (Bailie, 2012). This number grew to close to twenty nature-based preschools housed in various nature centers by 2010 (Bailie, 2010). In 2017, over 250 nature preschools and forest kindergartens were identified in forty-three states across the nation (North American Association for Environmental Education, 2017). This rapid expansion led Sobel (2016) to compare the nature-based preschool movement to mycelium that quietly expanded underground but is now forming mushrooms all over the country.

In spite of the growing movement, the majority of families do not have an opportunity for their children to attend a nature-based preschool (Finch & Bailie, 2015). Indeed, there are few nature-based preschools options in the South Bend, Indiana region. A local Montessori school incorporates outdoor play, farm visits, and gardening into their primary/preschool classroom (Good Shepherd Montessori School, n.d.). Additionally, a licensed childcare center is available for two, three, or five days for preschool

programming and includes a natural playground. Programming includes extended outdoor time and in-classroom nature time (Early Learning Center, n.d.). A local private school also offers preschool programming utilizing the Reggio Emilia approach, including classrooms with lots of natural light and materials (The Stanley Clark School, n.d.). These programs are a great start to nature-based preschool programming in South Bend, Indiana, but there is room for growth.

Looking more broadly the northern half of Indiana in general has few nature-based program options, with only four listed programs on the Natural Start Alliance Map, plus two other programs known personally (Natural Start Alliance, n.d.). However, there are a number of programs within a short drive of South Bend, including sixteen programs in lower Michigan on the Natural Start Alliance Map and eighteen programs listed on the Northern Illinois Nature Preschool Association website, an active association hosting professional development experiences (Northern Illinois Nature Preschool Association, n.d.). These nearby programs may be a good source of support and professional contacts for a new program in South Bend.

The nature-based preschool movement has roots in both the fields of early childhood education and environmental education. The movement in the United States is growing quickly but has not been extensively developed in the South Bend, Indiana region.

### **Nature-Based Preschool Curriculum**

Similar to traditional preschools, there is no one standard curriculum used by nature-based programs. Bailie (2016a) did not mention any particular curriculum, but



rather emphasized a curriculum that focuses on seasonal, local, and real experiences, includes weekly themes based on nature, connects to academics, and allows choice time for half or more of indoor sessions. In contrast Larimore (2011) advocated selecting a research-based curriculum, as this adds validity to a nature-based preschool. A formal curriculum can also provide benefits of resources for teachers, professional development, and child assessment systems. There are a variety of preschool curricula to choose from, although some curricula may be easier to adapt to a seasonal and discovery based approach than others. The 2017 National Survey of Nature Preschools and Forest Kindergartens indicated that seventy-three percent of schools use a self-developed curriculum while twenty-five percent use a pre-established curriculum (North American Association for Environmental Education, 2017).

Three curricula methods used by nature-based preschools in this literature review include Reggio Emilia, Creative Curriculum, and HighScope. In Reggio Emilia the physical environment with many natural aspects is very important (Larimore, 2011). This method also emphasizes a child led approach and individual learning where teachers learn alongside children. Creative Curriculum focuses on including eleven interest areas in the classroom, which can be adjusted to meet the developmental needs of a particular class. Additionally, children's interests are incorporated into activities and family involvement is a priority (Larimore, 2011). HighScope includes children's active learning through engagement with real items and experiences (HighScope, n.d.). Children's interests are important and children make plans and follow through, while teachers provide support through materials and interaction. HighScope utilizes an unique

plan/do/review pattern. Nature-based preschools may also use other formal curriculum methods.

### **Nature-Based Preschool Program Models**

As mentioned above, Finch and Bailie (2015) described the continuum of nature-based preschools. However, the current literature focuses heavily on nature-based preschools hosted by nature centers (Larimore, 2011, Sobel, 2016). In practice there are a variety of nature-based preschool program models, including those in public or private schools, nature centers, family childcare homes, and childcare centers. This subsection also mentions a blended model and the possibility of transforming a class within an existing traditional preschool. As academic literature comparing different models of nature-based preschools does not exist, this subsection gathered information from program websites. Many of the nature-based preschools discussed in this subsection were part of presentations at the Nature-Based Preschool National Conference hosted by Natural Start Alliance in 2016.

**Public/private school model.** In this research the public/private school model is defined as a nature-based preschool that is part of a larger school or school district which includes primary or secondary grades in addition to the preschool. To fit into this model the school must have a principal or head of school and a school board or board of directors. Prior Lake-Savage Area School District is a public school district in Minnesota that offers both half and full day nature-based preschool programs for three, four, and five year olds at several locations (Prior Lake-Savage Area Schools, n.d.). Half-day programs operate for two and a half hours with choices of two, three, or four days a

week, while the full day program runs from 6:30am to 6:00pm Monday through Friday. All programs run from September to May. The long hours of the full day program are provided in partnership with a local childcare company. The programs are tuition based, although there are options for financial aid. The school district website stated that there are not differences in outcomes between the nature-based preschool and the traditional preschool classes (Prior Lake-Savage Area Schools, n.d.).

**Nature center model.** In this research the nature center model is defined as a nature-based preschool that is located on the grounds of a nature center and is part of the nature center organization. This model includes a program director and the nature center's board of directors. The nature center program model could be licensed or unlicensed. Nature's Way Preschool is a licensed preschool hosted by the Kalamazoo Nature Center in Kalamazoo, Michigan (Kalamazoo Nature Center, n.d.). The Nature's Way Preschool is a well-recognized model for a nature-based preschool (Sobel, 2016). The program offers half day programming two, three, or five days per week for three and four year olds and runs from September to May (Kalamazoo Nature Center, n.d.). Each class runs for three hours and includes sixteen students and two teachers. The program is tuition based, although scholarships are available for the five day program. Situated on nine acres of outdoor space the preschool site includes forests and a creek. The preschool also utilizes the nature center for seasonal field trips, including bird banding and learning about maple syrup. Special family programs are included throughout the year, including family yoga, a family concert, campfire night, and a graduation campout (Kalamazoo Nature Center, n.d.).

**Family childcare home model.** In this research the family childcare home model is defined as a nature-based preschool located in a home. The homeowner operates as the director and educator, and although additional staff may also be employed a board of directors is not involved. Family childcare homes may or may not be licensed depending on the number of children served. Wind Ridge Schoolhouse in Duluth, Minnesota is a licensed home-based nature-preschool serving children from three years old until kindergarten (Wind Ridge Schoolhouse, n.d.). The program hours are 7:30am until 4:30pm and both full and part-time schedules are available. Staff includes the director/teacher, an assistant teacher, and a guest teacher. The family childcare is currently year round but will shift to operating September to June in the coming years. Wind Ridge Schoolhouse charges a daily program fee but eligible families can apply for a scholarship through the Minnesota Department of Education. There are three learning locations at the Schoolhouse, including the indoor classroom area, the backyard with a natural playground and gardens, and access to the Superior Hiking Trail for hiking or snowshoeing. Wind Ridge Schoolhouse aims to provide neighborhood based child care and focuses on play, self-regulation, and early learning. Children exiting the program are ready for kindergarten but also have a bond with the natural world (Wind Ridge Schoolhouse, n.d.).

**Childcare center model.** In this research the childcare center model is defined as a nature-based preschool housed as part of a licensed childcare center. These centers may be independently operated, run by a religious organization such as a church, or funded and overseen by Head Start. This model includes a center director, and additional

oversight may vary from a board of directors to religious leaders or federal employees. Classrooms with infants and toddlers may also be present. Here We Grow Early Childhood Center is an independent childcare center located in Mankato, Minnesota in a refurbished schoolhouse (Here We Grow Early Childhood Center, n.d.). The center can accommodate a total of thirty-eight toddler and preschool children ages sixteen months to five years and is working on licensing to enroll infants. Site hours are 6:45am to 5:30pm to accommodate working parents and scholarships are available for the center through the Minnesota Department of Education. Here We Grow occupies two acres of land and includes a large fenced outdoor area (Here We Grow Early Childhood Center, n.d.).

**Blended model.** A blended model for a nature-based preschool program combines at least two major partners together. The OAK Learning Center Nature-Based Four-Year Old Kindergarten, modeled after a forest kindergarten, is a partnership between the City of Green Bay, the Green Bay Area Public School District, the University of Wisconsin-Green Bay, and the Bay Beach Wildlife Sanctuary. Although the forest kindergarten occurs at the wildlife sanctuary it is provided tuition free thanks to the partnerships (Beach Bay Wildlife Sanctuary, n.d.). In order for this type of blended model to work each partner must have a need the nature-based preschool helps to fulfill (S. Ashmann, personal communication, August 31, 2016).

**Transforming an existing traditional preschool classroom.** For her master's thesis, Welz (2014) observed a pilot nature-based preschool program for two and a half weeks in a Northern Ontario community school. The school had two wooded areas on site, one with a fence and one without. A public park with various ecosystems was also

within walking distance. At the conclusion of the pilot both educators involved in the study felt they would recommend a longer-term nature-based program (Welz, 2014). With an available nature setting and appropriate permission this could apply to existing public or private schools or childcare centers.

There are different models for operating a nature-based preschool program, including public or private school, nature center, family childcare home, childcare center, blended, and transforming an existing traditional preschool classroom. This research will consider the first four program models.

### **Concerns about Nature-Based Preschools**

Both professionals in the field and parents have concerns about nature-based preschools. Professional concerns include lack of academic research to back up claims made by nature-based preschools and lack of standards. Parental concerns include kindergarten readiness and safety. This subsection considers these concerns and the steps being taken to address them.

**Lack of academic research.** As noted above, the nature-based preschool movement is relatively young and these types of preschools have only recently become more widespread. There is currently not published academic research that evaluates nature-based preschools (Larimore, 2011; Mongeau, 2015). However, several studies are currently in progress, including a study on how child movement in outdoor schools compares to children at home or other preschools in Seattle and a study in Michigan to look at how students attending nature-based preschools compare to traditional high-quality preschool students in kindergarten readiness skills (Bailie, 2016b; Mongeau,

2015). Preliminary results from the Michigan study are discussed below. More published research is currently available for forest kindergartens in Scandinavia (Mongeau, 2015). These European studies indicated that children attending nature preschools and forest kindergartens are as equally prepared for kindergarten as their peers in traditional programs (Bailie, 2016b). In addition, outdoor preschool students also have perseverance, are able to work together, and are more active. Since it takes time for researchers to move through the research process to publication, it is quite possible that there are a variety of studies currently occurring in the United States and that, within a few years, this concern will be addressed.

**Lack of standards.** There are currently not quality standards for nature-based preschools (Bailie, 2016a; Larimore, 2011). This means there is not a consensus on the basic standards for how a nature-based preschool should be operated (Larimore, 2011). Licensed early childhood program are required to meet certain requirements, but these do not address the integration of nature (Bailie, 2016a). Both the disciplines of early childhood education and early childhood environmental education have their own set of best practices, and comparing these guidelines is helpful. In practice, however, each nature-based preschool operates under its own structures and practices and is guided by the director. Bailie provided rubrics to assess the practices of a nature-based early childhood program (2016a, p. 223). These rubrics include five main program areas.

1. Program Goals, Curriculum, Practices: Goals of both early childhood education and environmental education, “nature is central organizing concept”, child led and inquiry based.

2. Staffing: Teacher as a facilitator, teacher training in both early childhood education and environmental education, ongoing professional development, teachers continue to learn about nature.
3. Environment: Indoor locations “infused with nature and natural light”, outdoor has access to locations for nature play and a variety of natural habitats.
4. Nature Center: Access to naturalist staff, animals, and special events, organization encourages professional development and preschool goals.
5. Parents & Community: Communicating nature benefits and learning approach to parents and other educators, includes family programs.

Bailie noted that not all aspects of these rubrics apply to every program, as some are specific to nature centers (2016a). This is a start to creating standards, which will surely develop as the movement continues to expand.

**Kindergarten readiness.** A common concern of parents in the United States who send their children to outdoor preschools is if their child will be ready to start kindergarten (Sobel, 2014). Parents do not want their children to be at a disadvantage because they spent their preschool years playing in the woods. An unpublished study appeared to address this concern. Researchers compared children’s outcomes on a variety of measures to test language, literacy, executive function, and reasoning at both nature-based and traditional preschool in Michigan (Larimore, Skibbe, Konishi, & Soble, n.d.). Preliminary results demonstrated no significant difference on these measures



between the two schools, indicating that children both preschools are developing at similar rates and will be equally prepared for kindergarten.

Unstructured nature play also gives children the chance to develop skills common to many early childhood standards, including initiative, persistence, invention, and problem-solving. Academic success builds on the development of these skills. The many benefits of outdoor nature play, especially building social/emotional skills and cognitive development, may be the most important part of outdoor preschools (Sobel, 2014).

Finch and Bailie (2015) additionally noted that neural connections are formed in the brain when children interact with diverse settings, engage all their senses, move, and have new experiences. Nature is an excellent location for these activities to occur, especially as preschool aged children are attracted to the natural world, and promote kindergarten readiness. Finch and Bailie (2015) also pointed out specific skills needed for academic achievement that nature-based preschools promote. For example, caring for classroom plants and animals develops responsibility and staying on the trail during hikes or being quiet in order to view wild animals encourages self-control. Parents indicated the observation skills of children rise after attending nature-based preschools, and the diversity of nature encourages language development. Children may also try basic science experiments, such as testing what floats in a puddle (Finch & Bailie, 2015). Finally, as noted above nature-based preschool programs make intentional curriculum choices and include number and letter work during indoor sessions (Sobel, 2014). There are many ways in which nature-based preschools help prepare children for kindergarten,

but more research regarding nature-based preschool outcomes should also be conducted to lend credibility to these claims.

**Risk and safety.** Parents may feel concern about their children being outside every day and about the possibility of injury during nature-based play. With regards to the weather, children may come home wet or muddy every day from a nature-based preschool (Sobel, 2016). However, most children enjoy the chance to play outside every day and may not even notice what adults deem as “bad weather”. Even on rainy, cloudy days, children appear happy to play (Sobel, 2016).

Parents also fear injury during nature-based play. Indeed, many Americans want to reduce all possible risk (Sobel, 2016). This creates social and educational pressure on early childhood educators to reduce opportunities that include risk (Little & Wyver, 2008). However, children have and will continue to be hurt in nature-based play settings (Finch, 2016). Does this mean nature-based play should be avoided? Do parents avoid driving their children in cars since accidents could cause children to be injured? Nature-based play injuries are not frequent and are usually minor, including scrapes, stings, bruises, and an infrequently broken bone (Finch, 2016). This idea is reinforced by Frenkel (2017), who in her master’s thesis compared injury data at two forest kindergartens that spent all their time outside against traditional preschools. Over fourteen weeks no major injuries were reported at any site that required medical attention from professionals. Minor injuries included scrapes, small cuts, and bruises. Frenkel concluded based on this data that nature-based preschools do not pose a risk to children (2017). More severe injuries can occur, but the risk of severe injury during nature-based

play is not greater than the general risks children encounter in everyday life (Finch, 2016).

Being concerned about risk-taking is not making children safer. For example, in the 1970s litigation for playground injuries began to occur, and as a result playgrounds made changes to the equipment and playground substrate (Hanscom, 2016). However, these safety features may actually cause greater injury to children as they try to add exciting elements to play experiences that have lost the ability to stimulate children (Little & Wyver, 2008). In fact, numbers of playground injuries have not decreased but are actually increasing, although severe injury or death continues to be very rare (Hanscom, 2016). Additionally, reducing risk opportunities prevents children from developing movement skills and confidence, as well as learning about how to manage risk for themselves and learn their own limits (Little & Wyver, 2008). When children occasionally fall they learn how to adjust their motor movements to decrease their risk of falling in the future (Hanscom, 2016). It may seem counterintuitive, but falling and making mistakes will help children to gain better balance. As Little and Wyver (2008) noted,

Parents have always been concerned for their children's safety and well-being, but an exaggeration of the risks involved in many common childhood pursuits has resulted in children being denied the opportunity to engage in many worthwhile activities that facilitate their learning and development. (p. 34)

When children are not allowed to play freely and explore their outside world they may be safe. However, this one benefit is outweighed by the potential drawbacks, including poor

development, less exercise, increased weight issues, few spontaneous chances to play, decreased road sense in older children, and a decrease in a sense of place (Little & Wyver, 2008).

Experiences that include navigating physical risk are an essential part of healthy child development (Little & Wyver, 2008). Children should slowly be allowed to help make their own decisions in regards to risk so they can learn how to assess situations for themselves. Taking on managed risk can help children learn judgment for themselves, which builds confidence (Little & Wyver, 2008). It is more beneficial for children to take minor risks and learn from them than to not take risks and not understand later in life how to manage risk (Sobel, 2016). Risk is indeed complex and necessitates looking at several factors including the task at hand, the apparent risk, the chance of success or failure based on a child's ability, and the level of danger associated with failing versus succeeding (Little & Wyver, 2008).

Allowing for risk opportunities in outdoor play does not equal a disregard for safety (Little & Wyver, 2008). For example, there is a difference between a risk and a hazard (Finch, 2016). A risk is an activity that carries a chance of being hurt. On the other hand, hazards are items that will likely cause injury and are never appropriate for nature-based play, such as dead branches on a climbing tree (Finch, 2016). Educators must find a balance between risky opportunities that promote learning and ones that could cause serious injury (Little & Wyver, 2008). In addition, educators must know about the present dangers and take precautions to make sure the play space is safe for children. Examples of this include appropriate supervision and clothing, having staff carry cell

phones and first aid kits at all times, and staff training in first aid and water safety (Finch, 2016; Little & Wyver, 2008). Warden has also advocated for benefit risk assessment, which involves educators eliminating hazards while considering the benefits of risk taking and involving the child so they understand how to stay safe (Earp, 2016). Parents can also help by checking regularly for ticks (Hanscom, 2016).

Conversations about the risks and benefits of nature-based play should engage all stakeholders of a nature-based preschool program (Finch, 2016). For children to develop and gain confidence the inherent risk in nature-based play must remain. However, hazards should be avoided and risk can be appropriately managed by educators.

Concerns about nature-based preschools include lack of academic research, lack of standards, kindergarten readiness, and risk and safety. Some of these concerns should be addressed as the movement progresses while others are inherent in the nature-based preschool model.

This section defined nature-based preschools, overviewed a brief history of the movement, presented several curriculum methods used in nature-based programs, examined various nature-based preschool models, and explored concerns about this kind of preschool. As this research sought to understand the possibilities for a diverse, nature-based preschool this next section will explore diversity in preschools.

