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Understanding Teachers' Beliefs of Young Children's Play in Naturalized Learning  
Environments

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Abstract

Recent research in the field of early childhood education has increasingly focused on children's connections with natural environments. However, there has yet to be a study that investigates teachers' perceptions of teaching young children and the impact on their learning utilizing natural environments during early childhood, which is precisely the aim of this research. Such a study is needed to attain authentic information about possible connections between teachers' personal experiences, their perspectives and their practices regarding teaching and learning in naturalized environments. This qualitative research study is composed of two major components: in-depth teacher interviews and an outdoor and indoor environment checklist. The in-depth teacher interviews document teachers' personal play histories, their ways of implementing children's play in naturalistic settings, and their beliefs about the value of children's play in naturalized environments. The environment checklist is used to examine the enriched naturalized environments that are provided indoors and outdoors to help children interact with the natural world. Four major themes were identified and several conclusions were drawn from the data. First, teachers' beliefs about naturalized environments are consistent with their teaching practice in those environments. Second, teachers who are teaching in naturalistic environment schools value the natural environment. Third, teachers' personal life experiences influence their perceptions of teaching and learning in naturalized environments. Fourth, teachers' perceptions regarding the value of naturalistic environments for children's learning were that creative thinking, problem solving, and more in-depth learning occurred.

## Understanding Teacher's Beliefs of Young Children's Play in Naturalized Learning Environments

This phenomenological research investigates teachers' perceptions of the effects of connecting young children with natural environments in early childhood settings, which is an area that has yet to be explored, despite the growing body of literature discussing the role of nature and naturalized play during early childhood. The importance of connecting children with nature has been the subject of research for many decades. Recent research has shown that relationships between naturalized environments and children's play are significant for children's successful learning and development (Sobel, 1996, Pyle, 2002, Wells, 2003), and many studies insist that natural environments provide opportunities for children to develop a sense of wonder and curiosity. Louv (1991), for example, insists that exploring natural environments in early ages positively affects children's use of their imaginations and develop the sense of wonder.

New findings indicate that there is a growing awareness of the importance of interactions with nature in children's learning, and in turn increasing children's exposure to natural environments as part of their educational development has become an important issue in many schools around the world. As Fjortoft (2001) points out, however, we are only beginning to understand the roles of natural environments in children's play areas, and we insufficiently know about the impacts of natural play areas on children's learning. Fjortoft studied Bjerke's (1994) research and explained that the topic of natural environments for children's play has not been actively studied in the child research field.

Natural environments provide children with a wide range of benefits. Studies are offering persuasive evidence that explorations are even more beneficial for the overall well-being of children than adults due to children's mental plasticity and susceptibility (Wells & Evans 2003). In discussing Mergen's (2003) findings, Blair (2009) insists that outdoor play



areas, in which both urban and rural children find out themselves, are places for exercising their imagination, creating stories, and inspiring a sense of wonder. Furthermore, Blair (2009) explains that first-hand or second-hand experiences in nature help children better understand their experiences.

In spite of this, children today are more likely to sit in front of their computers and play computer games and are less likely to play unorganized traditional games which involve a lot of moving (Fjortoft, 2001). Many other researchers think that children today are barely exposed to the natural world that inspires an understanding of environmental worth and places science in context (Finch, 2004; Kellert, 2002; Orr, 2002). Blair (2009) studied the research of the U.S. Department of Agriculture (2006) and indicates that children today have insufficient experiences with complex and natural ecological environments. Therefore, wilderness is no longer the regularizing criterion for explorations with nature (Mergen, 2003).

Recently, many schools in the United States have diminished or eliminated recess from their curricula; therefore, children have fewer opportunities to play outdoors and to interact with the natural world. Frost et al. (2008) emphasize that traditional recess needs to be maintained, not to be decreased or substituted for arranged physical activities. Children of all age need wild places, and during recess, children should be allowed to follow their natural inclinations to explore and learn. To facilitate children's sense of wonder, playgrounds need to be more natural, creative, and plentiful (Frost et al., 2008). The researchers also studied Francis's (1995) research and points out that wild areas are unforgettable and are explored more often than manufactured areas.

Current research supports the idea that through a regular reciprocal process of being close to nature children develop a positive attitude toward nature and the natural world, especially during early and middle childhood (Kellert, 2002). Children will be in danger of not developing positive attitudes if they do not develop a sense of appreciation and concern

for the natural environment during their first few years (Sobel 1996, Wilson 1996). The natural world fosters children's ability to maintain information and ideas, which is a primary force in cognitive development (Bloom, Engelhart, Furst, Hill, & Krathwohl, 1956), and findings explain that young children's learning, development, and maturation are facilitated when schools and teachers encourage young children to interact with natural environments.

While relationships between natural environments and children's development have received increasing attention from scholars in the field of early childhood education, many questions remain unanswered. One area of unanswered questions has to do with teachers' perceptions of natural environments as learning environments for young children. These questions might include the following. What do teachers perceive their role to be when teaching in natural environments? What are teachers' perceptions the influence of the natural environment on young children's learning? What do teachers believe are the values of teaching in a naturalistic environment? What changes in curriculum and instruction do teachers believe are beneficial when teaching in a naturalistic setting? What are teachers' perceptions in regards to the role of children's regular interactions with the natural world for the promotion of healthy development? What unique types of knowledge or dispositions do teachers perceive that children gain as a result of ongoing connections with nature? What do teachers perceive as negative consequences of children's engagement with nature in an educational setting? What are teachers' perceptions regarding the importance of supporting young children's play in naturalistic settings? Focusing these questions on the perceptions of early childhood teachers would provide more specific information for the field of early childhood education.

This present research was prompted by questions such as these. The purpose of this phenomenological study is to investigate early childhood teachers' perceptions of connecting young children, particularly infants to six year olds, with natural environments. A further

purpose of this study is to help early childhood educators develop more appropriate curriculum that supports young children's development and learning in naturalistic settings.

## Chapter 2 Review of Literature

It is well-known that young children learn through play (Mills and Mills, 1998). Over several decades, researchers and scholars have defined play in a various ways, but have reached no single consensus. Play is an important medium for children to develop in diverse areas, and most researchers identify play as all activities that occur in play settings, which are environments that provide a wide range of materials to explore. Play provides children opportunities to improve social, cognitive, physical, and literacy development. It has positive effects on children's cognitive, social, emotional, physical and moral development (Elkind, 2007).

According to Saracho (2001), children attain information and develop their intellectual, social, symbols and language skills while they play. In addition, play offers opportunities to enhance children's perception and abilities. Saracho (2003) indicated that children improve their social language by using various conversation styles, supple and communicative tones, and applying the language rules while they play. She also claims that children's symbolic play enhances their language and literacy development. Bergen and Mauer (2000) found that children tend to use language and separate the sounds of language from its meaning while they play. Taylor et al. (1998) studied Piaget and Inhelder (1969) and Shantz's (1975) studies, and indicates that by playing, children can learn to deal with emotion problems, and they can find ways to handle conflict in personal relationships. Furthermore, play helps children to acquire appropriate ethical viewpoints.

*Loss of Children's Play in Naturalized Environments*

Children need time to explore outdoors (Rivkin, 1995). Compared to several decades ago, our children live in environments that have fewer connections with nature. Nowadays, a large number of playgrounds for children are grayer rather than green (Moore & Wong, 1997). Frost et al.(2008) insist that natural play environments are vanishing in inner cities

since the housing patterns have changed and the density of buildings has increased. Also, adults' support of play in natural and creative environments has decreased. Adults continue to maintain engagement in children's play culture; however, children's play is becoming more arranged than creative. When our ancestors were children, almost all of them spent their time in natural environments with trees, animals, insects, water, and other aspects of wild nature. Even until the 1970's, children were easily able to interact with nature; for instance, children spent much of their free time outside in parks, greenways, fields, forests, and other spaces, but our lifestyles have become urbanized and indoor oriented (Moore 2004, White & Stoecklin 1998).

From the late twentieth century, a large number of children have been surrounded by urbanized environments (Chawla, 1994). Currently, these children do not have sufficient opportunities to experience free outdoor play and they may barely come into contact with the natural world (White, 2004). Children who live in inner city and suburban areas often have few opportunities to connect with nature and have been separated from naturalized environments due to insufficient parks or natural spaces in their neighborhoods. Furthermore, busy life schedules and financial issues limit children's ability to leave town to experience nature (Louv, 2005). According to Coffey (1996), almost all young people have no opportunity to explore the wilderness, and many of those who live in inner cities have no truly meaningful experiences with the natural world even though urban children still look for dirt, water, and trees, and want to play in natural environments like children in rural areas (Mergen); however, city expansion and environmental decline are decreasing city children's opportunities to explore desirable experiences with natural environments (Finch, 2004; Kellert, 2002; Orr, 2002). Consequently, children's opportunities for unsupervised exploring and interacting with nature are disappearing day by day (Chawla, 1994; Kuo, 2003; Rivkin, 1995). Recent research reveals that 70% of mothers in the United States played outside on a

daily basis during their childhood, while today only 31% of their children daily play outdoors. Also, 56% of those mothers spent three or more hours outdoors while 22% of their children today play outside with the block of time (Clements, 2004).

However, according to Louv (2005), children today are more likely to stay inside, depending on electronics, such as television and computers rather than traditional physical play. He stressed that a large volume of findings indicate that American families are more likely to spend their spare time watching television and using computers rather than going outside. Children's increased obesity is one result of the changed lifestyles. He interviewed a parent who lives in Swarthmore, Pennsylvania. According to the parent, unlike her own generation when children played outdoors frequently, children today are more likely to stay inside. Louv (2005) visited one neighborhood in suburban, Kansas, which still offers adequate natural environments to children for outdoor play even though much of the natural setting has disappeared. However, even there children seldom played outdoors. He also visited Kansas City and interviewed young people there about their connections with nature. He found that many children have difficulty playing outside because they are too busy or spend most of their time with media, such as television and computers. Also, some of their parents worry about them going outside. Blair (2009) also studied Moore's (1995) findings and explains that TV, video games, and directed sports have replaced children's unorganized experiences with nature. There are not enough research findings about the relationship between children and technology, however, some effects of technology on adults are known. For example, Carnegie Mellon University (1998) research found that adults who regularly use the Internet every week are more likely to have serious depression and feelings of isolation when compared to those who access the Internet rarely (ctd. in Louv, 2005).

According to Kellert (2002), modern society has drifted very far from its natural base; it has lost awareness of our species' need for nature as an aspect of growth and

development. Louv (2005) introduced the term 'nature-deficit disorder' to illustrate the phenomena that human beings are becoming separated from nature, losing use of all senses and wonder, presenting difficulties in concentration, resulting in poor health both physically and emotionally. The disorder can be recognized in individuals, families, and communities. The author insists that people living in urban areas can be affected by nature-deficit disorder, and studies have shown a relationship between the loss of parks and other outdoor spaces and higher misbehavior and illness in cities. It is possible that the disorder can be culturally and individually perceived and validated. In addition, Hofferth (1999) found that children's free time has diminished in recent decades and that it has gradually become more directed. He explained that between 1981 to 1997 children spent 8 more hours in school per week than previously, an average of 21 to 29 hours. According to his research, the increase of preschool children's time in school was the most significant change. Louv (2005) explains Moore's report (1986) which indicates state-authorized school curricula do not allow classes and study time to be conducted outdoors.