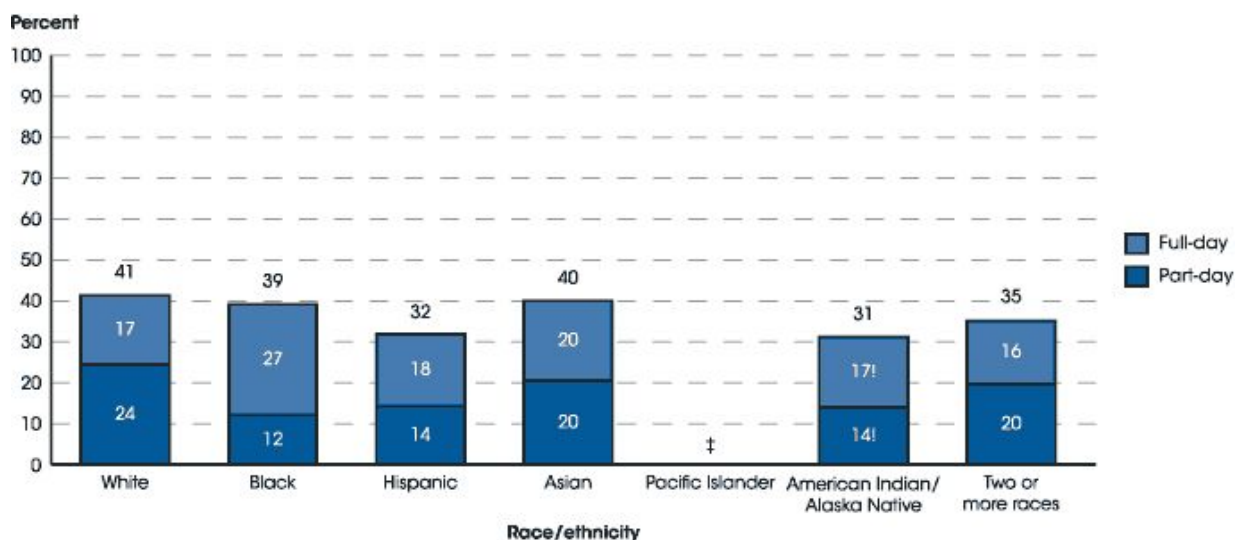
### **Diversity in Preschools**

The U.S. Census Bureau estimated there are now fewer non-Hispanic white infants being born than infants in other racial or ethnic groups, which means in the coming years no one racial or ethnic group will be the majority (Pew Research Center,

2016). In addition, by the time children reach kindergarten they have already shaped opinions around race, ethnicity, and socioeconomic status (Reid & Ready, 2013). Being connected with preschool classmates from different backgrounds could add information to these early opinions and may disrupt prejudices that could otherwise appear. This section examines diversity in preschool by looking at an overview of preschool diversity, barriers to preschool diversity, socio-economically mixed preschool classrooms, and promising nature-based preschool models for encouraging diversity.

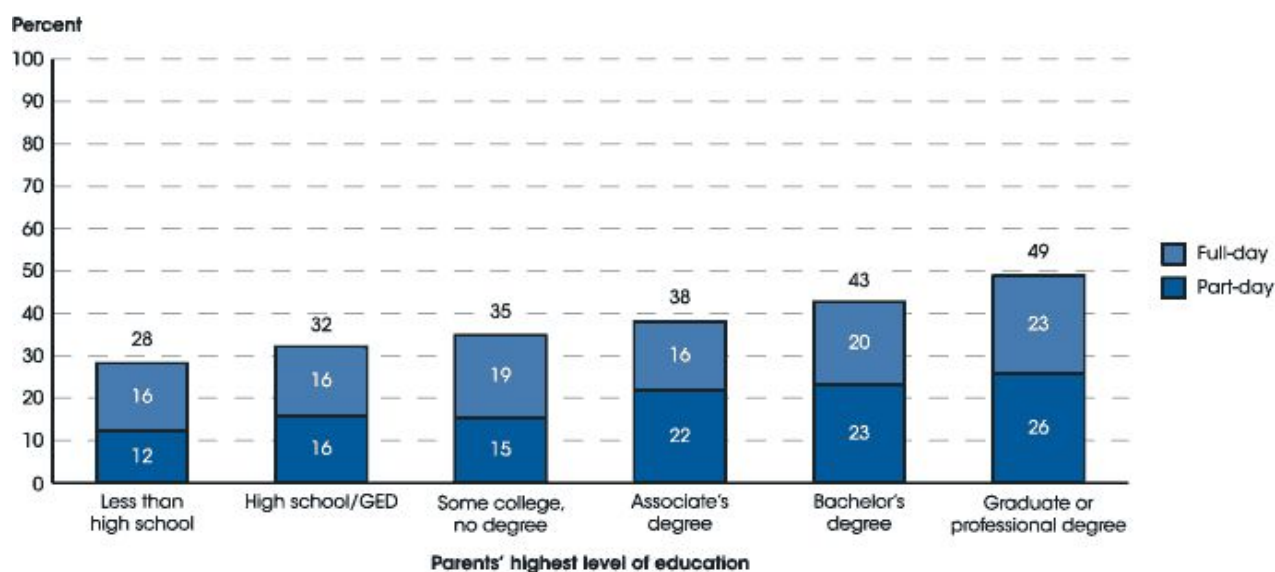
### Overview of Preschool Diversity

When discussing diversity in preschools it is important to try and understand an overall picture of the demographics of who attends preschool, since free, publicly funded preschool is currently neither required nor available to every child (U.S. Department of Education, 2015). The following two graphs presented by the National Center for Education Statistics (2016) website help convey this information.



*Figure 1.* “Percentage of 3- to 5-year-old children enrolled in preschool programs, by race/ethnicity and attendance status: October 2014.” Reprinted from *Preschool and Kindergarten Enrollment*, by National Center for Education Statistics, 2016.

This figure illustrates that fewer Hispanic children attended any preschool program than white, black, or Asian children or children of two or more races. Additionally, black and Hispanic children were more likely to attend a full day program while white children and children of two or more races were more likely to attend a part day program. Asian children were equally divided between full and part day programs. As described in a previous section not all early childhood programs are providing adequate opportunity for outdoor play, which means children attending full day programs are more likely to be missing out on the benefits of outdoor play.



*Figure 2.* Percentage of 3- to 5-year-old children enrolled in preschool programs, by parents' highest level of education and attendance status: October 2014.

Reprinted from *Preschool and Kindergarten Enrollment*, by National Center for Education Statistics, 2016.

A parent's highest level of education is defined as "the highest level of education attained by the most educated parent in the child's household" (National Center for Education Statistics, 2016, section Figure 5, para. 1). This figure shows that as the parent's educational level decreases, the overall percentage of children participating in preschool programs also declines. Additionally, children whose parents held any kind of college or graduate degree were more likely to attend a part-day program versus a full-day program than children whose parents did not hold any college degrees. If one assumes that less parental education is correlated to less household income, then this graph also shows that children living in households with less income are less likely overall to attend preschool and are more likely to attend a full-day program than a part-day program.

This assumption is reinforced by a United States Department of Education report (2015), which stated that children from low-income families have lower preschool enrollment than children from wealthier families. This is a contributing factor to noticeable achievement gaps for low-income children that start in kindergarten. Reading and math scores for kindergarten students were correlated to household income, being lower for those with less income and higher for those with more income. Reid and Ready (2013) noted these differences have increased even more as United States income inequality continues to rise. These authors also pointed out that low-income parents typically choose early childhood programs that are lower quality than the choices made



by higher-income parents. Although this is understandable given the barriers to low-income families described below, it is also concerning since research has indicated that low-income students have the most to gain from high-quality preschool (U.S. Dept. of Health and Human Services & U.S. Dept. of Education, 2016).

### **Barriers to Preschool Diversity**

It is important to examine why low-income students are less likely to attend preschool and are even less likely to attend a high-quality preschool. Potential barriers for diversity in nature-based preschools are also discussed.

**Barriers for low-income students.** As described in the first section of the literature review, the benefits from high-quality preschool are greater for children who live in low-income families and whose mothers have less than a high school degree. However, these children are also the least likely to attend preschool. What prevents these children from enrolling in preschool programs? Greenberg, Adams, and Michie (2016) reported a variety of different barriers low-income families may encounter. These barriers often occur at the same time and include lack of parent knowledge, in-flexible hours, program availability, enrollment paperwork, program location and transportation, and cost.

In order for parents to enroll their child in preschool they first need to know about the available options (Greenberg et al., 2016). Unfortunately, outreach to low-income families is not sufficient and preschool programs in the United States are not standardized, so there are often many different options in the same community. Additionally, in-flexible hours and schedules of a preschool can be challenging to

navigate for low-income families, who may not have predictable weekly 9:00am to 5:00pm work schedules. Available program space may also be a barrier, as many programs have waiting lists (Greenberg et al., 2016). For example, during the first year of the Indiana state funded pilot pre-kindergarten program, which is focused on low-income students, over 1,000 students applied for four hundred spots (McInerney, 2016). Another deterrent noted by Greenberg and colleagues (2016) could be challenging paperwork for program eligibility and enrollment. Requirements of this paperwork may include proof of income and home address, job status of the parent, or proof of enrollment in a job or education training program. This paperwork is especially hard if a language barrier is involved. Program location and transportation to and from the program can also be barriers for families. This is particularly challenging for areas with few public transportation options and long commutes to attend a half day program are even harder to manage (Greenberg, et al., 2016).

Finally, the cost of preschool programs can preclude participation for low-income children (Greenberg, et al., 2016). Even low costs for early childhood education may be a barrier for participation, especially if parent or free care from a relative is available. Childcare subsidies are meant to make child care more affordable and allow parents in low-income families to work (Shlay, Weinraub, Harmon, & Tran, 2004). This is important as childcare costs can equal over a quarter of low-income families total income, and both real and perceived costs of child care impacts a mother's job choices in looking for work and the numbers of hours to work. However, childcare subsidies are underused and most eligible families do not take advantage of these benefits (Shlay et al.,

2004). Only twelve to fifteen percent of eligible children are using childcare subsidies. A telephone survey of 196 subsidy eligible individuals among low-income African American families in Philadelphia, Pennsylvania conducted by Shlay and colleagues (2004) uncovered barriers to using childcare subsidies. One major barrier is knowledge about childcare subsidies. A quarter of those surveyed reported they did not need help with child care and half did not believe they were eligible. Communities will need to work together to address all of the above barriers for low-income preschool students. Nature-based preschools alone cannot address all these barriers, but some nature-based preschools have adopted policies to try and alleviate a few of these obstacles for low-income families, as described below.

**Barriers to diversity for nature-based preschools.** Finch and Bailie (2015) noted some barriers to diversity in nature-based preschools. First of all, the majority of current nature-based preschools are located in suburban communities, which makes for difficult access for children in rural or urban areas. In addition, nature-based preschools operating specifically at nature centers only offer half-day programs that run the length of the school year. Depending on what is offered these programs run from two to five half-days per week. This model is challenging for families that need full day care (Finch & Bailie, 2015). As noted above, since black and Hispanic students and students whose parents have lower levels of education are more likely to attend a full day program, this half-day only model may be a barrier to attendance for those students (National Center for Education Statistics, 2014). However, nature-based preschools are fully capable of transitioning to full-day programs that run all year (Finch & Bailie, 2015). As the

nature-based preschool movement continues to grow there is hope to increase access for more students.

As noted above in the subsection on barriers to outdoor nature play, African American and Hispanic families may not have as much access to or feel welcome in natural areas. These families may be less likely to seek out a nature-based preschool program for their children, especially if they are also low-income and facing the preschool barriers described above. Nature-based preschools may have a particular challenge in recruiting these types of students and may need to enact specific recruiting campaigns to this population that describe the benefits of nature-based preschools.

### **Socio-Economically Mixed Preschool Classrooms**

Currently, many preschools are economically segregated (Schechter & Bye, 2007). A majority of programs that are state or federally funded (such as Head Start) enroll only children from low-income families. In contrast, children from mid or upper income families enroll in preschools where families need to pay tuition. What is the impact of socio-economically mixed preschool classrooms? Although more research needs to be conducted on this topic, a few studies shed light on the subject.

A small study by Schechter and Bye (2007) of eighty-five low-income children compared the results of fifty children enrolled in preschools specifically for low-income families and thirty-five children enrolled in economically diverse preschools. The researchers specifically looked at receptive language growth, which foreshadows future vocabulary and reading comprehension. In the fall when children entered preschool the languages scores for both groups were similar. However, in the spring low-income

children in the economically diverse preschool had significantly higher scores than children in the low-income only preschool. In fact, scores for the low-income children in the economically diverse program were similar to scores of children from wealthier English-speaking families who attended the same program. It should be noted, however, that this was only true for low-income children who solely spoke English at home. The authors suggested these results point to the positive peer impact of higher income students on the classroom language environment. It is also interesting to point out that all the children in the study attended high-quality preschools and had above average increases in their receptive language scores. Even at this rate of language development the gap widened between children in the low-income preschool and mid to high income children. More research with larger sample sizes should be conducted on this topic (Schechter & Bye, 2007).

Henry and Rickman (2007) looked into the possibility of peer impacts in early-childhood classrooms. Is it possible that more advanced children could increase the development of skills in less advanced children? These researchers studied 630 children enrolled in private preschools, publicly subsidized preschool, and Head Start in Georgia. The researchers estimated the skills of children in each classroom and tested the impacts of peer skills at both the beginning and end of preschool. After controlling for variables the researchers found that skills of peers within the children's classroom were positively correlated with children's cognitive, pre-literary, and expressive language skills (Henry & Rickman, 2007).

Reid and Ready (2013) specifically examined the connection between preschool children's social and cognitive development and the socioeconomic makeup of their classrooms. While controlling for socio-demographic background and classroom characteristics, the researchers found positive connections between the average socioeconomic status of the class and children's language and math skills. The researchers indicated that these findings could be explained by direct peer impact and that socioeconomic makeup of classrooms should be an indicator of preschool quality (Reid & Ready, 2013). It is interesting to consider the impact of these results for children of all income levels. What is the optimal ratio of low-to-high income children for the best academic results for all children? On the whole, although the topic needs additional study, it appears that economically integrated preschools produce positive benefits. Socio-economically diverse classrooms could be part of the solution at the preschool level for closing the achievement gap and should be considered by preschools wanting to improve outcomes for low-income children.

### **Promising Nature-Based Preschool Models for Encouraging Diversity**

As noted in chapter one nature-based preschools as a whole are less diverse than the general population (North American Association for Environmental Education, 2017). However, some nature-based preschools are implementing structures that will allow for greater participation of diverse students. For example, Hartley Nature Preschool, hosted by the Hartley Nature Center in Duluth, Minnesota, now offers both half and full day programs for two, three, or five days a week (Hartley Nature Center, n.d.). They also offer a few limited scholarships for eligible families, which hopefully

reduces some of the financial burden. As mentioned above, the Circle of Friends Preschool also offers both half and full-day public school nature-based options for three, four, and five year olds (Prior Lake-Savage Area Schools, n.d.). This preschool also charges tuition, although options are listed for financial assistance. One unique feature of the full day program is a partnership with a childcare company, which allows the preschool to be open from 6:30am-6:00pm. These additional hours allow for participation by children whose parents work less traditional hours.

Tiny Trees Preschool in Seattle has set an exemplary model for making an outdoor nature preschool affordable and accessible to many families. This preschool uses the forest kindergarten model, which differs from the scope of this study, but there are still valuable insights to gain. Tiny Trees does not spend any money on buildings, since they host their classrooms in city parks (Tiny Trees Preschool, n.d.). Instead, they take those savings and spend it on teachers and provide every family with a discount on the market rate preschool price for Seattle. Tiny Trees opened four preschool sites at once, which helped them pull from different communities and allowed them to use tuition payments from higher income locations to supplement tuition for students in lower income locations. Each program has two prices, the regular price, which is ten percent off the market rate, and a financial assistance price, which is forty percent off the market rate. This business model is based on the idea that half of families will pay the regular tuition rate while the other half pays the forty percent reduced rate. Tiny Trees also claims to have a straightforward process to apply for this financial aid. Additionally, Tiny

Trees has partnered with the Seattle Preschool Program-Pathways, which provides tuition free preschool for eligible families.

In terms of program options the majority of programming at Tiny Trees is half-day preschool. However, they have also partnered with Seattle Parks and Recreation to provide afternoon care for students enrolled in morning programs, which is helpful for working families. Some locations also operate year round. Finally, every child receives free rain gear from a corporate sponsor and children attending on financial assistance or scholarships receive free snacks and lunches. This program is using innovation and partnerships to address the barriers associated with cost, financial aid paperwork, and half-day only programs. With an urban location this program also opens up the possibility of an outdoor nature education to a wide audience of children.

This section overviewed diversity in preschools, explored barriers to preschool diversity, examined socio-economically mixed preschool classrooms, and highlighted a few nature-based preschool models that encourage diversity.

### **Chapter Summary**

This chapter reviewed the literature regarding four major themes including traditional preschool, the need for nature-based preschool, an overview of nature-based preschool, and preschool diversity. High-quality preschool assists developmental growth for children during the crucial early childhood period and is especially influential for low-income students. Additionally, nature-based preschools in particular are needed to enhance children's physical, cognitive, social/emotional, and creative development through connection with nature, as barriers to nature play increase and nature play



declines. More work needs to be done to remove barriers low-income students face in attending preschool, and some nature-based preschools have promising models to encourage diversity. High-quality nature-based preschools that promote and accommodate racial and socio-economic diversity are well suited to create positive outcomes for a variety of children.

This literature creates a solid foundation for this qualitative multiple case study, which examined four nature-based preschool program models and how they may relate to South Bend in order to understand the options for establishing a new diverse, nature-based preschool. The literature established the need for both nature-based preschools and preschools that serve low-income children. Additionally, the literature defined nature-based preschools and the various nature-based preschool models that will be studied by this research. Chapter three explains the methods employed by this study and covers the topics of setting and participants, research procedures and data collection tools, data analysis process, and Institutional Review Board and Human Subjects Review process.

## CHAPTER THREE

### METHODS

Nature-based preschools are a rapidly expanding type of program in the United States. These preschools focus on both whole child development and environmental education through daily unstructured outdoor nature play and a nature-focused indoor curriculum (Larimore, 2011; Sobel, 2016). In spite of this expansion, my home region of South Bend, Indiana currently has limited nature-based preschool options. As an environmental educator interested in early childhood education, I am intrigued by the aim of this type of program to connect children and nature while also meeting child development goals. Additionally, I hope for nature-based preschools to be accessible to all children, regardless of race or class. In the literature reviewed in chapter two I presented a case for the need for both traditional and nature-based preschools, provided an overview of nature-based preschools, and described preschool diversity. This chapter presents the methodology used in this qualitative, multiple case study to consider the questions of *what are the benefits and challenges of the four main program models for nature-based preschools? How would those benefits and challenges be relevant to opening a diverse, nature-based preschool in South Bend, Indiana?*

This chapter briefly explains and presents a rationale for using a qualitative research paradigm and a multiple case study method. The setting of South Bend, Indiana and research sites, as well as the adult study participants are described. Next the research

procedures of interviews with local experts in early childhood education, document and artifact collection, and site visits to various models of nature-based preschools are detailed and I present the data collection tools of interviews, observations and field notes, document and artifact log, and journal reflections. Finally, the process for data analysis and the Institutional Review Board and Human Subjects Review is discussed.