Furthermore, outside of school, children often do not have time to play outdoors because many families' routines are highly arranged. Children spend a great amount of time in school settings; however, children's opportunities to play outdoors and in the natural world are becoming increasingly limited or nonexistent (Malone & Tranter, 2003). In the United States, approximately twelve states have reduced or removed recess since the federal and state governments and schools increased pressure for higher advanced test scores. Recess is more likely to be considered a waste of time because of this push to obtain higher academic achievement, and it contains responsibilities and possibilities of danger. Lack of play time coupled with pressure for academic success can affect young children's health conditions, such as increasing risks of heart disease and obesity (Louv, 2005). Therefore, efforts should

be made to reconnect children with nature and foster a generation that respects and maintains the natural world (Malone & Tranter, 2003).

Sobel (1996) indicates that children are not linked with their outdoor environments; their contact with all creatures and ecosystems around the world is only through the media. White (2004) stressed that the loss of children's outdoor play culture and contact with the natural world had a negative influence on children's growth, development, and acquisition of knowledge. In addition, he indicated that we are continually losing our natural environment and this destruction of nature also has a harmful impact on children's growth and development. Forming children's understanding of natural environments needs to be a major purpose for children ages from four to seven (Sobel, 1996). During early childhood, children's experiences help them to form the values, attitudes, and gives a fundamental direction to their world (Wilson, 1996).

#### *Naturalized Learning Environments*

By having developmentally appropriate experiences, children can adjust themselves to diverse learning areas. When children have new experiences that are developmentally appropriate, they will be able to adjust to different kinds of learning (Louv, 2005). Recent research focuses on the effects of the physical environment on children's development such as how the outside environments of neighborhoods affect children's development when encouraging daily activities to promote children's appropriate development (Taylor et al., 1998). Nature, which is beautiful, wild, and inspiring, provides something special that constructed environments cannot (Louv, 2005). The outdoors broaden opportunities for experiencing complexity, challenges, diversity, and innovation, and other elements that encourage creativity, learning, and development (Frost & Strickland, 1985; Frost & Sunderlin, 1985). Constructed play settings have diverse levels and corners that provide opportunities for children to be socialized and maintain privacy, and structures, tools, and



materials that are changeable (White & Stoecklin, 1998). According to Greenman (2005), playgrounds are more valuable than inside environments for activities that are untidy or noisy.

Frost et al. (2008) argue that playgrounds need to provide diverse natural materials. For example, playgrounds can offer materials with a variety of textures, such as grass, dirt, stone, leaves, sand, and water. Besides, outdoor play areas include various plants, gardens, natural sites, and creatures. Coffey (1996) suggests that outdoor environments for children's learning can contain butterfly meadows, ponds, insect gardens, and shrubs. In addition, the environments need spacious elements, such as water, sand, portable materials, tools, gardens, nature areas, hills, streams, trails, animals, construction materials, places for solitary play, and transition spaces between classrooms and playgrounds. Rich environments contain magical qualities and can fill children with wonder. How we understand the value of children's play, our own passions, and how much energy we are eager to spend can make a difference in creating play environments (Frost et al., 2008). Teachers should modify their rules for neatness, play space management, and simplicity in regards to outdoor preservation for school gardens in order to include places that are not tidily planted or handled, thus helping foster children's imaginative play (Finch, 2004).

The movement to convert playground patterns is increasing in North America, especially in preschool and kindergarten environments. Some school settings have been changed to naturalized environments from manufactured environments, which are helpful for children's exploration and discovery through play (White, 2004). Providing gardens could be a valuable example in early childhood playground settings. School gardening has become a nationwide campaign over the last several decades; however, few school gardens provide friendly areas, wilderness, or spaces to dig in the dirt (Blair, 2009). Children's gardens need to include specific vital components, such as high-quality soil, water, trees, spaces for

planting vegetables, habitats for creatures, a playhouse, hiding sites, areas to dig, and a storage space to keep tools and materials (Frost et al., 2008). Naturalized environments are more likely to be planted than constructed. The Natural Learning Initiative, led by Robin Moore at North Carolina State University, Rusty Keeler's Planet Earth Playscapes and the White Hutchinson Leisure & Learning Group's Discovery Play Gardens use the landscape and its vegetation and materials as not only play settings but also the play materials. The naturalized playgrounds are created from children's viewpoints and are casual, and natural (White & Stoecklin, 1998).

#### *Outdoor Play and Children's Development*

Supporting children's play with the natural world has a wide range of benefits on learning and development. According to Fjortoft (2001), there was a noticeable advance in children's curiosity and knowledge of nature when children's regular outdoor play settings were greatly naturalized. Sobel (2004) concluded that naturalized playgrounds have positive effects on children's development of environmental attention values. Also, the researcher pointed out that the variety of the natural environment positively influences children's appreciation of nature and experiences with it. Children can develop knowledge and attain better attention skills by discovering nature, and when they have first hand experiences, they can concentrate fully rather than listening to or imagining something else (Louv, 2005).

In general, playing outside is more active than playing inside (Rivkin, 1995). Children can cognitively, physically, and mentally develop by being encouraged to interact with nature (Louv, 2005). Frost et al. (2008) explains Tizard, Philips, and Plewis's (1976) research and indicates that children's outdoor language is more sophisticated than their language in inside settings. Grugeon (2005) studied children's informal language used outside of the classroom and focused on its influence on children's literacy development. The research examined that the playground is a highly inter-textual and imaginative place where

children play out narratives of their own ideas. We can analyze the influence of pretending through children's socio-dramatic role play. Pretend play and games often occur during outdoor play time. Children are tremendously enthusiastic and able to explain narratives of their play and games. In these situations, children are very active. By observing children's fantasy play outside, it can be observed that children use a variety of sophisticated conversations and complex vocabulary. Pupils use advanced language to sustain their characters and the world that they have created (Grugeon, 2005).

Frost et al. (2008) indicate that children's outdoor play is not the same as their play indoors. The researchers studied many researchers' findings about playgrounds and indicate that playgrounds promote children's motor development (Myers, 1985), manipulative abilities (Pepler & Ross, 1981), and social development (Eisenberg & Harris, 1984). In Louv's book (2005), Last Child in the Woods, he discusses Sallis's study that focused on children and adults who are more active than the average. Sallis explained that the amount of time preschoolers spend outdoors is a good indicator of their later physical activity. Since the outdoor spaces are open-ended, there are fewer possibilities of accidents. A child's body is freer rather than being controlled. Children are able to yell, sing, and use loud voices, and also they can jump, move as they wish, and are allowed to run free (Rivkin, 1995). Also, children who have contact with nature regularly obtain higher scores on concentration and self-discipline tests (Taylor et al. 2002).

Louv (2005) explains that playing outdoors also encourages children to be self-motivated and fosters self-directed contact with what they wonder about. The author also mentions that natural environments facilitate a reciprocal process in social development. He mentioned a Swedish study about the effects that connecting with nature has on social interaction. The study shows that children and parents who are able to experience the outdoors near their homes have twice as many peers as more those who are not able to

connect to outdoors. Frost et al. (2008) also state other researchers' findings and show that (quite unrestrained) outdoor play areas allow children to have choices of interacting with friends with more freedom (Boulton & Smith, 1993), and such experiences help children to be more appropriately socialized when teachers are encouraging (Pettit & Harrist, 1993). Coffey (1996) reports that many teachers think that when children learn by engaging their surrounding environments, social problems in the classroom are reduced. Taylor et al. (1998) state that children can develop social skills and obtain pro-social behaviors through play. They explained Damon (1978), Piaget (1976), and Shantz's (1975) findings which pointed out that children are able to develop a sense of cooperation while they play games or pretend play, especially in terms of learning to collaborate, care for others, understand different roles, and control themselves. Louv (2005) explained Wells and Gary Evans's finding that the children whose homes are adjacent to natural environments have fewer behavioral problems than children who live in places that provide insufficient exposure to nature. Taylor et al. (2001) mention their previous study (Taylor et al., 2001) and emphasize that exploring nature by interacting with green activity environments was connected to reducing symptoms among children with Attention Deficit Disorder. In addition, outdoor environments significantly improve children's independence and autonomy (Bartlett, 1996).

Frost et al. (2008) mention Olds's (1987) study in their book and explain that through nature, children can have access to a wide range of sensory stimuli, such as sounds, smells, and textures. According to Moore, children's experiences with nature no longer come first hand, but "by the secondary, vicarious, often distorted, dual sensory (vision and sound only), one-way experience of television and other electronic media" (qtd. in Louv, 2005, p.65). In the report, Moore insists that the natural world is essential to fostering children's sensory development and encounters with free, open spaces allow children to experience their senses and gain a feeling of wonder. The quality of environments, such as enriched and opened

environments, are vital to facilitate children's creative involvement. To children who are growing up in a harsh family or unhelpful neighborhood, nature provides a cure and also it encourages children's creativity by allowing them to use their senses and imagination. In addition, children are able to enjoy freedom, discover the imagination, and maintain privacy in the natural world (Louv, 2005).

### *Adults' Roles*

Taylor et al. (1998) indicate that adults have a key role in providing daily activities that enhance children's healthful development because when children interact with adults, they are challenged to grow socially and cognitively. Bennett et al. (1997) emphasized Vygotsky's model of the Zone of Proximal Development (ZPD). ZPD refers to the difference between a child's abilities by himself and with the support of an adult or more able peers. Play environments can provide young children equivalence with the kind of real life events that which can be experienced at home and schools with adults (Hall, 1994).

Playing outside brings a sense of freedom which is not only important to children but also teachers (Rivkin, 1995). Taylor et al. (1998) explains that children have meaningful experiences while they spend their spare time outside close to their home; similarly, adults in the areas also can significantly manipulate the naturalized environments surrounding them. Taylor et al. (1998) points out that attaining adults' guidance or having interactions with them are significant to facilitate children's social and cognitive development. The frequency of interacting with adults is needed in promoting children's appropriate social and cognitive development. Children might not be able to fully present their potential abilities without adults' help, encouragement, and modeling. Compared to being inside, children tend to have more guardianship from adults when playing outdoors. However, as long as the outdoor environments for children's play are secured, teachers do not need to be very strict. Limiting

children's behaviors is not highly recommended and providing a choice to children in deciding what to play is desirable (Rivkin, 1995).

### Chapter 3 Design of Research

The research methodology for this qualitative study is phenomenological and ethnographic. The study takes an ethnographic approach to early childhood teachers who are utilizing and working with children in naturalistic settings, and the study is phenomenological because it focuses on features of teaching and learning in naturalistic settings. The following factors, adopted from Goodwin and Goodwin (1996), underlie the design of this study: nonintervention, non-manipulation, context sensitivity, rich and descriptive data, valuing the perspective of the participants, and understanding the researcher as the primary instrument of data collection using direct and personal means. This ethnographic research also takes a necessarily holistic perspective because data is collected through observations of children's play in natural environments, interviews of teachers engaged in the context, and observations of the environments. Throughout the process of data collection, the researcher was in the context of the nature-focused school and made direct observations of the context and social setting.

#### Context and Participants

The context for the research is two full-day private preschools with naturalistic settings, located in Edmond and Tulsa, Oklahoma. The classes at one site range from preschool to sixth grade, and each early childhood class is multi-aged and contains a maximum of 18 children. The classrooms have one main teacher and one assistant teacher in the classroom three days a week. According to the school's brochure, the school values the intrinsic curiosity of individual children, fosters empathy, and encourages a passion for learning. This school provides diverse experiences that facilitate children's cognitive development, social development, and creativity, and the curriculum is sufficiently flexible to allow children time to explore activities related to their interests. Children in the school can explore the beautiful surrounding acreage, which contains huge play areas, ponds, and a lot of

trees and flowers and which is home to a variety of animals. The school was designed to look like a house, so the interior seems like a home renovated with classrooms, project areas, workshops, a kitchen, an art room, a computer lab and a cafeteria. The inside of the school contains wood floors and ceilings, and most of the indoor environments are made of natural materials. The school provides individualized learning programs and helps children meet their individual needs. Unlike at many schools, the children at this school are regularly able to interact with animals, such as horses, goats, dogs, and homing pigeons. The children have daily responsibilities to feed, water, and groom the animals and to clean up the farm area. In addition, at the end of the day, the children are responsible for sweeping, mopping, dusting, and restocking various areas inside the classroom. The patrons of this school are of upper middle socio-economic status. The major ethnic demographic is Caucasian, and approximately 10 percent of the students are African American, Russian American, Mexican American, and Vietnamese American.