### **Research Paradigm and Method**

This section discusses the qualitative research paradigm and multiple case study method used in this research project. Researcher bias is also disclosed.

#### **Qualitative Paradigm**

I decided to use a qualitative research paradigm based on recommendations in Larimore's book *Establishing a Nature-Based Preschool* (2011). Larimore did not specifically discuss qualitative research, but based on the suggested steps of interviews and site visits the qualitative approach is the best fit.

Qualitative research includes "...emerging questions and procedures, data typically collected in the participant's setting, data analysis inductively building from particulars to general themes, and the researcher making interpretations of the meaning of the data" (Creswell, 2014, p. 4). This research paradigm is particularly helpful for new topics, and based on my literature review I contend the topic of nature-based preschools is just beginning to emerge in the academic literature. Additionally, the purposeful sampling strategy of qualitative research is an asset in comparing various settings (Maxwell, 2009), which is used in this research when exploring different nature-based preschool models.

One of the basic characteristics of qualitative research is the disclosure of researcher bias (Creswell, 2014). In approaching this study, I believe nature-based play and nature-based preschools are useful strategies and educational models for developing the whole child, and this belief has been reinforced by the literature review. Additionally, while I am a white woman and have lived the majority of my life in suburban or rural locations in the Midwest, my time living in Washington, DC and my experiences teaching urban youth has made educational equality and accessibility for all children a professional priority for me. I also hope to eventually develop and open a diverse, nature-based preschool in South Bend, Indiana. While I have taught in environmental education and have experience teaching special programs in preschool settings, I do not currently have direct experience with nature-based preschools. I also do not have past experiences with the individuals or preschools included in this study.

### **Multiple Case Study Method**

Stake defined a case study as "...the study of the particularity and complexity of a single case, coming to understand its activity within important circumstances" (1995, p. xi). A case is studied when it poses unique interest and the study uncovers the complexity of the case. Case studies can include individuals, organizations, relationships, communities, or programs (Baxter & Jack, 2008). A case study is a research strategy, but does not use particular types of evidence or advance a single method for gathering data (Yin, 1981).

Specifically, this study is a multiple case study where four program models, or cases, were considered. Multiple case studies enable the researcher to study both within

each case and across cases. It is expected the context for each case will vary, and the multiple case study method allows for “examining several cases to understand the similarities and differences between the cases” (Baxter & Jack, 2008, p. 550). The benefit of a multiple case study is that the resulting evidence is strong and reliable, but a drawback is that multiple case studies may take substantial amounts of time and money (Baxter & Jack, 2008). My research study sought to better understand the various nature-based preschool models and local early childhood context so I am well informed of the potential options for developing and opening my own nature-based preschool.

### **Research Setting, Sites, and Participants**

#### **Setting**

The setting for this study is South Bend, Indiana, which lies within St. Joseph County. Although two nature-based preschools site were in Illinois, this study primarily focuses on the possibility of developing and opening a nature-based preschool in Indiana.

South Bend, Indiana is located directly south of the Michigan/Indiana state line and is approximately ninety-five miles east of Chicago, Illinois. The population estimate of South Bend was 101,735 people in 2016 (U.S. Census Bureau, n.d.,b). Additionally, the percentage of children under age five in 2010 was 8.2 percent. This includes children who are old enough to attend preschool. Demographically, residents identifying as white compose 62.9 percent of the population, while residents identifying as black make up 27.1 percent. Residents who identify as Hispanic compose 13.7 percent of the population (U.S. Census Bureau, n.d.,a).

Economically the region is still trying to recover from the Great Recession in 2007 to 2009. Job growth, a lower unemployment rate than in recent years, and construction indicate the area is rebounding. However, St. Joseph County still does not have as many jobs as it did prior to the recession and just under half of households in the county are labeled “working poor” (South Bend Tribune, 2015). The median household income between 2011 and 2015 was \$34,523 (U.S. Census Bureau, n.d.,b).

### **Sites**

Research sites in this study were nature-based preschool programs in Indiana and Illinois. Three sites were located in suburban areas while one was rural. At each site the nature-based preschool program was part of a larger organization serving children of varying ages, but the research occurred within classrooms for two to six year old children. Sites were identified via recommendations from committee members and publically available websites for national and regional nature-based preschool coalitions. Sites were then contacted to request participation in the study. Pseudonyms used in this study for sites are based on their program model, including nature center, public/private school, childcare center, and family childcare home.

### **Participants**

Participants in this study were two adults who served as local early childhood experts with knowledge regarding the South Bend, Indiana preschool community and four adult leaders or teachers of nature-based preschools in Indiana or Illinois. Children at nature-based preschool were observed as part of this study, but were not questioned or interviewed as formal participants.

## **Procedures and Tools**

### **Procedures**

My procedure utilized and adapted recommendations found in Larimore's book *Establishing a Nature-Based Preschool* (2011). My research had two main components. One component consisted of interviews with two early childhood experts familiar with South Bend, Indiana. The purpose of these interviews was to enhance my understanding of the early childhood field in this area and to help identify which nature-based preschool models would best fit.

The second component of this research consisted of site visits to four nature-based preschools, which represented the four main nature-based preschool program models. Larimore (2011) stated that site visits to existing nature-based preschool programs are an invaluable source of information that cannot be replicated simply by reading or talking about these programs. I visited one site for each of the basic models; public or private school, nature center, family childcare home, and childcare center, in locations as close to South Bend as possible. Preference was given to sites in Indiana since licensing requirements vary per state. Each site visit included a site tour, an interview, and an observation where I recorded field notes and took facility photographs. Artifacts obtained from these sites were analyzed. Throughout the research gathering process I journaled after site visits or interviews with local early childhood experts.

### **Research Tools**

Yin (2014) stated it is important to use more than one type of evidence to support the findings in a case study. Indeed, the chance to gather multiple sources of evidence is

one of the benefits of conducting a case study. My research used interviews, observations and field notes, and documents and artifacts to collect data. I additionally journaled during the research to help to process what I was learning and feeling.

**Interviews.** Interviews are frequently used in case study data collection (Yin, 2014). Additionally, Larimore noted it is helpful “having a list of questions prepared ahead of time” when conducting nature-based preschool site visits (2011, p. 36). I conducted semi-structured interviews with both local early childhood experts and leaders and teachers of nature-based preschools in Indiana and Illinois. I prepared interview questions based on suggestions from Larimore (2011) as well as questions related to preschool diversity (see Appendices A and B). These questions were pilot tested and were provided in advance to interview participants. The questions served to guide the discussion, but I allowed the conversation to flow naturally. As suggested by Creswell (2014), I audio-recorded the interviews in addition to taking notes and transcribed the interviews.

**Observations and field notes.** Observations are helpful sources of evidence in case study research, as, by definition, this research occurs in a real-world setting (Yin, 2014). I conducted two to three hour observations of children and teachers learning and playing and recorded field notes during site visits to existing nature-based preschools. I conducted a follow-up visit at one location in order to better complete my observations and field notes. Each observation included both outside and inside settings. I was a complete observer, as I observed without participating (Creswell, 2014), and took field notes using a Field Notes Data Tool (see Appendix C). These field notes were typed up



following the observation. I also requested and received permission prior to site visits to take photographs of nature-based preschool facilities. Children were not included in the pictures.

**Document and artifact log.** Documents in case study research are useful in supporting data from other sources (Yin, 2014). I requested materials from individuals I interviewed to support my understanding of either the local early childhood community or different nature-based preschool models. I additionally analyzed the websites of the nature-based preschools I visited to gather data related to the different program models. As recommended by Creswell (2014), I created a record of documents and artifacts through my Document and Artifact Data Log (see Appendix D).

**Journal.** Mills (2014) pointed out that journaling while conducting qualitative research can aid in recording the researcher's feelings. I wrote journal entries after interviews and site visits in order to aid my reflection on what I was learning and how that impacts opening a nature-based preschool in the future. In each journal entry I considered what I learned about nature-based preschool models and how I felt about what I learned.

### **Data Analysis**

This section discusses data analysis procedures used in this study. Within qualitative research the analysis of data occurs at the same time data is being collected (Maxwell, 2009). This makes it possible for the researcher to focus interviews and observations as findings become apparent. The researcher can also decide if it is possible to further test these findings.

In order to analyze the data I worked through the steps recommended by Creswell (2014). It should be noted that these steps are interrelated. The first step was to organize and prepare raw data after it was collected in the field by typing up field notes and transcribing recorded interviews. Next I read through all the data once to familiarize myself and wrote short descriptions of my overall impressions of each case or local early childhood expert interview, as suggested by Stuckey (2015).

I then coded the data for each case and local early childhood expert using both deductive codes based on the research question and interview questions and inductive codes as they emerged from the data. Once all the data was coded for one program model I pulled out the most important themes and completed within case analysis. As Eisenhardt (1989) recommended, I created a case study write-up for every program model and organized codes for the important themes in order to pare down the large amount of data I collected and to more fully understand each case separately. Once all four program models were analyzed in this way I also completed cross case analysis, which involved looking at each theme that emerged from coding and comparing the cases to find similarities or differences of interest to the research topic (Eisenhardt, 1989). This process of within case and cross case analysis was then repeated for the local early childhood expert interviews. Following this analysis I completed the final steps by writing narrative passages to communicate the major findings and interpreting the results.

Validity in the study is addressed through triangulation, member checks, rich, thick descriptions, clarifying bias, and including negative or discrepant data. Reliability of the study is addressed by carefully documenting the procedures.

### **Institutional Review Board and Human Subjects Review**

Following my proposal meeting with my capstone committee I completed and submitted an exempt human subject application to the Institutional Review Board at Hamline University. Although my research included the observation of minors, it only involved the observation of public behavior and I was a complete observer. My application included descriptions of the study sites and participants, research topic and methods, and the involvement of participants.

Additionally, I wrote and attached to the application an informed consent letter that was given to and signed by the individuals who participated in my research. In the informed consent letter I assured participants of confidentiality, anonymity, and voluntary participation. To protect research participants I used only pseudonyms for nature-based preschool sites and adult participants in this research. Recordings, photographs, and electronic documents were only placed on my password protected phone, password protected computer, or locked external hard drive. Audio recordings will be deleted after the completion of the study. Participation in the study is voluntary and participants can withdraw at any time without consequence.

There are limited risks and benefits to participants for involvement in this research. There is a limited risk that nature-based preschool sites and adult subjects could be deduced based on the fact that certain nature-based preschool models are not common, but the geographic classifications should be broad enough to reduce this concern and interview subjects were not asked sensitive or personal information. Benefits of the study are for a professional audience or larger society and include information that may be used

to open a new nature-based preschool and a contribution to the academic literature on nature-based preschools.

### **Chapter Summary**

This chapter described and explained the qualitative multiple case study method used in this research project. The qualitative research paradigm and multiple case study method were briefly overviewed. The study setting and participants, as well as research procedures and data collection tools were also discussed. Finally, the data analysis and Institutional Review Board and Human Subjects Review processes were described.

Chapter four presents the results of this study by describing the benefits and challenges of each program model and examining additional themes related to program models. These results are then applied to South Bend, Indiana through explanation of the local context and application of the benefits and challenges of each program model to South Bend.

## CHAPTER FOUR

### RESULTS

The purpose of this qualitative, multiple case study was to explore and examine the benefits and challenges of the four major program models for nature-based preschools, including nature centers, family childcare homes, childcare centers, and public/private schools, with the goal of better understanding these models and applying them to the local context of South Bend, Indiana. While nature-based preschool are growing across the nation in popularity, this type of preschool is not yet well represented in my hometown of South Bend. I hope to eventually open a nature-based preschool in this location that can connect children to nature while also developing the whole child. Diversity in race and class will also be another important goal for this future program. This chapter presents and interprets the results of this study to answer the questions of *what are the benefits and challenges of the four main program models for nature-based preschools? How would those benefits and challenges be relevant to opening a diverse, nature-based preschool in South Bend, Indiana?*

Results from the primary research question concerning program model benefits and challenges are presented first in this chapter. For each model a program overview is provided for background and benefits and challenges are discussed. In addition, six themes that arose as a result of cross-case analysis are examined. Next the secondary research question is considered by relating information about the local early childhood

context of South Bend, as provided by local early childhood experts, and applying the benefits and challenges of each model to this location.

To summarize the research methods as explained in chapter three, data collection for this study occurred in April and May of 2017. Four nature-based preschool programs in Indiana and Illinois were each visited for approximately half a day. Visits occurred during the morning. At one site I made a second visit in order to better observe in indoor and outdoor environments. At each site I interviewed the lead teacher or program leader, observed children and teachers learning and playing in indoor and outdoor settings, and received a site tour. Data collected included interview transcripts, field notes, and artifacts and documents provided by the sites. I also took facility photographs that did not include children and journaled after each visit. In addition to site visits I also interviewed two local early childhood experts. Collected data from sites was analyzed for benefits and challenges of each model, as well as any additional themes. Interviews from local early childhood experts were analyzed to provide local context and to help apply information about program model benefits and challenges to South Bend.

### **Nature-Based Preschool Program Models**

This section addresses the primary research question of *what are the benefits and challenges of the four main program models for nature-based preschools?* A brief introduction to each program is presented and program model benefits and challenges are identified and discussed. In two models an additional difference was also identified that could be interpreted as either a benefit or challenge depending on context. Findings are

presented here as summaries, with detailed information available in appendices E through H. Finally, six additional themes related to program models are discussed.

Before the benefits and challenges of each model are presented a few points should be made. First of all, it is not within the scope of this research, nor am I trained, to assess the quality of the programs I visited from either an early childhood or nature-based perspective. Secondly, while each model provides a program framework and unique benefits and challenges there are still many choices each program must make, including length of program, curriculum, adult-child interaction style, learning environment, financing, program assessment, and the ratio of structure to unstructured activities. I am aware that programs from the same model could function in very different ways and have tried to only select benefits, challenges, and differences based on the model and not the program choices or specific program infrastructure. As such I present a brief overview of each program to provide a snapshot of program choices. Finally, it should be noted that program models and the numbers of students served are mutually exclusive. Each model type could either serve a small number of children by only having one classroom or could serve a larger number of children by having multiple classrooms or providing multiple half day or part-time programs. However, a family childcare home model is restricted by size per home for the capacity for full time care. I have noted where model benefits or challenges may be impacted by program size.

### **Nature Center Model**

The preschool program at the nature center model is a half day, two or three day a week program that runs from September to May. Twelve children and two adults

participate in each class for a total of forty-eight children across all classes. This program has been in operation for six years. The curriculum is composed of themed, seasonal units and teachers incorporate standards from early childhood learning domains into these units. Children's interest also play a large role in guiding the learning. The program is exempt from licensing based on the limited amount of time children spend in the program. Teaching staff are paired in classes for complimentary educational backgrounds, with one teacher a master naturalist and the other a certified early childhood educator. The program manager, who is also a lead teacher, oversees all administrative aspects of the program except for tuition payments. These tuition payment compose the majority of financing for the program, although a one time donation was made that currently provides some scholarship support.

This program in particular was part of a forest preserve, which means oversight for the program includes the forest preserve's director and a board of directors composed of elected officials who represent taxpayers. This differs from a nature center run by a non-profit with a volunteer board of directors. One building is dedicated to the preschool program and includes a main classroom with live animals, ample natural light, nature-themed decorations, and various learning areas. An outdoor natural playground includes a garden, stump circles, outdoor kitchen, fort building area, playhouse, stage, and music net. Beyond the immediate building lies 350 acres of land owned by the forest preserve that includes a variety of natural habitats. Outside the forest preserve are rural and small suburban areas and a small town.



**Benefits.** The two benefits identified in the nature center model are program access to large tracts of natural habitat and program access to a variety of educational animals. The nature preserve contains 350 acres of wooded trails, prairies, creeks, and a river. The program includes daily hikes into the forest preserve, and children who participate in the program for two years are very familiar with the land. During hikes children are immersed in the natural surroundings and are able to hike up and down hills, play in a creek, and view native plants and wildlife. Additionally, besides having animals in the classroom the program also has access to a variety of educational animals that visit the program, including “mammals, birds, reptiles, amphibians and insects.” Both of these benefits provide children with a wide variety of nature experiences. While I observed that children in this program model more readily identify native plants and animals by name, how this variety of experiences impacts children’s learning or environmental ethic as compared to a model with more limited experiences is a topic for future study.

**Challenge.** The main challenge identified in the nature center model was organizational priority of the preschool program. The forest preserve has a variety of objectives and goals, and early childhood education is not a major priority for the organization. Unfortunately, this means the only value given to the preschool program is the amount of money the program earns. This also impacts the preschool program budget, including limited funding for both staff payroll and staff professional development. In the past the program manager has struggled to find quality staff for the available pay and stated, “But that trickles back to the value they place on this program, and fact is that for an elected board who represents taxpayers they can only look at this, really look at

numbers.” However, it is important to note while this challenge may apply to all nature centers funded by tax dollars, it may not hold true for non-profit nature centers where board members hold volunteer positions and whose leadership may be more supportive of early childhood education programs. As included in the rubrics for high-quality nature-based preschools, the ideal is for nature center organizations to encourage the goals of the preschool program and staff professional development (Bailie, 2016a).

Detailed information for the nature center model is located in Appendix E.

### **Family Childcare Home Model**

The family childcare home model operates from seven in the morning until five in the evening Monday through Friday. The program runs during the school year and children can attend full or part time. An additional summer program operates half days for four weeks in the summer. Capacity of the program is sixteen children with two adult staff, although at the visit only fourteen children were enrolled. The owner also owns an infant and toddler home. Children from the infant and toddler home transition to the preschool program when they are between two and three years old and can stay until they start kindergarten. The owner has operated a family child care in this home for twenty-four years and a nature-based program for the past eight years. Curriculum used in the program is an emergent, place-based curriculum that includes all learning domains, is seasonal, and is guided by children’s interests. The program is licensed through the state, nationally accredited by the National Association of Family Child Care, has received the highest rating through a voluntary state rating system, and has a certified Nature Explore classroom. Lead teachers are required to have at least a child

development associate's credential and assistant teachers must be working towards this credential when hired. A background in environmental education is not required for staff. The program owner doubles as the lead preschool teacher and also oversees staff and administrative aspects. Tuition is the primary source of program funding, although some grants have been received in the past for materials. Scholarships are not available, but the owner would accept childcare vouchers if necessary.

The preschool program shares space with the owner's personal home. The main indoor classroom area included seasonal decorations, children's art, and traditional preschool toys. While there was ample natural light there were no plants or animals in this space. The outdoor play space was in a fenced backyard and featured gardens, a stage, traditional playset, digging area, sand table, hammocks, and a dry/wet rock creek bed. Within a short walking distance from the home is a wooded area with trails, a river, and a creek where children visit on Fridays. The home was located in a residential neighborhood between a suburban and rural area and is about fifteen minutes from the center of a city with 67,000 people.

**Benefits.** The two main benefits of a nature-based preschool program located in a family childcare home are the home-like setting and the ability for a home to be located in a variety of locations. As noted in the handbook of this program, "Family child care provides for children the comfort and experience of belonging to an extended family. We provide a home like setting." I believe this atmosphere has the potential to feel more welcoming and inviting to children and families than large buildings and classroom spaces. In addition, a family childcare home can occur anywhere a home can be

purchased, and therefore can exist in a variety of neighborhoods or locations. When thinking about a diverse nature-based preschool this means a family childcare home could be placed in a diverse residential neighborhood as long as there is access to nearby nature. This is specifically in contrast to the nature center model, which in the Midwest is typically located in less diverse areas.

**Challenges.** The three main challenges of the family childcare home model are sharing home space with the program, administration and hours, and overcoming the stigma against family childcare homes. In this home the owner has dedicated the dining room, a small family room, and a storage closet completely to the program and also shares other spaces, such as the kitchen and bathrooms. Meals and snacks are provided for children through the Child and Adult Care Food Program, but all program food storage and prep happens in the home's kitchen. I observed that the owner and her family have made sacrifices of their own living space in order to operate the program. Furthermore, the majority of administrative work falls to the owner in addition to the daily program time, which is already ten hours in length per day. The owner reported that she completes the administrative work in the evenings and works fourteen to fifteen hours per day, specifically mentioning these hours as a challenge in this model. While I can imagine alternatives to each of these challenges, such as buying a house specifically for the preschool program or hiring additional staff, both of these alternatives cost money and may cut into program profits.

The final challenge faced by the family childcare home model is overcoming the stigma against family childcare homes. One of the local early childhood experts noted

that in South Bend many family childcare homes are unlicensed or licensed but of low quality, and there are few high quality family childcare homes. The second local early childhood expert pointed out that childcare centers tend to have waitlists over family childcare homes and stated, “Sometimes homes have that stigma that they’re not as safe or they’re not as good.” This view is reinforced by the fact that only thirty out of 148 family childcare homes in St. Joseph County, or twenty percent, are listed as high-quality (Indiana Early Learning Advisory Committee, 2017). The family childcare home owner in this study did not mention this stigma, but I imagine it may be an issue for new programs trying to establish themselves as high-quality and safe options for children.

**Difference.** One major difference between the family childcare home model and other models is that the owner has complete control over program management and decision making. In each of the other models the leader of the preschool program reports to at least one supervisor and a board or advisory council provides additional oversight or support for the program. This could be a benefit or a challenge depending on the personality of the owner or at different points in time. This aspect of the model gives the owner full decision making over whether to expand or contract the program, the daily structure, pricing, and which families are admitted to the program. On the other hand, there is no one above the owner to offer guidance or support, or to help with networking, fundraising, or legal matters. This would change if a family childcare home decided to become a non-profit and include a board of directors, but as reported by one of the local early childhood experts the majority of family childcare homes are for-profit operations. Detailed information for the family childcare home model is located in Appendix F.

### **Childcare Center Model**

The childcare center program model in this study is housed within and is fully part of the programming and staff of a church. The program runs the length of the school year with two, three, or five day options available. Hours are from 8:30am to 3:30pm, with before care starting at 7:30am and after care lasting until 5:30pm. The three to five year old classrooms have eighteen students and three teachers, with a total center capacity of 120 children. This program has been operating for five years and utilizes the HighScope curriculum as the primary curriculum, for which teachers receive specific training. Children's interests are an important component of the curriculum, as well as open-ended learning experiences that can be initiated by children or facilitated by teachers. The curriculum does not specifically focus on nature but allows for nature themes to be addressed.

The program is licensed, accredited by the National Association for Education of the Young Child, has the highest rating on a voluntary statewide rating scale, and has a Nature Explore certified natural playground. Lead teachers are required to have a bachelor's degree in elementary education with an emphasis on early childhood, while associate teachers need an associate's degree in early childhood, a child development associate's credential, or a bachelor's degree in a related field with additional relevant experience. Training or background in environmental education for staff is not required.

The center's principal reports to the church's finance director, who is part of the church leadership team. In addition, two advisory councils, one with community members and one with parents, provide support but do not have decision making power.

Twenty staff are employed by the center, including teachers, office and food coordinators, and music, drama, fine art, and Spanish teachers. The program is primarily funded from tuition, but partial scholarships are available and the program receives some financial support from the church. There are five classrooms inside the center, each which has a different layout and decorated theme. Classrooms contained children's artwork, photographs of children's experiences, one animal or a few plants, and traditional play areas. Not all classrooms had access to natural light. The natural playground included a large grassy hill, wooden covered bridge, playhouse, sand area, dry creek bed with logs and large rocks, wooden platform with slides, pavilion with bathrooms, and gardens. The church property also provided access to a pond and a small area of trees designated as a bird sanctuary. Beyond the property are retail areas and two apartment complexes. The childcare center is in a suburban location outside of a metropolitan area of about 150,000 people.

**Benefit.** The main benefit of the childcare center model is that parents view licensed childcare centers as quality and safe options for children. This is partly due to the fact that licensed centers are held accountable through state regulations to specific standards aimed at ensuring quality and safety. During the planning process for the childcare center in this study a decision had to be made early on whether to be licensed or unlicensed. As the principal stated, in spite of the "...tens of thousands of dollars of more money of renovations and regulations versus unlicensed" the center decided to become licensed to demonstrate a commitment to quality.

In comparing a childcare center to other program models childcare centers have better reputations in quality compared to family childcare homes. As noted above many family childcare homes are unlicensed or of low quality, a negative perception that may impact even high-quality family childcare homes. This is reflected in the fact that typically parents want to send their children to childcare centers versus family childcare homes, as noted by one of the local early childhood experts. Additionally, Indiana public school preschools are exempt from licensing unless they wish to accept state funding (Horowitz, 2016). While these public preschools receive oversight within their school districts they are not necessarily held accountable to same level of quality and safety as a licensed childcare center. Finally, while a licensed preschool program at a nature center would need to comply with the same regulations as a licensed childcare center, a nature center program may be a stretch for families in need of convenient childcare locations or who view nature as foreign, which will be discussed below. Due to quality and safety standards I think licensed childcare centers may be the first choice for parents looking for child care and may be a good avenue for introducing families to nature-based programs.

**Challenges.** The two challenges of the childcare center model are sharing classrooms with church weekend children's programs and weather restrictions on outdoor play. The first challenge of sharing classrooms with weekend children's program is most likely specific to a church based center. At the center in this study the staff need to dismantle their classrooms on Friday afternoon and reassemble them on Monday morning, due to past experiences with materials being broken and damaged on the weekends. Furthermore, the weekend programs initially planned and created the



classroom spaces. These classrooms are strongly thematic, such as jungle, farm, or sea, with bright colors and include large immovable objects, such as indoor slides, a painted scarecrow, or safari jeep. This is opposite of the open-ended classrooms the childcare center principal would prefer and makes it more difficult to infuse nature into the classrooms.

In addition, while state licensing provides accountability for quality and safety it does impose challenging weather restrictions for outdoor play. For the childcare center in this study state licensing standards considers temperatures under twenty-five degrees Fahrenheit, including wind chill, to be a safety hazard (Family and Social Services Administration, 2016). In comparison, the other licensed program model in this study, the family childcare home, did not face these same restrictions and did not limit outdoor winter play until the temperatures were below fifteen degrees Fahrenheit. Given the location and average winter temperatures for this particular childcare center, I imagine this restriction limits the number of winter days children are allowed to play and learn outside, which hinders a nature-based program. This particular challenge may or may not apply across the childcare center model due to variations by state in licensing and weather restrictions. Detailed information for this program model is located in Appendix G.

### **Public/Private School Model**

The program observed in this study was a small private school encompassing preschool to eighth grade that has been operating for six years. Due to the small size not all grades are represented each year. The primary program, which combined preschool

and kindergarten, ran a half day morning program Monday through Friday during the school year. Sixteen children and two staff composed the one primary classroom. School wide educational practices are focused on place-based, experiential education, and learning in the primary classroom blends experiences that are both child-initiated and teacher led. The only formal curriculum in the primary program is Jolly Phonics, which is used for phonemic awareness. The school is registered with the state as a private school and the primary program does not have any specific early childhood licensing or accreditation. School wide all lead teachers have a master's degree and at least eight years of experience. The lead primary teacher also had experience in teaching nature programs and had training as a forest school teacher. The assistant primary teacher had an associate's degree in early childhood education as well early childhood program experience.

Besides teaching staff the school also employs a school director and part time office assistant. All teachers report to both the faculty chair and the school director, who jointly make overarching school decisions. The school director is the liaison between the school and a small board of directors who help oversee legal and financial matters. School funding is generated through tuition, and although some informal arrangements have been made for families who need financial assistance, no formal financial aid is available.

The school is located within the building of a separate organization. The primary program uses three former dorm rooms and a modified section of hallway as the indoor classroom space and also utilizes an auditorium. The primary rooms had plants, animals,

and ample natural light, and decorations included children's art and natural items. Traditional play areas were spread throughout the space, although plastic items were limited. Outside the certified Nature Explore natural playground included swings, a sandpit, playhouse, and branches and logs for fort building. The school has access to forty-two acres of land with prairie, woods, wetlands, a pond, and a creek and has created a school garden. Beyond the property is a suburban community of a major metropolitan area and near the school are residential streets, commercial areas, and three apartment complexes.

**Benefits.** The three benefits of a nature-based preschool program at a public/private school model are building the school population, allowing children to be part of a larger school community, and providing a longer term school option for children and families. The first benefit of building the school population is a positive for all members of the school community, as school size, and subsequently school budget for a private school, contribute to the overall experience for children, families, and staff. As the lead primary teacher stated, "The early childhood piece is so important [the children] have a good experience, that program will then feed the rest of the school."

The second benefit of allowing children to be part of a larger school community makes it possible for primary children to interact with older students and participate in school wide events. Primary children interact with older students in shared outdoor time on the natural playground, in school wide events such as the Harvest Moon Dinner or school wide concerts, and through being an audience for shows or projects created by the older students. This creates a sense of community for children. As part of a school

community it is also easier for primary teachers to understand where children are heading educationally and the expected ability level of children as they enter older grades, which should ease teacher and parent concerns over whether children are ready for future schooling.

Finally, a public or private school that includes preschool provides a longer term option for children and families, as opposed to transitioning children to a new setting between preschool and kindergarten. While schools have different grade ranges, the school in this study currently allows children to attend all the way through eighth grade, so children do not need to transition to a new setting for middle school either. This provides continuity of education for children and families through most of their childhood school experience.

**Challenge.** The main challenge for the public/private school model is limited resources and stretched school staff. The challenge listed here may be specific to smaller schools and may not apply to larger school programs. I had expected before entering the field to possibly find evidence of limitations, liability concerns, or skepticism of nature-based preschool programs from a principal or school board, but surprisingly did not find evidence of this at the program I visited. However, this may still be a challenge for other schools with less supportive leadership.

The school in this study did have a school director and part time office assistant, but their responsibilities include management, paperwork, and troubleshooting for the entire school, not only the primary program. These staff also double as the school nurse, bus drivers, and substitute teachers. The lead primary teachers works afternoons in the

office and states, “You may not realize when you go to school, ‘Oh hey, you’re the art teacher this afternoon’”. Limited resources and stretched staff also means that teaching support for the primary program can be limited, as other teachers or staff may not be available to offer advice or help solve a problem, in part because the primary program is only one aspect of a larger school organization. This challenge requires staff to be flexible and independent at times in solving problems.

**Difference.** The difference identified for the public/private school model is that preschool program credibility is established by being part of a larger school organization, as opposed to licensing and regulations. As noted above, public schools in Indiana are exempt from licensing as long as they do not receive state funding (Horowitz, 2016). The private school in this study was also not held to any licensing requirements. This could be a benefit or a challenge depending on context. For a school committed to high-quality education and safety for children the relaxation of regulations may provide schools with more freedom to make program choices consistent with a nature-based program, including outdoor play. However, this elimination of licensing may also mean a school or teacher can employ unsafe practices or ignore evidence-based best teaching practices without repercussion, that may at worst harm children or at best not fully engage children at developmentally appropriate levels and leave them unprepared for future school success. The burden of quality control and safety falls to the school, with a greater likelihood of shortcomings as compared to models with external licensing. Detailed information regarding the public/private school model is located in Appendix H.

Each of the four major program models for nature-based preschools has benefits and challenges unique to the model, and both the family childcare home model and public/private school model have additional differences that may be benefits or challenges depending on the context. Some of these benefits and challenges make a large impact on the operation and programming of the nature-based preschool, while others are pluses or limitations to a model that should be considered but may not change the overall nature of a program. A person seeking to open a new nature-based preschool program should apply these benefits and challenges to their local setting, as I do below.

### **Additional Themes**

Additional themes related to the four program models emerged as data was analyzed across cases. These themes were selected to highlight interesting similarities or differences between program models and further connect the data to the literature review. The themes include nature-based play, early childhood education and environmental education priorities, commitment to child assessment, critical thinking and problem solving, program flexibility, and program diversity and barriers. Again, this is a summary of the data and specifics for each model are detailed in appendices E to H.

**Nature-based play.** In the literature review nature play was defined as “...unstructured outdoor play in natural areas that involves playing with nature or interactions with nature” (Ernst, 2012, p. 13). To greater and lesser degrees nature-based play was observed in each program model. On the natural playgrounds both non-nature play and nature play was documented. Non-nature play activities included swinging, playing soccer, riding tricycles, playing hide and seek, and building PVC pipe structures.

Nature play activities included digging in a gravel pit, pretend restaurant play with leaves and sticks for food, exploring a stump with termites inside, and climbing trees.

Additionally, nature play thrived at the nature center model and the public/private school model when children hiked or walked in the woods and were able to play at the creek or within a large thicket of shrubs and trees. In the large thicket in particular children climbed trees, played family, stacked fallen bark on a tree, discovered worms and small animal bones, and built a fairy house. Describing this play in my research journal I wrote,

There were no swings or soccer balls, no trucks or play houses, just the children and their imaginations and the natural materials around them. The children knew exactly how to play in this space and took no time getting to their play.

Despite the differences in program models and choices between sites it was encouraging to witness nature play at each location in this study.

**Early childhood education and environmental education priorities.** As discussed in the literature review, nature-based preschools combine and follow best practices of both early childhood education and environmental education in order to address both the growth of the whole child and the development of a child's environmental ethic. At the sites and models observed in this study each program ensured the major learning domains of early childhood education were covered. Additionally, in three of the programs environmental education and daily outdoor experiences were held as high priorities and a major program focus. At the childcare center, however, I observed that environmental education and daily outdoor play were more supplemental, or one equal component of many in a well rounded early childhood education. Nonetheless, the

consideration of early childhood learning domains in each of these programs should help alleviate parent apprehension regarding kindergarten readiness, a potential concern of nature-based preschool programs noted in the literature review.

**Commitment to child assessment.** Each program included in this study had a strategy for assessing children's development and progress, although strategies varied between programs. The nature center model and public/private school model both had internally composed assessment checklists and child assessment was largely based on observation. The family childcare home model used an external list of pre-kindergarten skills while the childcare center model used an external assessment with a web-based system where teachers input anecdotal notes and rated children from zero to seven for their development level on a particular indicator, which ranged from mathematics to social skills. This assessment system then helped teachers plan experiences to ensure all key indicators were covered. Child assessment is an early childhood best practice (NAEYC, n.d.) and again helps to reduce concerns that children in nature-based preschool programs will not be ready for kindergarten.

**Critical thinking and problem solving.** I observed at the nature center model and the public/private school model, where some teachers had specific experiences or training in environmental education, teachers prompted children more frequently to problem solve on their own and asked more critical thinking questions than at the family childcare home model or the childcare center model, where teachers did not have experience or training in environmental education. Examples of critical thinking questions included "I wonder what [the birds] are thinking?" and "What is new about the



outside that is different?” This is an interesting pattern to me, as encouraging children to problem solve and critically think is not limited to outdoor settings. However, I wonder if more of an emphasis is placed on these skills in the training for environmental educators as a strategy for developing the cognitive skills and whole child in outdoor settings.

Perhaps because outdoor settings have fewer obviously “academic items”, such as prominent letters, shapes, and numbers, more emphasis has been placed on these teaching strategies as a way to develop cognitive skills. It should be noted, however, that while staff to child interaction was one component of my observation I was not specifically looking for teacher encouragement of problem solving or critical thinking questions, and may have failed to notice or document instances where this occurred. A further study could specifically look at the interaction between teacher training within these program models and the prominence of staff support of children’s problem solving and critical thinking skills.

**Program flexibility.** Similar to the previous theme, at the nature center model and the public/private school model where teachers had specific experience or teaching in environmental education, teachers had plans and intentions for the day, but were willing to adjust them for the weather or teachable moments. As the program manager of the nature center model stated,

We have intentions. We use our intentions for the day and we can plan them out.

But when your children go outside and they see a pile of snakes sunning on the sidewalk and they are getting ready for their hibernacula because it's fall, then we're going to talk about why they are doing that, it's what they see, they no

longer care what it is that you're going to talk to them about, they want to know what that is!

In contrast, the family childcare home model had a more relaxed plan with abundant unstructured play and the childcare center model had a very structured and predictable routine. Certain elements of this routine would be hard to adjust, such as the amount of play time on the outdoor natural playground given the restrictions of five classrooms sharing one outdoor space. The principal of the childcare center did mention that during nice weather teachers could take their classes outside for additional time, and during my observation small group time took place outside. However, the daily routine and teaching intentions all proceeded as planned, which differs from the models where full components of the schedule were moved to the next day or teacher's plans were set aside to follow the children's led. Again, this topic could be studied further to understand how staff training within these models impacts the flexibility of the program schedule.