The school in Tulsa serves preschool through 12<sup>th</sup> grade. The preschool classrooms and the K-1 classroom are multi-age classrooms with an age range from three to five and five to six years old, respectively, and each classroom has two classroom teachers. The Tulsa school's website indicates that the school values inspiration, creativity, curiosity, exploration, and discovery, and they provide children with a safe and secure environment in which to pursue this type of learning. The curriculum of the school is based on the philosophy and pedagogy of the Reggio Emilia approach in Italy. In this school, it is essential that children build deep relationships with teachers, families, peers, and their environment to form fundamental skills in socio-emotional, intellectual, physical, and moral development. The mission of the school is to offer an outstanding education in a family-oriented atmosphere. Students are motivated and supported to learn and develop in various and caring environments. The children at the school are able to explore 120 acres allowing children to



hike in the woods, experience different seasons, and explore nature in a natural setting. And in addition to this vast landscape, the children are given time for investigation and discovery. The school especially supports children's outdoor play because they believe outdoor investigation is an important part of learning related to children's in-depth and fundamental scientific knowledge. The indoor environment of the school is designed to develop children's creativity, investigation, imagination, and problem solving.

An Informed Consent Form that both describes the purpose of the study and solicits permission to conduct teacher interviews was given in person to each teacher at the two sites when the researcher visited the schools to give a presentation about this study and to obtain the teachers' permissions to collect data. Nine teachers from the two schools voluntarily participated in this study, and they were interviewed by the researcher using a questionnaire consisting of in-depth, open-ended questions.

#### Data Collection Procedures

Multiple methods of data collection were used to ensure triangulation. Triangulation (Denzin, 1988) is the practice of utilizing multiple methods, and it is significant in qualitative research to enhance credibility and reliability because the variety of methods allows the data collected using one approach to support that collected using a different approach (Goodwin & Goodwin, 1996). The qualitative data collection methods include in-depth teacher interviews, indoor and outdoor environmental checklists, photographs of the environments, and researcher journaling and note-taking. The photographs were taken for further analyses after the school visits were complete. The outdoors and indoors environment checklist was used to analyze how the teachers create environments both inside and outside that are effective in enhancing young children's play, particularly in the natural world. Throughout the observations of the outdoor and indoor school environments, the teachers used the available natural environments in authentic ways to support young children's learning through play in

naturalistic settings. The classroom designs reflected each teacher's individual perspective on this issue, which were mainly discussed during the in-depth teacher interviews.

A one-on-one in-depth teacher interview was conducted with each of the nine early childhood teachers at the two schools. These interviews took place during school visits in the second semester of the school year. Teachers' beliefs and understandings about teaching and supporting children's interactions in natural environments were obtained through the interview. The interview questionnaires included open-ended questions designed to attain as much information regarding the teachers' beliefs and understandings as possible. The direct and in-depth Teacher Interview Protocols will be used to solicit information regarding teachers' personal play histories, their preferred ways of implementing play in natural environments, and their beliefs about the value of play in natural environments (See Appendix A for the In-depth Teacher Interview). These three main categories are significantly related to understandings of teachers' philosophy and knowledge of teaching and learning in early childhood development. Gathering information about where teachers grew up and about the places they have recently worked will help create a more complete picture of the teachers' perceptions about the value of children's play in naturalized environments. There were commonalities among all the teacher's responses, and there were differences as well, reflecting the participants' different backgrounds, experiences, and perspectives; however, in aggregate the information collected from the interviews is relevant to many research findings. The information gained from the interviews was used to analyze the teachers' diverse viewpoints and perceptions of children's interactions with natural environment in the context of children's learning and development.

The natural environments of the schools were observed by the researcher in two ways. Photographs of the settings were taken for later analyses, and the Outdoors and Indoors Environment Checklist was used by the researcher to make a formal record of the

characteristics of the two environments. The checklist about outdoor environments included information about animals, gardens, shelters, and naturalized environments, such as trees, flowers, and plants. The checklists for indoor environments document opportunities in the classrooms to access plants and flowers, creatures—such as turtles, fish, hamsters—and books about nature and so on. (See Appendix B for the Outdoors and Indoors Environment Checklists) The quantity of each item on the checklist was recorded by the principal researcher.

The principal researcher maintained a reflective journal throughout the process of data collection, making frequent and extensive notations, especially after each school visit. The form of the reflective journal is open-ended and divergent so that the researcher was able to describe individual thoughts and perceptions of the context under study.

## Chapter 4 Data Analysis for Teacher A

Chapters 4 to 12 present the data analysis collected the teacher interviews which includes personal play histories, ways of implementing play in natural settings, and teachers' beliefs about the value of play in natural environments.

*Section I. Personal Play History*

The first section of the in-depth teacher interview focused on individual teachers' personal experiences of play in their early childhood. Teacher A teaches preschoolers at a suburban private school. She grew up in a very small town in Iowa and lived on a property near a heavily wooded area. Her neighborhood was large and the place where she grew up was a very safe place, so her parents allowed her to play outdoors, even until dark. As a child, she really enjoyed outdoor play. Many young children lived in her neighborhood, so she had many opportunities to play with other children her own age. She often enjoyed make-believe play with her peers outside, and they usually used natural materials, such as wood sticks, symbolically during their make-believe play. Her neighborhood provided a rich natural environment that included a variety of trees and flowers, and she loved exploring the surrounding nature. She spent much time as a child climbing trees, running around the woods, walking up and down the creeks, catching tadpoles and raising them to frogs, and playing hide-and-seek in the woods.