**Program diversity and barriers.** Reflective of the 2017 National Survey of Nature Preschools and Forest Kindergartens, child demographics at each of models I observed were primarily white (North American Association for Environmental Education, 2017). Additionally, the program manager at the nature center confirmed the trend of nature-based preschool programs mostly enrolling middle to upper class white families and mentioned this is a conversation occurring at the national level. The most diverse program in terms of race occurred at the public/private school model, which I attribute to location near a major city more than program practice. Each program model mentioned having books that included racial diversity. Beyond that program practices

ranged from not teaching about racial diversity at all to staff anti-bias training to specific lessons at Martin Luther King Jr. Day and natural discussions of race as children broached the topic. From the evidence gathered none of these programs had an on-going method for educating children about racial diversity and inclusion.

The most diverse program in terms of economic status occurred at the childcare center model, which specifically raised funds at an annual auction for scholarships and had a formal scholarship process for families. The nature center model also had some scholarship funds available and the family childcare home model was willing to accept vouchers. The public/private school model had no formal process for financial aid.

As noted in the literature review, barriers for low-income families attending preschool are often overlapping and include in-flexible hours, program availability, enrollment paperwork, lack of parent knowledge, program location and transportation, and cost (Greenberg et al., 2016). To varying degrees between programs all of these barriers were represented at the sites involved in this study, with the exception of enrollment paperwork for which I did not gather data. Specifically for nature-based preschools, barriers to diversity include a suburban location and half-day programming (Finch & Bailie, 2015). The suburban location barrier applied to three out of four models in this research and half-day programming occurred at both the nature center model and public/private school model. With perhaps an exception for location in the nature center model, these barriers are not inextricably intertwined with specific models and I believe most of these barriers could be addressed within each program model, as they are based more on programmatic choice.

Focusing in particular on lack of parent knowledge, each model stated their primary method for recruiting was word of mouth, followed by social media or a program website. The childcare center model additionally placed a magazine advertisement. The lead primary teacher at the public/private school model illuminated the concern with word of mouth recruiting and social media when she commented that this type of recruitment usually spreads to families who are in a similar peer group for level of education or socio-economic background as those already attending the preschool. While this type of recruiting has been effective for these programs, I wonder if they could attract more diverse families with broader recruitment strategies. While barriers for low-income families are challenging I think nature-based preschools should look carefully at program practices that may lessen these barriers, regardless of program model.

This section answered the primary research question regarding the benefits and challenges of the four main nature-based preschool program models. In addition two program model differences were identified, as well as six themes related to interesting similarities or differences between models. The results presented in this section are more applicable to a professional audience, while the next section has a greater personal application.

### **Program Model Application to South Bend, Indiana**

This section addresses the secondary research question related to nature-based preschool models of *how would those benefits and challenges be relevant to opening a diverse, nature-based preschool in South Bend, Indiana?* In particular this section will draw on information gathered through interviews with local early childhood experts. To

distinguish between local experts the pseudonyms Kate and Anne are used. First context for the early childhood community in South Bend, Indiana is provided, followed by application of the program model benefits and challenges to the area. It should be noted that South Bend, Indiana is located within St. Joseph County.

### **Local Early Childhood Context**

Several themes arose from analysis of the local early childhood expert interviews, including the need for early childhood programs, especially high quality programs, program elements of early childhood programs important to low-income families, and program funding. These are important themes for understanding the early childhood context in South Bend.

**Need for early childhood programs.** There is a large need for additional early childhood programs in South Bend, especially high-quality programs, and this need was repeatedly emphasized in both interviews. Kate and Anne each noted the high-quality programs in the community are consistently full, and even programs that are not high-quality have waitlists due to “lack of sufficient programs”, as stated by Kate. This need for more high-quality programs is reinforced by the St. Joseph County Profile created by the Indiana Early Learning Advisory Committee, which lists for 2016 “high-quality enrollment in known programs” at thirty-two percent and “high-quality enrollment available for children with all parents working” at only fourteen percent (2017, n.p.). This information was surprising to me, as I knew the South Bend community had limited nature-based preschool options, but was unaware of the large need for additional early childcare programs in general. The emphasis placed by both

Anne and Kate on high-quality programs reinforced for me the need to not only open a nature-based preschool, but also a high-quality preschool that will immerse children in nature as well as adequately prepare them for the next steps in their lives.

In terms of locations underserved by preschool programs in South Bend, Anne pointed out that the majority of high-quality centers reside in wealthier parts of town and that a large area of South Bend is currently in need of additional programs. Kate reinforced this idea when she stated, “I hate that there is probably a need in most neighborhoods in the county.” In particular Kate emphasized the collection of neighborhoods with high levels of poverty on the west side of South Bend. The west and southwest sides of South Bend were locations I had previously considered, and this information confirmed to me these areas do need additional preschool sites, as well as a number of other high population areas in South Bend.

**Program elements of early childhood programs important to low-income families.** The needs mentioned by the local early childhood experts echoed the barriers to early childhood programs for low-income families mentioned in the literature review, including location, hours, affordability, and transportation. As Anne stated when discussing the families in her early childhood program,

From my parent's perspective, they're working families in poverty, they're looking for a program that's going to meet and fulfill their needs, so they're going to look for something close to work or close to home, open the hours that they need and that's affordable.

The need for an accessible location for families was mentioned multiple times between the two interviews and Anne also mentioned transportation as a need for families, as some low-income families opt into Head Start in-part because of the provided transportation. In order to create a diverse nature-based preschool that is truly accessible to all families these are barriers a new program should to consider how to address.

**Program funding.** As cost for preschool programs can be a barrier for low-income families, program funding beyond traditional family tuition payments is important. Three forms of additional funding were discussed by both Kate and Anne, including childcare vouchers, On My Way Pre-K funding, and grants. State funded childcare vouchers can be used by families at any preschool site that is licensed and chooses to accept vouchers. Programs rated higher on the Paths to Quality statewide childcare rating system receive more reimbursement than lower rated programs. Unfortunately, as Anne noted the funding for childcare vouchers is not consistently available, which can create large wait lists for families. Similar to childcare vouchers On My Way Pre-K funding, which as discussed in the literature review is starting in St. Joseph County in 2018, can be used by families at any preschool program with a high-quality Paths to Quality rating. This again emphasizes to me the need for a high-quality program that is licensed and participates in Paths to Quality, otherwise families could not take advantage of these cost saving benefits. Finally, non-profit preschool programs are eligible to apply for grants related to early childhood programs. For-profit preschools are generally not eligible for these grants, so that is another programmatic choice to consider early on in the process of creating a new program.

The need for additional high-quality early childhood programs, program elements of early childhood programs important to low-income families, and program funding are all themes that influence my understanding of the early childhood context in South Bend and directly relate to my desire to open a new diverse, nature-based preschool program. These themes and concepts impact my application of program model benefits and challenges to South Bend, as explained in the next subsection.

### **Applying Program Model Benefits and Challenges to South Bend, Indiana**

In this subsection the benefits and challenges of each program model, as discussed above, are applied to the local context of South Bend, Indiana in order to identify which models present the best opportunities for moving forward with a new diverse, nature-based preschool program.

**Nature center model.** Within the city of South Bend there is only one nature center. The Rum Village nature center and park is owned and managed by the city of South Bend and includes 160 acres of woods and three miles of trails (City of South Bend Venues Parks and Arts, n.d.). While this amount of space would give a nature-based preschool access to large tracts of natural habitat, this park does not have much variety of habitat, as there are no natural water features in the park. The Rum Village nature center also does not have educational animals, which would negate that benefit of this model. Additionally, as the nature center is owned by the city of South Bend I fear the same challenge of organizational priority would apply to a nature-based preschool program, provided it is even possible to move through the right channels to open a program in this location.



In the interviews with local early childhood experts Anne initially did not think a nature center program would be an attractive option to low-income families based on location. However, when I mentioned Rum Village Anne changed her mind, since this nature center is located near more diverse neighborhoods. In the densely populated neighborhoods that border Rum Village the number of households below the poverty line ranges from thirty-three to forty-four percent, while the number of residents identifying as non-white ranges from forty-two to sixty-seven percent, based on data from between 2000 to 2013 (South Bend, Indiana (IN) income map, earnings map, and wages data, n.d.). Anne added that the location of the nature center mattered, “If it's way out then you're not going to attract the low [income] working families that need it.” For me this also eliminates the several county parks located in St. Joseph County. While these are beautiful locations they will be difficult for diverse families to access unless the preschool program provides transportation, which is an added programmatic challenge.

Furthermore, Kate noted a nature center model as a whole may be too far out of the comfort zone for the diverse populations of families I hope to reach with a new nature-based preschool. She noted while “...we have a lot of really well meaning programs and opportunities for families to be exposed to nature through community gardens” that this can feel foreign to families, especially those families that are “...extremely under-resourced and very vulnerable in our city.” This view reinforces the findings in the literature review that Hispanics and African Americans are less likely than their white counterparts to use parks, nature centers, or recreation areas for reasons including cultural preference, discrimination based on race, being unfamiliar with nature

spaces, or differences in language (Strife & Downey, 2009). I hope a new nature-based preschool will be an attractive and welcoming option for all families, and am concerned that minority families will not feel as comfortable with a nature center model as they may with other program models. Because of this concern and the challenge of working within the city government to operate a preschool at Rum Village, I feel that the nature center model is not the most promising option to pursue.

**Family childcare home model.** Currently one of the most attractive aspects of the family childcare home model is the ability for a home to be located in a variety of locations. At the moment my idea for this model would be to purchase a home near the Rum Village park and nature center. As mentioned above there are diverse populations living in the neighborhoods around Rum Village and a preschool program in walking distance of the park and nature center may be able to take advantage of the natural habitat located in the park. Additionally, a home in any neighborhood would continue to confer the benefits of a home-like setting.

As for challenges, my idea would be to buy a home that exists strictly as a family childcare home, not a location where someone also lives. This strategy has been used by several other local high-quality family childcare homes, who I may be able to use as resources if I pursue this option far enough to consider financing and budget. The challenge of administration and hours may simply be a challenge I would need to accept as part of this model, although I hope the program could eventually grow large enough to hire additional staff so I could at times step aside to attend to administrative work. Overcoming stigma against family childcare homes may be an additional challenge to

contend with in the first few years of the program, although I plan to enroll any future program in the Paths to Quality rating scale and will work to achieve a high enough rating to lend external credibility to the preschool.

The local early childhood experts were both very positive regarding the idea of a new nature-based preschool program in a family childcare home. Kate thought there is a “strong need” for this model and noted the need might be even higher than the need for the new center based on the ability for a family childcare home to be located within a neighborhood. Out of all the model options Kate choose the family childcare home model as the most attractive to low-income families. Kate did mention the capacity limitations on family childcare homes and that “...it would be really difficult to have a wide impact because you have one program or a few programs.” However, there is an appeal to me in starting out small as I step out in a new program. Anne also affirmed the family childcare home model, but specified that the need is for a new high-quality home. Again, the repeated emphasis on high-quality programming helped me to identify this as an important component of any new program. The family childcare home model is an option for a new diverse, nature-based preschool program that I plan to continue to pursue.

**Childcare center model.** The benefit of the childcare center model that parents view licensed childcare centers as quality and safe options for children would most likely continue to apply to a new nature-based preschool program in South Bend, although some parents may have concerns about risk and safety regarding daily nature play, as discussed in the literature review. Additionally, both Kate and Anne each agreed there is a need and an interest for a new childcare center in the area. The potential challenge of

sharing space with weekend programs is again dependent on the specific building used for the program, and while it should be considered may be an issue that could be worked through. However, licensing restrictions on childcare centers regarding weather for winter outdoor play, as noted above, appears to be an extremely difficult challenge for a program that values daily outdoor play through all months of the year.

One potential way around this challenge is that Indiana also recognizes a similar model known as an unlicensed registered childcare ministry. This type of center is managed by and run out of a church or religious organization exempt from federal income taxes (Family and Social Services Administration, n.d.). While these centers do still require inspections from the state and can accept childcare vouchers, the number of required regulations and amount of money needed to open a ministry is much lower than a licensed childcare center, as reported by the principal of the childcare center in this research. In addition, an unlicensed registered childcare ministry does not have weather restrictions on outdoor play, which would be more amenable for a nature-based program (Family and Social Services Administration, 2010).

However, an unlicensed program may not carry the same benefit as a licensed center in attracting families. In St. Joseph County unlicensed registered ministries are much less likely to be high-quality, as there are only three high-quality programs out of a total of twenty-seven, or eleven percent, compared to child care centers, which has eighteen high-quality sites out of a total of twenty-seven, or sixty-six percent (Indiana Early Learning Advisory Committee, 2017). Similar to a family childcare home model a new unlicensed registered ministry committed to high-quality may still face a stigma of

not being as quality or safe as a licensed center. Even so, the advantage of this type of center over a family childcare home would be the ability for a greater number of children to attend, as Kate noted. The unlicensed registered childcare ministry is another possibility I intend to explore further to see if there are any churches or other religious organizations in the neighborhoods around Rum Village or the west side of South Bend that might be interested in partnering.

**Public/private school model.** I believe the benefits of the public/private school model, building the school population, allowing children to be part of a larger school community, and providing a long-term option for children and families, would apply to most school settings, and therefore would also apply for a new nature-based preschool program at a school in South Bend. As noted in the discussion of this model above the challenges of this model may be dependent on size and whether a school is public or private, and while other challenges may arise in a different context than the one I observed for this study I think a new program could probably be adapted to meet these challenges.

However, the local school context in South Bend does not appear to currently provide a natural fit for integrating a new diverse, nature-based preschool. Anne was not able to think of any local schools that would be a good fit for this type of program. While Kate mentioned a local private school I have observed that school is one of the most expensive in the area and already has a very developed educational philosophy, which causes me to question whether they would be open to adding a new nature-based element to their program. That school also probably does not contain the diversity of students I

hope a new program will reach. Kate also thought it would be interesting to add a nature-based component to the preschools with the local public school system, although she then conceded this school system does not have the capacity to add a new element like this at the moment. Even if the school system were more open to such an addition in the future Kate pointed out such a shift would also require infrastructure support, such as training and supervisory staff in order to be successful. As I do not have the education credentials, experience, or connections to work within the local public school system or perhaps even with area private schools I do not currently plan to pursue a new diverse nature-based preschool program under the public/private school model.

This section answered the secondary research question by describing important themes related to the early childhood context in South Bend, Indiana and applied the benefits and challenges of nature-based preschool programs to the local context. Through this application I determined that the family childcare home model and the unlicensed registered childcare ministry, which is similar to a childcare center, are the most promising models for moving forward to open a new diverse, nature-based preschool program in the South Bend area.

### **Chapter Summary**

This chapter presented the results of this research study and answered both the primary and secondary research questions related to nature-based preschool program model benefits and challenges and their relevance to opening a new diverse, nature-based preschool program in South Bend, Indiana. Program model benefits and challenges were discussed as well as six additional themes related to program models. In addition

important themes regarding the local early childhood context were identified and used to help apply program model benefits and challenges to South Bend. Chapter five reflects on the main learning from the research, revisits the literature, considers research limitations, discusses future ideas for research and a recommendation, and presents the next steps for opening a new nature-based preschool program.

## CHAPTER FIVE

### CONCLUSIONS

The main motivation behind this research project was to more fully understand the four major program models of nature-based preschools, a quickly expanding type of preschool in the United States that uses nature as the central theme for both indoor and outdoor play and learning. This qualitative, multiple case study sought to answer the questions *what are the benefits and challenges of the four main program models for nature-based preschools? How would those benefits and challenges be relevant to opening a diverse, nature-based preschool in South Bend, Indiana?* Data collection included site visits to nature-based preschools, complete with observations and interviews, and interviews with local early childhood experts. Chapter four presented and interpreted the results of this study.

This chapter concludes the capstone by reflecting on the learning from this research, including major conclusions and implications, unexpected findings, and personal growth. Additionally the literature is briefly revisited and research limitations of broad parameters for data collection, wide variation between cases, and limited time at program sites are discussed. Several ideas for future research are presented, as well as a recommendation for an external accreditation process for nature-based preschool programs. Finally the next steps in my own journey towards opening a new diverse, nature-based preschool program in South Bend are described.



### **Reflection on Learning**

This section reflects on the most important conclusions and implications from this research study, unexpected findings, and my personal learning from the research experience. From my perspective there are three major conclusions to be drawn from this study. First of all, this research found that each nature-based preschool program model has both benefits and challenges unique to that model. For two models an additional difference was uncovered as well. The implication of these findings is that these benefits, challenges, and differences could be considered and applied to the local context for anyone seeking to develop a new nature-based program. In some situations it might be possible to decrease the impacts of challenges or mitigate them with foresight and careful planning. Secondly, while barriers for low-income families in attending nature-based preschools was not a primary focus of the data collection, this study concluded that evidence of barriers exists across all nature-based preschool models. Again the implication is that existing and developing nature-based preschools should consider programmatic choices to ease these barriers in order to make this type of education accessible to all families. Finally, a finding most relevant to my own goal of opening a new diverse, nature based preschool in South Bend, my own local community has a need for new high-quality programs and the most promising nature-based program models include the family childcare home model and an unlicensed registered childcare ministry, which is similar to the childcare center model. The implications of this finding and next steps towards opening a new program are discussed below.

There were not many unexpected findings in this study, primarily because the existing literature does not discuss nature-based preschool program models, which limited my expected findings prior to collecting data. I did have a few preconceived ideas for benefits and challenges of various models, some which proved to be true and some which did not. For example, I correctly surmised one benefit of the nature center model would be program access to large tracts of natural habitat, but also expected to find one benefit of the childcare center model to be the ability to enroll a large number of children. However, I realized during the data analysis process that program size and model are not necessarily correlated, even though in this study the childcare center model enrolled the most children. It was helpful at this point to consider the examples of nature-based preschool models noted in the literature review, as this assisted me in distinguishing the difference between what was unique to a program model and what was program choice. A similar thought process occurred when I did not find expected evidence of limitations or resistance from school leadership in the public/private school model, as again supportive or unsupportive leadership could vary across different programs in the same model. I was surprised, however, to learn from the local early childhood experts of the high need in South Bend for additional high-quality early childhood programs. I had heard anecdotally from other parents in the area about the challenge of finding child care, but did not realize the scale of this issue prior to the study.

Finally, I learned great deal personally through this study about qualitative research. With past experience in only quantitative biology research this study was my first time using qualitative methods. In particular I gained knowledge regarding the

qualitative analysis process, which I thought would be easier than processing statistical data until I was faced with a large amount of data I needed to code and analyze for themes and patterns. I am now also more aware of the importance of disclosing researcher bias in qualitative studies, as I understand more fully how this bias impacts aspects of the study ranging from the interview questions asked and what is recorded during an observation to how the researcher views the data. Completing the qualitative process once has provided me with insights on how to better conduct this type of research. Overall the major learning from this research project contributes to both the theoretical and practical knowledge base for nature-based preschools and also enhances my own understanding of research and how to progress with my goals.

### **Revisiting the Literature**

This section links the research back to the literature, including connecting the findings of this study and noting the most relevant aspects of the literature for this project. Current literature related to nature-based preschools is focused mostly on programs hosted by nature centers and does not compare or contrast different program models. This research study generally adds to the limited, but growing amount of literature on nature-based preschools and specifically adds information regarding benefits and challenges of various models. In addition this study also confirms possible barriers for low-income families related to preschool generally and nature-based programs in particular.

As noted above the example models of nature-based preschools presented in the literature review were important in helping me distinguish between what was unique to a

model and specific program choice. The nature-based preschool definitions, features, and concerns for both professionals and parents guided the development of my research tools and provided assistance in coding data and analyzing important themes. Barriers for low-income families in attending either traditional or nature-based preschools also served a similar purpose. This study both relied upon and contributed to the literature.

### **Study Limitations**

Limitations of this study included broad parameters for data collection, wide variation between cases, and limited time at program sites. When I entered the field to collect data I knew my research focused on program models of nature-based preschools, but my research question did not specifically focus on model benefits and challenges until after my data was collected. As Creswell (2014) noted, part of the emergent design of qualitative research is that some research aspects, including the research question, may change after entering the field. Because of the lack of specificity in the research question my interview questions and field note data tool were too broad, pulling my attention in many directions and causing me to gather irrelevant data. This may have caused me to miss important details or aspects specifically related to the research question.

Another study limitation was wide variation between cases, or nature-based preschool programs. As Yin stated, “Because comparisons will be drawn, it is imperative that the cases are chosen carefully so that the researcher can predict similar results across cases, or predict contrasting results based on a theory” (as cited in Baxter & Jack, 2008, p. 548). In determining which programs to visit I choose sites primarily based on model type and proximity to South Bend, Indiana, as opposed to how similar they were to each

other. Each program in this study self-identified in some form as a nature-based preschool. However, aside from the Nature Explore natural playground certification there is no agreed upon set of external criteria or certification process for nature-based programs. Since the official definition and features of nature-based preschools are still evolving there are currently a wide range of programs referring to themselves as nature-based. With that in mind the literature review did note the presence of a continuum of nature-based programs, with the most basic programs providing a natural playground for daily outdoor play and nature brought into the classroom (Finch & Bailie, 2015). Even at this basic level I do not believe the childcare center model used in this study qualifies as a nature-based program. In addition to licensing requirements that limited outdoor play in cold weather children also did not go outside if it was raining, restricting daily outdoor play. Also while a small amount of nature was present in the classrooms it was not an obvious classroom focus. One program not being truly nature-based made it harder to compare cases to each other and examine similarities and differences. Furthermore, in this study there were two licensed programs and two unlicensed programs, which may have impacted program choice and freedom. This difference between programs made it challenging for me to distinguish between benefits and challenges based on program model, as opposed to program licensing or choice.

A final limitation in this research was the absence of extended time spent at program sites. While observing in each program for a morning provided me with a general overview and feel for a site, I may have missed regularly occurring program aspects that for whatever reason were not included in the schedule on the particular day I

visited. As I noted in my research journal, it would be helpful for a researcher trying to fully understand a program to attend for a full week to observe program variations and nuances. While these three limitations may have impacted the research study they also helped me understand how to facilitate better research in the future.

### **Research Ideas and Recommendation**

In addition to the need for more research related to nature-based preschools in general, which is noted in the literature review, several ideas for related research projects arose from the data analysis, as well as a recommendation. The first research idea is to consider to what degree children at different nature-based preschool models develop an environmental ethic. Do children who attend a nature center model with access to large tracts of natural habitat differ in their environmental ethic from children who attend a childcare center model or family childcare home model with less access to natural land? It would also be interesting to consider how program choice within models, such as the amount of unstructured nature play at a program impacts the development of an environmental ethic. Another study idea is to explore the relationship between teacher training backgrounds, whether trained in environmental education or not, and the prevalence of either staff support of children's problem solving and critical thinking skills or program flexibility. This could occur at either nature-based or non-nature based programs. The results of such a study may highlight the types of educational backgrounds or staff training important for developing programs that are flexible and promote high levels of cognitive development.

One recommendation resulting from this study is for the creation of an external accreditation process for nature-based preschools, which would provide program certification. As mentioned under limitations above, programs can currently define themselves as nature-based without following the basic tenets of a nature-based preschool as defined in the literature. However, as also noted in the literature review the specific set of features that compose a nature-based preschool has not yet been formally agreed upon. The creation of an external accreditation process would require the professional community to agree on specific features and best practices of nature-based programs. Even if a particular program did not pursue accreditation this set of external standards may help raise program standards by increasing knowledge of expected practice. I believe the entire nature-based preschool community could benefit from the creation and implementation of an external accreditation process. These research ideas and recommendation could contribute to both increased knowledge and more standard practice among nature-based preschools and additional validation within the larger early childhood profession.

### **Next Steps Towards Opening a Diverse, Nature-Based Preschool**

Conducting this research study also provided me with the next steps to take in order to continue moving forward with my dream of opening a diverse, nature-based preschool in South Bend, Indiana, including additional education and experience recommendations and the next stages in planning the preschool program.

Interviews with the local early childhood experts solidified for me the importance of high-quality care. One of the National Association for Education of the Young Child

program standards noted in the literature review is employment of qualified teachers who have training in early childhood education and receive regular professional development (NAEYC, n.d.). Specifically in Indiana participation in the Paths to Quality program can demonstrate high-quality. Paths to Quality rates childcare programs from level one to level four, with levels three and four being considered high-quality, as noted by Kate. Programs with high-quality ratings allow families to use On My Way Pre-K funding or receive higher reimbursement rates for childcare vouchers, which is also important to me in seeking to enroll diverse families. For a family childcare home to receive a level three rating the lead caregiver is required to have a minimum of a year of experience in a licensed childcare program and a child development associate's credential or sixty hours of relevant education (Family and Social Services Administration, 2008a). In an unlicensed registered ministry a child development associate's credential is required of the director in order to achieve a level two rating (Family and Social Services Administration, 2008b).

While it is possible I may find a professional in the field to partner with who already has these credentials it seems prudent for me to pursue additional education and experience in the early childhood field, especially considering early childhood training is not part of my educational background. In terms of education that doubles as training in a curriculum method, both Kate and Anne specifically mentioned HighScope as a popular curriculum in the area due to support through the local community foundation. They each also thought this curriculum was compatible with a nature-based program, which is reinforced by the use of HighScope in nationally recognized nature-based preschool



programs such as Tiny Trees (Tiny Trees Preschool, n.d.). Due to this encouragement and the wide use of the curriculum locally I am currently taking a HighScope certification course with the idea to use HighScope in a future nature-based program. This course also conveniently doubles as one of two courses necessary for me to receive my child development associate's credential. As contact hours with preschool students is also required for this credential, and in part due to the minimum experience qualifications for the lead caregiver in a high-quality family childcare home, I am also considering applying for positions in local HighScope preschool programs.

In addition there are also next steps to consider specifically related to a future nature-based preschool. Larimore (2011) listed six steps necessary for starting a nature-based preschool. The first three steps, meeting with local preschool stakeholders, early research regarding the need for a program, and visiting nature-based preschool programs have been completed through this research. The next step is to create a philosophy for the program, which for me includes deciding on a program model and identifying potential partners. The fifth step is to determine a program location and the final step is to establish a general program outline, including student age, when to operate programming, staffing needs, curriculum, and funding. In order to also address barriers for diverse families attending I would also add to this list the need to consider student financial aid, availability of before or after care, transportation, recruitment and enrollment policies, and available food options. These steps could be taken concurrently with gaining additional education and experience. The road to opening a new diverse, nature-based preschool program in South Bend may be longer than I originally

anticipated, but I believe taking the necessary time to build a high-quality program is a worthy investment.

### **Chapter Summary**

This chapter concludes this research project by reflecting on major learning for both professional and personal application. The research implications, ideas for future study, and recommendations are all relevant for the professional nature-based preschool community. In addition study limitations and connections to the literature were discussed. This capstone also contributed to my personal understanding of research, nature-based preschool models, and how to proceed with my professional dreams of opening a new diverse, nature-based preschool program.

Overall this research adds to the growing body of literature related to nature-based preschools and specifically described previously unexamined program model benefits and challenges. While each model is unique and should be considered by anyone seeking to open a new nature-based program, any of these models can be used as a basis for a meaningful program that develops the whole child, including an environmental ethic. Beyond the models, program choice is also an important component of nature-based preschools, especially in increasing access for diverse families. Understanding and applying program models and choice to the local context is also valuable when considering a new program, which could help contribute to a greater number of nature-based preschools that enhance child development, connect children back to nature, and are available to any child.

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## Appendix A: Interview Questions for Local Early Childhood Experts

**Interviewee Name: (pseudonym)** \_\_\_\_\_

**Interviewee Title:** \_\_\_\_\_

**Introduction:** Describe my research question, define nature-based preschools and the four main program models, and explain my interest in opening a diverse, nature-based preschool in the South Bend, Indiana.

### **Current Programs**

1. I defined the four main program models of nature-based preschools that I am using in my research. Describe any additional types or program models of preschools commonly found in the South Bend region.
2. Describe any programs in the area that routinely have waitlists.
3. Describe the types or program models of preschools where the majority of low-income preschool students currently attend.
4. Describe any locations in the region that are currently underserved by preschool programs.
5. Describe how most programs are funded: tuition-based, cooperatives, state funded, grant supported, etc.
6. Describe any state or regional scholarships or vouchers available to low-income students. Are there requirements for the types of programs students can attend while receiving this aid?

### **Potential for New Programs**

7. Explain if you would agree or not agree that this region has the need or interest to support enrollment at a new nature-based preschool located at nature center.
8. Explain if you would agree or not agree that this region has the need or interest to support enrollment at a new nature-based preschool in a childcare center.
9. Explain if you would agree or not agree that this region has the need or interest to support enrollment at a new nature-based program at a family childcare home.
10. Describe any regional public school systems or private schools that may be a good fit for a nature-based preschool.
11. Describe which of these four models (nature center, childcare center, family childcare home, or public/private school) you think would be most attractive to low-income families.

Follow-up or additional questions may be asked as needed.

## **Appendix B: Interview Questions for Nature-Based Preschool Sites**

**Preschool Model:** (circle one) Public/Private School, Nature Center, Family Childcare Home, Childcare Center

**Interviewee Name (pseudonym) and Title:** \_\_\_\_\_

### **Program Origin**

1. Describe the history of this program, how it started and has changed over time.

### **Program Specifics**

2. Describe how the program is funded: tuition, grants, fundraisers, part of a larger organization, etc.
3. Describe the schedule for a typical day.
4. Describe any meals or snacks that are served and who provides the food.
5. Describe what curriculum, if any, is used in the program.
6. Describe any ways the children are assessed or evaluated.
7. Describe any overall program evaluations that are completed for internal or external purposes.
8. Describe any program accreditation or licensing.
9. Describe any programs offered for parents or students beyond the daily classes: parent orientation, home visits, family nights, etc.

### **Staffing and Management**

10. Describe the minimum qualifications for teachers.
11. Describe who handles the clerical and daily administrative aspects of the program, such as recruiting, enrollment, tuition payments, parent communication, etc.
12. Describe staff professional development opportunities.
13. Describe the management hierarchy, or chain of command, for oversight of the preschool.

### **Program Model**

14. Describe the benefits and challenges of operating a nature-based preschool under this program model (public/private school, nature center, family childcare home, childcare center).

### **Diversity and Inclusion**

15. Describe any diversity in the student population.
16. Describe how the preschool recruits new students, including any specific practices used to recruit diverse students.
17. Describe any program practices used to teach about racial diversity and/or to promote inclusion.
18. Describe any program practices used to assist low-income families.

Follow-up or additional questions may be asked as needed.

Questions 1-12 are adapted from Larimore (2011).

### Appendix C: Field Notes Data Tool

**Preschool Model:** (circle one) Public/Private School, Nature Center, Family Childcare Home, Childcare Center

**Observation Date:** \_\_\_\_\_

**Observation Location:** (inside, outside, or both) \_\_\_\_\_

**Indoor Facilities:** Number of classrooms. Additional indoor space beyond the classrooms? How is the classroom set up? Available natural play materials. Classroom decorations. Live animals or plants? Student napping space available?

**Outdoors Facilities:** Number of outdoor play areas. How big is the play area and what are the natural features? What is included in the outdoor play area? What are the children doing? Student preferences for features in the outdoor area. Is anything not used? Availability of loose parts.

**Beyond:** Is there a location beyond the immediate preschool grounds the site uses for excursions? What habitats does this include? What occupies the land surrounding the school? Does the preschool feel accessible to diverse populations?

**Staffing:** Staff-student ratio. Non-teaching staff visible? Staff demographics. Staff teaching style. Nonverbal communication. Are any naturalists present?

**Students:** How many. Student Demographics.

**Staff to Student Interaction:** Frequency. Child-directed or teacher directed learning? How often do children look to staff to answer questions or solve conflicts?

**Student to Student Interaction:** Groupings during play. What conflicts, collaboration, or decision making is evident?

**Structure:** What is the order of activities? Are activities planned or free flowing? Are teachers willing to interrupt a plan for a teachable moment? How children interact with/respond to the activities.

**Curriculum and Learning:** Is nature the focus of the curriculum? Is it evident that child development and environmental education are both goals of the program? Evidence of learning.

**Diversity and Inclusion:** Multicultural play materials or books. Positive or negative signs of inclusion of non-majority children by majority students or staff. Any signs of socio-economic diversity or accommodation.

**Conversation:** What are students/staff talking about and with whom?

**Researcher Impact:** How is researcher affecting the scene?

**Overall Researcher Thoughts:** Feelings, impressions, or criticism.



## Appendix E: Nature Center Program Model

### Benefits

#### *Program access to large tract of natural habitat*

##### Interview

- Today I didn't really give them a big choice on it, but these are 4 years olds, so this is their second year here, they all know the 350 acres really, really well.

##### Field Notes

- The access to the woods, trails, and creek is a great benefit of this program. Children seemed free to explore and enjoyed the hike outside.
- On the hike the group saw two deer and excitedly shouted "White-tail deer!" A child spotted horse tracks and scat. A child spotted two ducks and identified skunk cabbage.
- As the hike continues children found violets, mayapple, and trillium.

##### Artifacts and Documents

- Children will discover the wonder and beauty found in Hoover's nearly 350 acres of prairies, woodland trails, and creeks, as well as the Fox River.
- By locating Natural Beginnings inside the preserve, the children have access to numerous daily experiences with plant life both inside and outside the physical classroom. Aside from daily hikes amid the native plant life, the children will tend the outdoor gardens as well as care for the indoor plants.

##### Research Journal

- This preschool has 350 acres of woods, hills, prairies, creeks, and rivers in which to hike, view wildlife, and play. This felt like true nature immersion. The class was IN the woods and playing in a real creek. There were physical challenges of hiking up and down hills and the wildflowers were plentiful.

#### *Program access to variety of education animals*

##### Artifacts and Documents

- Children will have daily experiences with animals inside the classroom. Children are taught the correct way of handling the classroom's educational animals. We also have many other mammals, birds, reptiles, amphibians and insects visit our classroom throughout the school year some of which come from our [nature museum].

### Challenges

#### *Organizational priority*

##### Interview

- Because we are a forest preserve there are so many things the forest preserve does, rightfully so. Their main concern is not early childhood education, so we are low hanging fruit, low man on the totem pole I guess, and so there's not a lot of value seen in this program except for how much money are we bringing in. Bottom line.
- Budget is an issue, staffing has, up to this year, it's been hard to me to find people that want to work for what we're allotted to pay them. I would say budget for the quality of staff that is needed for this is hard. But that trickles back to the value

they place on this program and fact is that for an elected board who represent taxpayers, they can only look at this, really look at numbers.

#### Research Journal

- I thought the program manager made an interesting comment about how the nature center values the preschool as a cash generating program and not as an interest in promoting early childhood education. That may not be true though across every model, as the board of this center was publically elected as opposed to volunteer appointments.

### **Nature-based play**

#### Field Notes

- Gathering/drop off time. Parents and children arrive while children play in the trees and bushes close by.
- Some children collected sticks on the hike and pretended they were swords or telescopes. “Sticks can be anything we want.”
- Some children threw rocks in the creek, while others poked sticks. Some children got wet or muddy.

#### Artifacts & Documents

- While exploring, children could be climbing, fort building, digging, engaging in water play or acting out dramatic play.

### **Early childhood education and environmental education priorities**

#### Interview

- I want [teachers] to tell me three different benchmarks and they have to be from three different domains. I don't want to see that one person gives me literacy or gross motor all year and that's all they've touched on, because that's not the whole child.
- I try to have an environmental educator and an early childhood educator in each class.

#### Field Notes

- The themes for the day were a pirate theme and chickens/eggs. For this class session it felt like environmental education was the larger topical focus, but social/emotional health and learning was addressed throughout (such as using kind words, how to address conflict, how to let someone else be a leader).
- Circle time inside. Sang the seasons song and played a “yes/no” game about what animals lay eggs with laminated pictures. The children knew this well. Sang a good morning song. Program manager read a treasure adventure that she wrote based on what the children previously had wanted to include in the story.

#### Artifacts & Documents

- Program Mission: To nurture whole child development through primary experiences with nature while initiating them into a life-long, meaningful relationship with the natural world.
- Program goals address both environmental education and early childhood development.

- Students will be exposed to phonetics, numbers, counting, and more through these organic interactions. This program strives to foster a child's natural curiosity and build a life-long love of learning.
- Circle time includes singing our good morning song, discussing weather, calendar or our Jolly Phonics letter of the week. Children may take part in thematic conversations, listen to stories or poems, explore movement or receive special visits from naturalists or from the [nature museum] inhabitants (animals).

### **Commitment to child assessment**

#### Interview

- I do not quiz them ever. But I can tell you because we are measuring tracks this year, your child knows numbers. I can tell you because they are counting acorns or they are looking for letters when we go out on a letter hike.
- I can tell you where they are, every child right now off the top of my head without drilling them or skilling.

#### Artifacts & Documents

- Child Assessment: Includes learning domains of social/emotional development, language development, cognitive development, literacy, mathematics, science, motor skills, and environmental awareness.

### **Critical thinking and problem solving**

#### Interview

- Critical thinking discussion starters, these are how we want to talk to our kids, and I know I'm guilty of using quiz questions, but this is more of what we want to see. "I wonder how that happened, I wonder why that happened, How did you think of that", get them thinking their own thought process is a big thing.