She mentioned that since she did not have the types of electronics that children have today, she and her peers grew up outside and had to use their imaginations all the time to create their own play and to entertain themselves. Nature was their primary source of entertainment, and as a consequence she enjoyed being outside with peers and playing in the natural world. She believes that those outdoor experiences taught her to appreciate fully the natural world, and she still enjoys outdoor activities such as gardening as an adult. She stated that although she is not a completely outdoorsy person, she does love being outside as much

as possible including interacting with animals and spending time on the farm at the school where she teaches.

To the best of her memory, she had recess twice a day during primary school for a total of approximately 45 minutes, with 15 minutes in the morning and 30 minutes after lunch. The children could not go outside until everybody was ready, and also her teacher did not let them play outside when it rained, so she disliked rainy days because she was forced to spend her recess indoors. Unlike the natural environment in her neighborhood, the outdoor environment at her primary school was blacktopped, so the children at the school were more exposed to blacktop or cement than grass or trees.

### *Section II. Preferred Ways of Implementing Play in Natural Environments*

The second section of the in-depth teacher interview concentrated on each teacher's ways of supporting young children in connecting with natural environments. Teacher A often plans outdoor play activities and allows her students unstructured play time. She gives the children enough time to play outside because she thinks that they need to take advantage of the enriched natural environments at the school site as much as possible. She stated that children today need to spend more time outside since they have so much exposure to all kinds of technology and spend much of their time inside, occupied by electronic products rather than playing outside. She usually offers about an hour of recess after lunch every day, and also when the weather is very reasonable for outdoor play, she often takes her children outside in the morning and provides them an extra recess. Therefore, she normally plans recess twice a day for a total of about an hour and twenty minutes of outdoor exposure. Sometimes, she and the children in her class spend the entire afternoon outside and enjoy water play, especially during summer season. Her opinion is that children can discover, create, and learn as much if not more outside than they can inside.

She strongly believes that children should be outside in various kinds of weather, as

long as the weather is not threatening, in order to experience the differences. For example, if it is raining but without lightening and thunder, the children in her class still can go outside and play, and they are supposed to bring extra clothes when it rains. She also thinks that it is a great opportunity to go outside when snowing because children do not have many opportunities to see snow in Oklahoma. One of her students' most unforgettable weather experiences occurred last winter when beautiful snow covered their vast acres at school. All of the children went outside and observed the snow flakes, and they brought black paper outside and drew the snow flakes.

The school where teacher A works is located on a large plot of land that provides exposure to a variety of natural elements allowing children to explore their surroundings. Because of this rich outdoor environment, she does not bring anything except a few flower pots and fish to help her students connect with nature indoors; instead, she uses the authentic natural environment at her school site to help her children connect with the natural world outside and to give them opportunities to explore whatever they have outside, including trees which the children love to climb, ponds in which they built hibernacula in order to raise tadpoles into frogs, animals to take care of and observe, and gardens in which to plant diverse vegetables and fruits. The children in her class are completely involved in gardening and taking care of animals in the barnyard at school. For instance, they all go out and plant together. Furthermore, the multi-aged class is very beneficial when taking care of the garden because she divides the children into groups that contain one older child and one younger child, so the older child can help the younger child when planting. The children learned how to plant from one specialized teacher, and afterwards they planted tomatoes, beans, squash, cherries, and many others. They do not use any chemicals on their garden, so all the vegetables and fruits from the garden are totally organic. They yielded great tomatoes last year.

In addition, the children are engaged in taking care of animals every morning. At this time, the children are able to interact with horses by feeding them, brushing them, and cleaning the barnyard. Even younger children who are two or three years old help to clean up the barnyard together. Older children teach younger children how to do various cleaning tasks and how much food to feed the animals; therefore, all of children know the chores and what they have to do in the barnyard. During the day time, children are not allowed to go to the barnyard for safety reasons; however, they are able to go up to the fence to observe the animals whenever they want.

To support children in continuing to bond with the natural environment inside the classroom, teacher A provides natural materials from outside, such as pinecones, and sticks (or whatever the children are interested in), and she and her children sometimes go out and gather natural materials together and bring them into the classroom. In the fall, they bring all the different colors of leaves into the science center, along with stones, branches, flowers, and feathers. Those natural materials collected from outside are used in various classroom activities, especially ones related to science.

### *Section III. Teachers' Beliefs about the Value of Play in Natural Environments*

The third section of the in-depth teacher interview was designed to investigate the teacher's ideas and value of children's play in the natural world. Teacher A insisted that young children need more places to run around and that children should have recess to enjoy outdoor play because a lot of children today grow up within city limits, which do not provide undeveloped plots of land or an enriched natural environment. She encourages her children to actively interact with animals, trees, land, and other natural elements rather than just observing the environment around them. She likes the relaxed atmosphere at her school and is satisfied with the fact that she can utilize natural environments for her teaching which is directly focused on children's learning in nature. To her, being outside and playing, or even

just breathing fresh air, is an important part of growth in early childhood years, as long as the surroundings are safe.

When describing the beliefs of the ideal early childhood environment, she said that the school she is now working at is an excellent example because the school contains absolutely enriched natural surroundings. She thinks the best early childhood environment would be a place where children are not restricted in exploring their environment. At her school, children do not experience much stress about academics, and they are able to climb trees, play in water, and dig in the dirt in a safe and relaxing learning environment. She emphasized that children learn not only through academic instruction but also through unstructured play in natural settings. Such opportunities encourage children to use their imaginations and to create their own play for enjoyment.

Teacher A believes that children learn a lot from nature, and her children thoroughly being outside and interacting with nature. Through such interactions, children obtain a sense of wonder and become more inquisitive about the world around them because they have more opportunities to experience hands-on learning rather than just opening a textbook and memorizing content. For instance, unlike a textbook explanation that a tadpole grows up to be a frog, the children in her class built a small pond for tadpoles, and they can observe first hand the process of how the tadpoles become frogs in real life. In addition, they can go to the blue bird house and watch the baby blue birds' growth. Teacher A said that those kinds of hands-on experiences influence children's learning and help them to keep their interest in nature.

When she talked about the effects of supporting young children's play with nature, she expected that the children in her school would be a lot healthier and less obese than those who spend most of their time inside. Furthermore, she believes that the children will be able to attain more broad and divergent thinking skills and will eventually reach outside of the box



when they generate ideas because they were never limited in their thinking and were always given the opportunity to investigate and explore their interests by themselves. She said one of the most valuable effects of children's exposure in nature could be helping them become great thinkers as they grow up.

Teacher A does not have any difficulty in encouraging her students to connect with the natural world since her school has an enriched natural environment and because the director of the school is very encouraging about teachers using the natural environment in their teaching. It is possible that some parents would think this school is undesirable and do not see the value of the curriculum; however, school patrons are mostly supportive and understanding of the unique curriculum and love the natural environment. At the beginning of the school year, she informs parents that they should not let their children wear nice clothes and shoes because the children will get muddy, sandy, and dirty during their outdoor play. Now the parents have realized this fact, and they do not even send socks because they know that almost all of the children are barefoot all the time. In sum, she does not have any serious difficulties in helping children to interact with the natural world.

Sometimes, severe weather causes difficulties; however, as long as it is not very severe, they still go outside and she gives the children appropriate restrictions for their safety. She always recognizes the importance of safety, and she and the other teachers focus on play in a safe environment. For example, the animals in the school are not aggressive, but she believes that there is always the possibility of someone getting hurt, so everybody needs to be careful; therefore, teachers teach the children about how to hold and feed them correctly. Since the children and the teacher have discussed the safety, even three-year-old children know the boundaries of playing outside. The children do not go into the creek, pasture, or pond without a teacher watching them, and the children know that they should inform their teachers before climbing trees. Even with these safety rules, she noted that the children still

have a lot of freedom and enjoy being outside in the open spaces.

## Chapter 5 Data Analysis for Teacher B

This chapter will describe the in-depth teacher interview data for teacher B, including her personal play history, her ways of implementing play in natural settings, and her beliefs about the value of play in natural environments.

*Section I. Personal Play History*

Teacher B teaches a multi-aged class with students ranging from K to 1<sup>st</sup> grade at a private school. When asked her favorite play as a child, she shared some of her early childhood experiences. She grew up in a very small town that provided her many opportunities to play outside. She said that she spent most of her time outdoors, and her favorite activity, even as a young adult, was climbing trees. Even when she was in college, she still climbed up palm trees that were on her college campus. She also enjoyed just sitting in the trees and using her imagination all the time. She liked riding a bicycle from her house to school and playing in woods. In addition, she liked to play with Barbie dolls, but rather than playing with them inside, she took her dolls outside and played with them in the natural world. She mentioned that one reason why she was always able to play outside is that the young children at that time did not have the toys and technology that keep children inside today. She thinks that most people in her generation grew up with nature including lots of trees and grass, and she believes that she and her friends had a lot more freedom than the children today. Teacher B also had experiences raising animals during her childhood. She believed the early experiences with nature lead her to love nature and to enjoy being outside, using their imagination and exploring whatever they are interested in about nature.

Teacher B loved all the natural environments that she experienced as a child including beaches, woods, and the mountains. She remembers that she liked being outside because she had a lot of freedom. There were no limitations outside, so she was able to do whatever she wanted to do, and to use her imagination a lot. She regularly used natural

elements as a source of art materials to create something new; for instance, she and her peers made little fairy houses from materials they found in nature. They regularly used natural elements when creating imaginative play. These and other creative outdoor experiences encouraged her to engage in imaginative play.

Teacher B believes that those great outdoor exposures as a child influenced her decision to become an elementary teacher because this job enables her to be back outside where she has always been happy and to be able to connect this joy with her teaching by bringing her love of nature to the children. She emphasized that her outdoor experiences as a child influence the type of curriculum she designs, which includes many opportunities for children to interact with nature.

Teacher B remembers that her recess was quite long and the playground was bigger than the school where she now teaches. She said that every elementary school that was located in her town, including her own, had a public pool. As an adult, she became a teacher and taught at the primary school where she graduated, and she tried to let her students grow up outside as much as possible, the same way she grew up. Also, she took the children to the swimming pool as a part of the school curriculum. She remembers having at least 30 to 40 minutes for recess, and the preschool children had two 30 minutes recess periods, one in the morning and one in the afternoon. The playground was equipment-dominated with swings and slides, but she and her peers were still able to use their imaginations, and the recess was truly child-directed. Her teacher allowed them to investigate whatever they were curious about, and watched the children outside carefully. During the recess, teacher B mostly played make-believe with her friends, creating stories that were related to a TV show that dealt with detectives, and making their own roles to become the characters of the TV show. She stated that she and her peers used their imaginations all the time, both when making their own games and when playing with equipment.

*Section II. Preferred Ways of Implementing Play in Natural Environments*

When teacher B described the recess at the school where she now teaches, she said that she provides her children at least an hour a day after lunch. The children usually eat lunch very quickly, and go outside to play. Additionally, she creates outdoor activities, especially, ones that are related to science, and sometimes she takes her students outside for authentic experiments. Her class is multi-aged, and all of them work together when they conduct real experiments. She thinks that the children are better able to learn the concept of gravity, speed, force, and impact through such outdoor experiments. She and her students try various tasks by using the natural environment at school, and the curriculum is completely child-directed, instead of teacher-directed. She encourages her children to find answers by themselves through real explorations which are very hands-on.