#### Field Notes

- The program manager directed attention to the birds, "I wonder what they are thinking." "What do you think they are saying?"
- Child: "My hands are dirty."
  - Program Manager: "I wonder what we should do about that."
  - Child: "Maybe I should wipe them on something."
  - Program Manager "I like your thinking."
- The program manager asks leading questions, such as "How does the rock feel?"

#### Artifact & Documents

- We encourage divergent thinking and reflection by asking open-ended questions and providing information in response to children's ideas and insights.
- Our instructors are trained in eliciting critical thinking skills from the students and having powerful interactions rather than quiz-type interactions.

### **Program flexibility**

#### Interview

- Any, all of [the daily schedule] can take place outside. It just depends on the weather. So I saw the afternoon class was taking their backpacks out. That means there out there journaling and they're going do their snack out there while they're



out today. So it's a gorgeous day and they have the liberty to do that as long as they're touching on some of our core curriculum.

- What I say is, we have intentions. We use our intentions for the day and we can plan them out. But when your children go outside and they see a pile of snakes sunning on the sidewalk and they are getting ready for their hibernacula because it's fall and then we're going to talk about why they are doing that, it's what they see, they no longer care what it is that you're going to talk to them about, they want to know what that is!
- Our themes are seasonally based, what they see outside is what they are interested in, but like I said we went off on pirates for six weeks and that wasn't in a [curriculum] tote and that's perfectly fine.
- (Referring to how the pirate unit began) [The children] saw the box when we were out in the woods and they were like "What is that?" "I don't know, let's find out." So we went across or around that little creek bed and pulled it out and it was a treasure chest so then they thought "There's 350 acres here, there's treasure buried everywhere!"
- [The children] wanted to make a raft to get to the other side because they thought pirate ship, or pirate treasure was on the east side and the west side. We have creeks that run to the river, we're right in-between those, on both sides, and they wanted to get to the other side, so we made a raft and that's outside of our building against the wall. And so they did and when they got to the other side I thought for sure they were going to be disappointed because I don't know where there is other geo-cache hidden in the forest, but they found those ice chunks and it was diamonds!!
- (Referring to pirates and ice) We studied the ice, we used food coloring and dye and salt to see what would happen, so it's just like that, you've got to be ready and fluid and roll with it kind of stuff.

#### Artifacts and Documents

- We value spontaneity in activity and take advantage of the "teachable moments" that we are afforded.
- Although every day promises to be a new adventure for our class, we maintain a loose, but structured schedule with predictable events throughout the day.

#### Field Notes

- The schedule was teacher directed but child influenced, as children helped some to decide what would happen within a particular activity. Teachers guided the overall flow and schedule.
- The activities for the day were planned, but adjustable. Teachers were willing to interrupt a plan for what the children wanted instead.

### **Program diversity and barriers**

#### Interview

- Describe our diversity, you see where we live, right. So it's a reflection of our society and what we've got right here. There's not a lot of, I mean we have a few different ethnicities in here, but not so much.
- Our books that we have include children of different colors, and that's about it.

- (Regarding recruiting) A lot of social media. Website, we just had an article in the newspaper last week, a big front page spread. Word of mouth is probably our best.
- How well are [diverse populations] being served anywhere for nature-based early childhood education. That is the hot topic in our field right now. Is how can we better serve them, and we're not. It's usually middle to upper class white families that enroll their children into nature-based early childhood education. That's just the fact, and we're working on a national level, how do we partner up with other organizations who are devoted to diversity and inclusion and bringing those kids in.
- (Regarding schedule) We have morning Monday/Wednesday/Friday and a morning Tuesday/Thursday. And then an afternoon Tuesday/Thursday and an afternoon Monday/Wednesday/Friday.
- Then as far as economic, which I think you get into there, we have a scholarship. It's not a scholarship that renews itself every year, it was a lump sum that was donated to us for that specific reason, and so we have to look at it every year to see how much we have in there, how much we can parcel out, will it be a percentage of tuition or cover one or two whole tuitions. That becomes a question every year and they still haven't really figured that out for next year.

#### Field Notes

- No visible multi-cultural play materials or books.
- Outside the forest preserve to the west are farm fields and some subdivisions. To the east is a small town, which feels middle class. Only one small apartment complex was visible in the town.

## **Appendix F: Family Childcare Home Program Model**

### **Benefits**

*Ability for home to be located in a variety of locations*

Research Journal

- I can also see how a family childcare home perhaps has the potential (in a place like Indiana) to be located in a diverse area, as opposed to nature centers which are usually in less diverse locations.

*Home-like setting*

Artifacts & Documents

- Family childcare provides for children the comfort and experience of belonging to an extended family. We provide a home like setting; therefore we do not follow a strict routine.
- We will provide your child with loving care, understanding, patience, and guidance in a secure, happy family setting.

### **Challenges**

*Sharing home space*

Interview

- (Regarding food program) CACFP: the child and adult food program. We serve breakfast, lunch, and a snack in the afternoon.  
Janelle: Then all the storage and prep just happens right here in your own kitchen, you don't have a separate refrigerator or anything else, it's all right there.  
Owner: Yeah, it's all right here.
- The challenge is sharing the space of your home. Where, I don't know if I wasn't living here if I'd still be here fifteen hours a day, but I probably would be.

Field Notes

- Personal space for the family in the home included a combined dining/living room with a small table for four and two bedrooms. Shared space in the home was the sun room (storage for jackets and boots), the outside patio (small picnic tables for eating), two bathrooms, and the galley kitchen. The dining room area, small front room, and storage closet were completely used for the daycare.

Research Journal

- This nature-based preschool is based out of the owner's home, and she and her family have certainly made sacrifices of their own living space to accommodate this. This model would really need the buy in of an entire family in order to work.

*Administration and Hours*

Interview

- Janelle: Describe who does the clerical and daily administrative aspects of the program like recruiting, enrollment, tuition payments, that's all you. And when do you do that kind of stuff?  
Owner: I do that in the evening. I work fourteen or fifteen hours a day. My program assistant takes care of all the food program stuff, but that's pretty simple.

Research Journal

- The owner has to plan and work outside of the childcare hours in order to meet all the needs.

### *Overcoming stigma against family childcare homes*

#### Local Early Childhood Expert Interviews

- We have a very large number even in St. Joe County, which is largely urban as you know, that are home-based and I would say that a significant portion of that are unregulated. Maybe they are licensed, maybe they are in Paths to Quality, Level 1, but very few unfortunately high-quality home programs. With that in mind they use a plethora of different approaches, some have a curriculum, some don't. I would say it's a minority of programs that have a high-quality, research based curriculum.
- Most centers are full versus homes. But I think, again, from personal experience, I think sometimes the homes kind of have that, you hear about homes all the time in the news, so you want the center.
- There's an even greater need for high-quality care and sometimes home have that stigma that they're not as safe or they're not as good.

### **Difference**

#### *Owner has complete control over program management and decision making*

##### Interview

- The hierarchy would be [the owner] and then lead teacher, and then the assistants. The assistants they go to the lead teacher and then the lead teacher comes to me.

##### Research Journal

- One big benefit I see is that the owner has complete control over her program and doesn't have to answer to a director or a board for the program. She has full say over whether to expand or contract the program, the daily structures, the pricing, and which children are admitted to her program.

### **Nature-based play**

#### Artifacts & Documents

- Some of the children dig for worms daily, some play with the loose parts.

#### Field Notes

- (Non-nature based play) Children played on the play set, in the hammocks, and on bikes. Some children pretended to be babies/big sisters. The new PVC pipe/ball station was popular. One boy played solo with a big truck. Two children got out clipboards to use for coloring.
- A group of younger children sat at a table and collected maple seeds, breaking them open and calling them "food." One girl talked on a bark cell phone. There was a lot of pretend family play. Some children dug in the gravel pit.
- Children scooped the loose corn from the bin into smaller metal pails for play. A few kids sit on the grass to play with corn. One child spread corn "on the tracks for chickens".
- Children walked around the dry creek bed, balancing on the rocks.

### **Early childhood education and environmental education priorities**

### Interview

- I take a lot of photographs of the kids to help with at teacher conferences and to make sure that we are learning all of those learning domains that are required for preschool. The older kids, like 4 and 5, have their own journals, and I'll have them write their alphabet or they'll draw pictures and then they'll tell stories about what they have drawn for language. And simple things of math will be out here, let's count the trees, or simple little things to get them math and colors.

### Artifacts & Documents

- We are inspired to bring the same experience of awe and wonder we encountered to the children in our care. Our goal is to model love and kindness to all living things so our early learners will continue the work of nature preservation.
- [Our] curriculum is guided by the children's interest. The curriculum is adapted to educational standards while preserving developmentally appropriate practices for each age group served in our family childcare home.
- While nurturing nature as well as each other, objective goals and standards are being met as the children are engaged and learning in our "placed based" program. We educate about wildlife and plants that are native to our state and the Native Americans who came here before us. There is always something new to be unearthed and explored in our outdoor classroom.
- While in my care your child will have the opportunity to participate in a wide variety of activities, which include all domains of early childhood education.
- We will provide preschool curriculum, while using the seasons and interest in nature to develop large and small motor skills.

### Field Notes

- Specific curriculum was not evident, but focus on nature and child development were both evident. For example, nature images were used in circle time, but children could also say the ABCs and count. The children had good gross motor skills.
- Inside Circle Time: weather, calendar (month and day), days of the week song, counting acorn images, two addition problems, a discussion of full names and asked children to say their full name, spell the color yellow, song for the color yellow, ABCs to movement choice. Children took turns leading these different activities.

## **Commitment to child assessment**

### Interview

- I do use the, Funshine has an assessment with a check-off box. We do that twice a year with the alphabet, numbers, letters, colors, those pre-kindergarten skills. And you know, physical they are always like "can they hop on one foot" or those physical things too are the basics.

## **Critical thinking and problem solving**

### Field Notes

- The owner asked a pair of children working with the PVC pipe, "What are your intentions?"

### **Program flexibility (regarding unstructured play)**

#### Artifacts & Documents

- We allow the children many hours of unstructured play and celebrate with them as they discover an insect, cross the monkey bars, or pump their feet on the swing for the first time.
- Unstructured play is an important part of a child's early learning years. Unstructured play is where children learn social, critical thinking and problem solving skills that will be needed to become life long learners.

#### Field Notes

- Outside of the beginning indoor circle time planned activities (besides play) were not observed.

### **Program diversity and barriers**

#### Interview

- We do have a biracial child on Tuesdays and Fridays, and he also is ADHD.
- We have some books that we read and we talk about. We have an African American doll. Other than that, we talk about Native Americans and I put it out there as supporting all diversity, we are all unique and there are differences, and commonalities. We don't make it a really big issue, if it comes up we talk about it, but don't really, I guess, teach about, I might mention Kwanzaa and other religions and such, in a general way in the Christmas season, but we don't do a lot of like, we talk about Hispanic or tacos or something like that but other than that we just really don't. And not like a whole lesson on diversity.
- Basically our recruiting is by word of mouth. I'm at the point where I have people contact me and I will tell them I have a waiting list, but come for a tour. I don't really have a waiting list because I pick and choose who I want in the program. The last people that came by I really connected with them and they connected with my staff over there and they said, "I thought you had a waiting list", well that's what I tell everyone, if you're really really interested in coming here then you will show up for a tour.
- I will take voucher kids if it ever arose.
- (Regarding raising matching funds) It was a few years ago when the first pilot came out, I think it was [state funded preschool program] because there are so many programs going around and you had to find the matching funds. Say, yes I have an opening for two kids, so the money would come from the state to pay for that child's preschool tuition, but then I was going to have to go out and say "Hey United Way, will you make up the other half for this", they were only giving you half, and I thought that was ridiculous.

#### Artifacts & Documents

- [The program] is open from 7:00am until 5:00pm Monday through Friday during the school year. Children can attend full or part time.

#### Field Notes

- The neighborhood feels like a middle income area, but it could be accessible to diverse families from the nearby city with reliable transportation. No visible apartment complexes or low-income housing.
- No visible multicultural play materials or books.

## Appendix G: Childcare Center Program Model

### Benefits

*Parents view licensed childcare centers as quality and safe options for children*

Interview

- Principal: The first decision was what level of quality would you want this school to be. Would it be NAEYC accredited? Would you want it to be licensed or do you want it to be an unlicensed, registered ministry? Each of those comes with its own level of regulation. So one of the early responses, and this did not have to move in this direction, was to be a licensed center. That is tens of thousands of dollars of more money of renovations and regulations versus unlicensed, registered ministry, which recently just had to even have running water. It's four pages of documents versus forty. So a commitment to quality.
- Local early childhood expert: Most centers are full versus homes. But I think, again, from personal experience I think sometimes the homes kind of have that, you hear about homes all the time in the news, so you want the center.

Research Journal

- However, it's possible that diverse families will be most comfortable sending their children to either a childcare center or a school, as opposed to a family childcare home or a nature center.

### Challenges

*Sharing classrooms with church weekend children's programs*

Interview

- It is definitely a tension because we would very much just like to leave our spaces up at the end of a Friday, rather than every Friday we take them down and every Monday we're putting them back up. All the shelves get put away. There are upwards of sixty to seventy children in the classrooms and they are not respectful, the volunteers are middles, to high school, to adult volunteers, and they are not respectful of the materials and things just literally get broken and damaged. That's why you saw our documentation up higher, because children will literally rip down our documentation.
- (Reflecting on nature helping children to learn at their fullest capacity) A completely nature-focused program for children can do that. It would be so terrific to be able to do that all the time. Unfortunately, kind of how our rooms are and where we are located, we can infuse it a lot, but we can't at least at the moment, because we can't for example change our rooms, they're really highly themed. I don't really want them to highly themed, that's actually bad. Somebody that's knowledgeable would come in, somebody years in the field, and go, "Man your rooms are so themed" and it's just so true because you want them to be actually open-ended, you don't want to have a big 'ol giant whale in there and you know all the slides and stuff that we have, we don't want that.

*Weather restrictions on outdoor play*

Field Notes



- Children do not go outside if the wind chill is twenty-five degrees or below, above ninety-five degrees, or is an air quality day. They also do not go outside in the rain, as there is not enough rain gear for all the kids. They may go out in inclement weather in smaller groups.

### **Nature-based play**

#### Field Notes

- (Non-nature-based play) During outside play time many student immediately jumped on the tricycles and rode them around the sidewalk. Some kids played barefoot soccer in the sandpit.
- One boy climbed a rock and jumped into the sand. A few girls picked dandelions. There were girls eating clover and climbing trees. The girls filled buckets with natural treasures. A few boys were pretend playing on the logs that they found “gold” wood chips and needed to run from sharks. Three boys dug a ditch in the sand and were making an “ant house” or “large hole”.
- A few girls were digging in a stump to discover termites while boys jumped on rocks. Some children drew with chalk on rocks and others collected mushrooms.
- One girl made pinecone art during indoor work time.

#### Research Journal

- I also really appreciated being able to see the children engage in nature play outside. At first I was worried that the tricycles detracted from nature play, and I think to certain extent they do, but I was pleased to see that after an initial burst of time on the trikes that children really settled into deeper play, exploring, collecting, creating in the sandbox, and imaginative play with natural materials.

### **Early childhood education and environmental education priorities**

#### Artifact & Documents

- [This school] is a faith-based private school for young children that provides quality care and education. Honoring the family as the child’s most influential teacher, our loving and professional staff partners with those closest to the child to support safe, active learning in environments purposefully designed to inspire wonder and engage the whole child.
- We embrace the most effective methods and materials in the field of education for our programs, cultivating a community of professional learners among our staff.
- Teachers plan daily experiences using the Common Core standards and [state early childhood standards]. We meet with local elementary schools to ensure our children learn well and are ready for their next step.
- The children at our school jump off rocks and logs, pick fresh strawberries, furiously pedal their trikes and dig villages in the sandbox with caring, intentional teachers by their sides.
- List of Key Developmental Indicators includes early childhood domains of approaches to learning, social and emotional development, physical development and health, language, literacy, and communication, mathematics, creative arts, science and technology, and social studies

#### Field Notes

- Nature is not always the curriculum focus, but it currently was in four of five classrooms. Child development is clearly the top priority, while environmental education is a topic to be studied and fun for outdoor time. The preschool uses the HighScope curriculum, which has Key Developmental Indicators.
- Circle time included a good morning song, adding 1 link to the counting chain for the number of school days, a fictional book about hedgehogs, and a prayer.
- Kindergarten classroom: Pond study. After outside experience continued indoor learning through the life cycle sequencing cards and pond artwork. Displayed fish watercolor in the classroom and studying feathers. The class was hatching chicken eggs. The learning progresses from outside study to representation inside to more abstract concepts.
- Garden classroom: Animal study. Books about animals and alphabet with matching animals available for children's use.
- Sea classroom: Plant study. Recently visited a conservatory for a field trip where they sketched pictures of plants. The children were planting seeds in bags and predicting which seeds would grow the best (no dirt and no water, water and no dirt, water and dirt). The children knew that seeds need dirt and water. They also decorated cups and planted seeds.
- Farm classroom: Displayed drawing of hedgehog habitats. Art teacher confirmed that children go outside for art study and observation. This class recently conducted an ice cream melting experiment and also used snow.
- MyBackyard classroom: Studying spring. The class recently took a field trip to a farm. The students then drew their favorite animal and graphed it for math and counting.

#### Research Journal

- I don't believe that anyone trained in environmental education or as a naturalist is on staff. That being said, they do some nice things with their pond study, spring, and animal and plant units, but I got the feeling that this was a seasonal type of study, and had I visited over the winter the classrooms would have been focused on the building unit or community jobs.

#### **Commitment to child assessment**

##### Interview

- We have an on-line web based system that shows us that teachers are inputting data through anecdotal notes and then leveling that note from zero to seven of where that child is in their development. That's how we show that there's growth in different areas, some of them being very, very academic, like a mathematics area, and some of them being less academic like a social area.
- [Teachers] are trained in how to take a strong anecdotal note that really reflects the learning, not just "Ah I've got to get everything they are saying", or everything that they're doing. We have certain organizers that show us, the system is called COR, child observation record, and so we have lists of names and then lists of categories and we're literally focusing in as we look at our assessment on-line to say "Oh, we don't have any geometry notes on half our class". In the planning time then some geometric experiences will be planned so that it helps

support that learning for the future so that we're comprehensive and strategic. Strategic being, it might be sitting at the small group time and there's a note being taken, so it's on natural science, they would want to be able to apply that to maybe five children at once and then level it in their own way.

### **Critical thinking and problem solving**

#### Field Notes

- Teachers help to guide exploration. At an oatmeal sensory bin, “What would happen if we hold this up?”

### **Program flexibility**

#### Interview

- What also causes the schedule to vary is if the weather is very good they can just move their entire class outside. The teacher can make that call to entirely move the class outside and have just outside time for teaching any day that they wish to call that.

#### Field Notes

- A staff member told me, “If it’s nice we go outside. The children love it and the fresh air is amazing.” The class will sometimes do the large group activity outside, and maybe also small group or devotions.
- I think the preschool could improve on their nature focus, but having five classrooms and only one main outdoor play space does limit this some.

### **Program diversity and barriers**

#### Interview

- We've had somewhere between ten different countries represented here. Our population is primarily white.
- We also have scholarship children here, about 10%.
- It's part of [voluntary statewide rating scale] and NAEYC to do trainings on anti-bias curriculum and have discussions and train about diversity, so that's in our handbooks. There are different trainings, different video series that you can do, Starting Small is one that we use in particular which is lovely.
- We have a scholarship process that comes from the [annual auction] so some of those funds are used and that is a process using our advisory council. Early in each year to help accept scholarship and then provide assistance for families that can't afford to come here.
- We recruit primarily through word of mouth and then we do take an add out in [a local] magazine. Families come to us mostly through other families recommending us though, and we really don't do anything other than that, I mean we don't have any major recruiting anything. We used to, you know. We have an open house, so we have an open house if people want to come and see and we also offer tours on Thursday mornings.
- (Regarding recruiting) Another thing that people will do is from either outside the area they'll come to us, finding us on our website's important, Facebook's

important, we upload photos on Facebook all the time, people find us though through the internet and the word of mouth, word of mouth first, internet second.

#### Artifacts & Documents

- Scholarships: Only partial funding of tuition is awarded annually and is based on availability of funds donated to the scholarship fund. The early childhood advisory council will review the annual federal poverty guidelines to help determine a family's need for assistance.
- School schedule is the length of the school year and options include two, three, or five days a week. The school day runs from 8:30am to 3:30pm, with before school care starting at 7:30am and after school care lasting until 5:30 pm.

#### Field Notes

- Multicultural books and "differently-abled" books were present. Children of different races were observed playing together.
- Around the church property are retail areas and two apartment complexes, one north and one south. The preschool does feel accessible to diverse families.

## Appendix H: Public/Private School Program Model

### Benefits

#### *Builds the school population*

##### Interview

- The early childhood piece is so important they have a good experience, that program will then feed the rest of the school. For us this program's important for them to be happy and to really have a well rounded experience and to love the school, so they want to come back and stay until 8th grade is the hope to fill those grades.

#### *Allows children to be part of a larger school community*

##### Interview

- I think that the benefits are the community, that you're part of a bigger piece. You can see where your kids are going, what you're preparing them hopefully for, and you've noticed the experiences of the older children and my students that feel like part of something bigger, they have the big kids to look up to and emulate. A benefit is being part of something bigger and a community and having those resources of the older kids, all the experienced teachers of the older kids, and opportunities for us, we got to see a really cool shadow puppet show about the creation of the earth and fossils just a few weeks ago because they wanted an audience and we're always willing. We get kind of those benefits of just being in a school setting kind of getting opportunities to see, cool things they are working on, projects they want to show off.
- Older classes from about October to April, made soup once a week from scratch. Then they would make the soup and then we'd get to eat it on the Fridays, so we get the reward of their hard work.
- [Primary students] really get to know [older students], the old ones think they're cute, it's like "oh primary". They're really sweet to them and will push them on the swing and things and are aware of them too as they're playing, like aren't too rough around them, they dodge them when they're running around, it is really nice to have that mixed ages out here to experience.
- And then we have whole school events throughout the year. The primary class, we have a harvest moon feast in October, we actually harvest from our garden and have a big feast, it's potluck style we eat outside and then the families can camp on the grounds that night. The winter holiday season, primary has been [in] all-school concerts. We've prepared a few songs and sang on-stage. Then Earth Day is a family day, families are welcome to school the whole day and they can kind of shadow their children. For primary we have them come see [the] end, second half of our day, do some fun activities, kind of earthy activity. They have spring concert and art show that our class participated in, we sang again on stage and we had some art.

##### Artifacts & Documents

- Our annual festivals and celebrations follow the seasons, such as the Harvest Moon Dinner, or Winter Solstice Spiral. [The school] holds three all-school

concerts and performances a year: a winter concert, a spring concert, and an elementary theatrical production in the late spring.

#### Research Journal

- A nature-based preschool model that is part of a school is part of a larger community. The students have the chance to see where they are headed by watching the older students and can interact with them in school functions. The teachers can also communicate more easily, so that the teachers know they are preparing the students at the level expected for what is to come. The teachers are also part of a larger school community, as opposed to being part of a strictly aged-defined group of preschool students and other teachers.

*Provides a long-term option for children and families*

#### Interview

- I think the parents are looking for alternative education, especially if they are looking long-term you know that they're starting young, likely there's going to be some buy in. We do have a few families who have in the past just come for preschool and kindergarten and then left, but there's certainly a core of children who've been here since the school opened and they're getting older now, but the hope is you get them in young, since we do go through 8th grade they can stay. A lot of parents are already asking me at conferences for their 4 year olds, "What about high school? What happens after 8th grade?" Wow, one year at a time. But it's nice that there is that trajectory, so benefit of being in a bigger school is that they can stay here, they can really be here for like 10 years from the time when they start, which is pretty amazing.

### Challenges

*Limited resources and stretched school staff*

#### Interview

- Some of the challenges of being in a school, I can only speak to our school, we're a very small school, we have extremely limited resources and everybody wears multiple hats, so people aren't always available to jump in or to offer some words of advice or wisdom or help you through something, sometimes you've just got to figure it out on your own.
- Janelle: Can you describe you handles the clerical and daily administrative aspects of the program?  
Lead primary teacher: Mostly [the school director]. And then she has an office assistant in the morning, who's a parent and she [does] a lot of the paperwork filing, getting ready to order. Also being a small school they're also the school nurse, they're the bus drivers, the buses are our cars, they are the run and get more toilet paper at Target, you know they're the kind of every jack of all trades, aside from doing the true school clerical work, record keeping, checking with the state, all those things.
- If we have a sub call in or a teacher call off I fill in [in the afternoon], so the office people also are the subs. We have a few parents as subs, qualified teachers we call in for subbing, but it's almost always covered internally, which is good again with a small staff you have people kind of built in.

- Being small again it's great we have built in subs and all, but that also means you may not realize when you go school, "Oh hey, you're the art teacher this afternoon." It's a lot jumping in.

### **Difference**

*Preschool program credibility is established by being part of a larger school organization, as opposed to licensing and regulations*

#### Interview

- Lead primary teacher: We're just licensed by the state board of education. That's it as a school in [state] overall program certification I guess as a private school or licensed, or licensed is the right word, but we're operating as a school in the state.  
Janelle: So you don't have lists of regulations that you have to be meeting?  
Lead primary teacher: No. Exactly, which is nice, a change for me.  
Janelle: So no inspectors coming through.  
Lead primary teacher: No.

#### Artifacts & Documents

- [School] is registered with the [state] Board of Education and the [state] as a private school with 501(c)3 educational status.

#### Research Journal

- This preschool was not licensed, and I wonder if that is true for most preschools that exist as part of a public or private school since they fall under the regulation of the school. I imagine that this makes some things easier, but the teaching philosophy then probably needs to fall in line with the rest of the school. Also, for better or worse, the reputation of the preschool falls in line with the overall reputation of the school.

### **Nature-based play**

#### Field Notes

- (Non-nature-based play) At the natural playground the swings and soccer playing were the most popular.
- One child was playing restaurant with leaves and sticks to imitate food. Two to three children dug in the sandpit while one child dragged a small picnic table over by the water and added sand to a bowl on the table. The children in the sandpit were making a bug hotel. "A roly-poly moved in." The lead primary teacher helped to find some bugs for the hotel. A student calls out to a bug, "Too far, come back!"
- The boys who were playing soccer moved on to climbing in the evergreen bushes and were singing.
- In the large thicket of trees and shrubs children climbed trees, ran about, and played family, which was typically pretending a baby was stuck in a tree and couldn't get down. Some boys collected bark to stack on a tree. A group of three boys were making a fairy house, and one boy said, "Spring is Christmas for fairies." These boys were very focused on building the house and were working together without conflict. Some boys were finding worms, and commented that

the “worm is a neighbor for the fairy.” “He is your pet.” “Our pet, we are sharing.” The boys also made “Christmas lights” for the fairy house.

- Another boy created a “shop” to buy things. One child finds a bone on the ground, so several students start looking and collecting bones to take inside. Some children leave the wooded area to walk/jump on the stones surrounding the fire pit. The children made a “chair” out of a stick and two rocks suspended over an opening in the block wall. When a child tried to sit on it the stick broke.

#### Artifacts & Documents

- Primary students spend unstructured time outdoors daily where they are free to climb, run, build and play. Some days our class can be found in the “galloping meadow” by the pond, while others take us to the “Three Little Pigs Piles” where we can explore piles of dried plants, gather sticks and twigs and pile up rocks. Rain and snow only add to our adventures...puddles are fully embraced, icy puddles have become skating rinks and of course, there is always mud. Glorious mud!

#### Research Journal

- I also really enjoyed watching the children in true unstructured play time in nature when we walked to the forested area, which aside from the creek play at the forest preserve was really my first experience with that. There was so little conflict, and the children were so focused in their play and in making fairy houses. There were no swings or soccer balls, no trucks or play houses, just the kids and their imaginations and the natural materials around them. The students knew exactly how to play in this space, and took no time getting to their play.

### **Early childhood education and environmental education priorities**

#### Field Notes

- During circle time children stretched, then sang Good Morning Dear Earth with movements. Calendar time included counting the days and pattern recognition. There was a day song, a number of days of school chart, and a days of the week song. The group did months of the year in a robot voice and a child checked the weather. There was a weather chart for the week, so it was possible to compare rows in the graph.
- Yes, nature was the focus of the curriculum, but the curriculum is very loose. It is evident that child development and environmental education are both goals of the program.

#### Artifacts & Documents

- Our mission is to educate and inspire the whole child, and to prepare each student for a life of discovery by cultivating a strong sense of self, compassion and respect for others, and a deep connection with the natural world.
- School environmental mission:
  - Heighten students’ environmental awareness and to promote stewardship through developing ecological values out of first-hand experience.
  - Modeling sustainable school practices such as:
    - respectful use of carefully sourced materials (for example: our website is hosted by a 100% carbon neutral business)



- encouraging waste-free lunches
- encouraging organic and local sourcing of products
- use of green energy alternatives
- Understand sustainability as an entire web of relationships in community, interacting with other communities – human and non-human – in ways that enable them to live and develop according to their nature
- Collaborate with members of the school community and the wider community to attain our goals
- Work toward becoming a carbon-negative school
- The Primary class is a magical place where your child’s imagination is nurtured and exploring the natural world is something students do every day.
- We incorporate literacy, number sense, and science into the natural play activities. Our place-based model provides many opportunities for children to learn about the local environment and take advantage of “teachable moments”, like when a Great Horned owl decides to fly by or when exploring new colors unearthed in springtime.
- We offer an inviting environment and developmentally appropriate program in which each child’s social, emotional, and cognitive growth is encouraged and valued. We encourage investigation and discovery. The learning that happens in the Primary classroom is a combination of child-initiated and teacher facilitated experiences. Our approach is hands-on and multi-sensory.
- We engage in rich conversations daily with each child. We build close relationships with our students, getting to know that child, and where they are socially, emotionally and academically, so that we can tailor our activities to promote new learning and discovery.

### **Commitment to child assessment**

#### Interview

- Alright, I do, three times a year a progress report and that happens in October/November, March and end of the year and the fall and spring are followed then by a parent-teacher conference where I share those results with the parents and talk about them. And the end of the year one just goes home. So they are evaluated 3 times and conferenced with twice. They’re rubrics that we've made ourselves and they use 4 letters, there is experimenting (E), D is developing, A with assistant and I independent. We tell parents those are all positive, it's not like A, B, C, D, F, we grew up with, that even E, is experimenting, is the quote the lowest, but that means they're just trying it. They've just been exposed they're just trying it, so we try to keep it very positive especially with this age group everything is new, they're learning, it's not about mastery right now, it's about really trying new things...So I use those criteria for a variety of academic skills as well as social-emotional. We do assess to the common core, and we use that so that there's kind of a common baseline between grades, between our school and perhaps a district if the child wants to transfer out and it keeps us current with what's going on in the education world as well, so while we aren't necessarily teaching to the common core we're using the tools to sort of see where does the

world, where's America, where's the education world think we should be, where are we headed for each grade level, but then being fluid within our main stages. They're different, the expectations obviously for our 4 year olds versus a 6 year old, and there's still, it's very light what we're asking in those two, you know, your shapes and basic arithmetic, letter sounds and rhyming, and cooperative play, typical things you look for on a preschool/kindergarten assessment. So those are the tools that we use and I made my own for myself this year, as opposed to using a pre-made one.

- Janelle: So do you have a specific kid that you're watching throughout the day, or how do you kind of gather the data for that, just memory reflection?

Lead primary teacher: Yes, for us memory...so even when I come to my evaluations I have a lot in my brain about those few kids who I'm concerned about and then sometimes I do need to make sure in the week, really take a look at so and so and "I haven't really watched her fine motor skills in a while", the things you didn't kind of notice I try to make notes on. I haven't been very good about it...A lot of this is observational and anecdotal notes I'll jot down and [assistant teacher] and I are great about communicating too like, "Hey did you notice that so and so", we had one child who barely spoke beginning of the year and he spoke in a whisper, and now he's almost talking loud enough to hear him, but those little things you notice like growth, was great having the assistant too to kind of talk to each other about.

### **Critical thinking and problem solving**

#### Field Notes

- One student found a bird feather. Lead primary teacher asked "What kind of bird do you think it is? What colors do you see?" The student makes a few guesses.
- At the thicket for play the lead primary teacher asked, "What is new about the outside that is different?" One child finds a bone on the ground, so several children start looking and collecting bones to take inside. The lead primary teacher asked, "What are the longest bones in your body?"
- Some children made a "chair" out of a stick and two rocks suspended over an opening in the block wall. When a child tried to sit on it the stick broke. The assistant teacher asked, "Why is it breaking?"
- The lead primary teacher asked, "Do you hear anything in the woods? Birds?"

### **Program flexibility**

#### Interview

- This Tuesday was hot, it was hot enough to bring our chicks outside, so [the children] built a huge maze out of blocks and let the chicks run free outside. Some days just happen like today, there was a lawn mower so we shifted our schedule. It was warm enough for the chicks to come outside, so we bagged yoga and brought the chicks outside.

#### Field Notes

- The teachers started with a loose plan for the day that was flexible for what worked for the weather, late students, loud lawn mowers, etc. The teachers were very open to teachable moments.
- The lead primary teacher mentioned that the next day they would do more word work, art, and inside play time, but they took advantage of the nice weather today.

### **Program diversity and barriers**

#### Interview

- We certainly have children from a few different racial backgrounds, which you observed, we have varying skin tones.
- Social-economic I bet they're all probably middle to upper-middle class.
- We talk a lot about being in our school family, that the school, our class is like a family. We might disagree and you might not like the same things, you might fight, but the end of the day they'll care about each other, we all want the best for each other. We talk a lot about that from the beginning of the year, and the overriding rule is always to be kind to one another, to our tools and supplies, to nature.
- [Children] have brought up "His skin's darker." I'm like, "Yeah it is. Let's put our hands together. Oh, look at this side's lighter and this side's darker." And "Oh I have these freckles that are dark like his skin" and "Wow look at how his eyes are brown like your eyes." Those are the similarities and saying, "Wow, how beautiful, look at all the shades of brown we have in our classroom." Keeping it really positive. It's been brought up when they've been naturally [curious], then having a "Let's all talk about racial diversity."
- We did celebrate Martin Luther King Day, we talked about Martin Luther King Jr., we talked a little bit about why people were upset then, the world was unfair, and the children really...they were pretty specific, "That's not fair. Just because someone's skin was darker than yours doesn't mean you can treat them differently." You know, it was really sweet to see. That's probably the most we talked about it, putting it right out there, and having an African American student too in our class.
- We do have an African American baby doll in our classroom...we also had a doll where it's eyes were more Asian and we have blond, blue-eyed dolls. I think it was just try to get a mix of dolls in there, different bodies as well,...so we do have some dolls that show different skin colors.
- So our books, which I rotate out...I do try to have diversity in those, a few books that show children with disabilities as well and different racial backgrounds.
- We have talked about...having gratitude and what we're thankful for, and for those people who don't as much as we do. Maybe it was Christmas time, can't remember now. We also do talk a little bit about that to, what blessings we have and what we can do for others who are less fortunate. In those ways too the diversity in what we have.
- (Regarding recruiting) But I think our school's also been very much word of mouth up to this point. We have Facebook, our website should launch hopefully this month. Even to find us is kind of tricky. There is probably a big banner out in

the front yard when you drive in that's says like, "Now enrolling" and people are like, "What, there's a school there?"

- (Regarding recruiting) But I think people haven't usually found us, people might have a similar peer group, to themselves, and so when they're talking about their school it's people who were...same level of education or same socio-economic background.
- (Regarding recruiting) We want to get the word out, but we also don't because we're only so big, we only have so many more dorm rooms we can fit into, but it's the sticky part. I think it's, diversity is always a tricky one, because we welcome it, I think, I feel like we're very welcoming, we welcome anyone, but if you find us. Then how do you target a diverse population without overtly recruiting a certain background. If we're looking for, like we're going to go to this neighborhood and find these such people, you don't want to hand pick either, because there are people who want to be here who are naturally inclined to this background.
- There is some, I'm not privy to what financial assistance we offer, I do know that we've made accommodations, and certainly staff children have some tuition remission options for working here. Some families do, it's like a swap for skills for some discounts, but I'm not sure what all those were. I do know we try to make it accessible for those who want to be here within reason that we can, but we have no scholarship, we have no extra money to offset, so it's usually a sharing of trade or work.

#### Artifacts & Documents

- (Primary program schedule) Monday-Friday, half day 8:15am to 12:15pm

#### Field Notes

- Multicultural play materials and books were not noticed. Non-majority children were very accepted by majority children and staff in play and learning. There were no signs of socio-economic diversity or accommodation.
- One reason students leave the school is no financial aid is provided.
- South of the school are tree lined neighborhood streets while north of the school is a commercial area and three apartment complexes familiar to suburbia. The school lies outside of a major metropolitan area. Yes, the preschool does feel accessible to diverse families both due to the proximity to the city and more locally to the apartment complexes.