Teacher B uses the nature at her school to help children to connect with the valuable natural environment. In the morning, she and her students regularly go out to pasture, and even three-year-old young children know how to do it. The children in her class are able to take care of animals, such as horses, chickens, blue birds, and pigeons. From the beginning of the school year, they create a variety of opportunities to interact with the animals, including brushing the horses, and feeding the animals. They have blue bird boxes and nests on campus, so she and her children go there together and see the blue bird babies and observe how they are growing up. Sometimes, a marine biologist visits her school and teaches young children about birds in her K-1 classroom and in the preschool class. Teacher B invites specialists to come and speak when the children want to learn more and to attain appropriate information. She mentioned that she and her students learn a lot from these kinds of experiences at the school.

Recently, the teachers and the children at this school built hibernacula, which are hibernation pits for snakes and lizards. The children helped dig the pit, and they were

engaged in building a small pond for frogs on their playground by digging in the dirt, lining up with plastics, putting rocks around it, and filling the pond with water. Then they put tadpoles in the pond and watched them grow up into frogs. The school also has a huge pond, and she and her students often visit there to observe creatures such as baby geese, frogs, insects, and birds. Nowadays, they also can see butterflies outside so the children talk about what they have seen and start learning about the life cycle of butterflies as their curiosity becomes deeper and deeper.

To include the natural world in her classroom environment and activities, teacher B and her students collect a wide range of natural materials outside together and bring them into their classroom and continue to observe the materials. Anything that the children find outside is welcome to be brought into the classroom particularly when the children think it is unique and interesting. They share the natural materials to explain what they did with the natural elements and they often use those materials in the science center in the classroom. One of the school teachers brought foot prints of raccoons and deer that she made, and provided each classroom with copies that the children are able to observe in the science center. They have found footprints of ducks around their campus, too. A couple of years ago, she utilized telescopes to offer her children an opportunity to observe the growth process of owls. The children in her class drew pictures of what they had seen outside, and then they talked about it as a group. Teacher B thinks that sharing their experiences with nature is very meaningful to obtain better ideas of how to include nature in her teaching and in the children's learning.

### *Section III. Teachers' Beliefs about the Value of Play in Natural Environments*

When asked the purpose or value of supporting young children in playing outside, teacher B said that a lot of children today stay inside too much and spend much time playing video games; therefore, she believes that we need to provide many opportunities to help children be outside and to encourage them to use their imaginations and to explore

the freedom of the outdoors. She also focuses on helping them to find a love of nature by themselves. She believes that actual experiences in nature enable children to learn a lot more about nature than just being taught by teacher-directed instruction.

The school provides an organic garden and teacher B and the children are involved in planting it together. They are clearly able to see all the stages of how the vegetables and fruits grow since they are actively involved in the gardening process; for instance, they put the dirt into the garden and feed the worms which helps make good dirt. They have already grown strawberries and made strawberry cake for their snacks; however, they will donate their future products to others so they can also learn to share the joy with others. Teacher B teaches conservation and recycling at school. At least once a week, the teacher and her students go out to clean up the entire campus, and as they pick up trash, they learn about how to help the world to maintain great nature including both recycling and reducing.

Teacher B described the ideal early childhood environment as a school which provides large blocks of play time and a variety of hands-on activities that enable learners to interact with natural materials that relate to what they learn in math, science, and social studies. Learning activities need to be hands-on as much as possible, especially when teaching young children. She thinks free play is very important since it gives children opportunities to improve their problem-solving skills. When teachers do not intervene in children's play, they encourage them to find solutions to their problems by themselves. When children play with peers during free play time, they can learn how to get along in a group and how to collaborate with one another. They also can develop their play by watching others' play. Furthermore, Teacher B said that teachers need to teach children *how* to talk to others rather than just saying "Use your words." Her opinion is that teachers need to teach them first how to say, or what to say such as "I don't like the way you are pulling my hair." Then when the teachers sit back and watch the children, the teacher will be able to hear how the children

use the words in their play because children rehearse and use what they learned in their real lives.

Teacher B emphasized that outdoor play is the ideal physical environment for early childhood. The enriched outdoor environment of the school where she teaches enables children to experience various physical activities, such as running around the acres of land, riding bicycles, roller skating, skate boarding, climbing trees, and going to the pond to fish.

Teacher B believes that the more children interact with nature, the more they remember what they have learned because they can see it, touch it, and interact with it. Therefore, hands-on activities such as observing the baby birds and the process of their growth in real life is much more meaningful than looking at a book, and children will remember better what they have learned and will become more engaged in the learning process. Her students are able to observe the natural life cycle from birth to death, and through this observation the children can understand the science of nature. They are sympathetic and have more personal feelings about nature from experiencing it directly rather than just reading from books. She also mentioned that those interactions with nature inspire the children to gain a sense of appreciation of nature. For example, her students pick up trash when they see it on their playground, and all of them are saddened and want to help when they find an injured animal outside. She also stated that teachers need to provide child-centered activities that children can actively get involved in and that teachers need to lead children to develop their self-confidence instead of only designing teacher-directed curriculum.

Teacher B does not have serious distractions in maintaining her teaching curriculum which is related to connecting children's play with nature. She explained that many teachers do not like to conduct outdoor activities because they think their students are not in their control; those teachers think that they cannot gain their children's attention and that it is hard



to handle the children. Her opinion is that teachers need to let their students be in control of themselves and take responsibility for their own actions. For example, she teaches her students how to take care of the garden by themselves; therefore, they know that they are not supposed to step on the plants and they know both how to take care of the garden and also themselves. She said that most of the teachers in her school do not have any problem about this, so all of the teachers and the children in her school are okay with getting dirty. The children are happy and enjoy the outdoors more than being under the control of their teachers. The director and colleagues at her school are very supportive in the issue.

Mostly, the parents of her students visit the school to tour the facilities so parents are aware of their way of teaching and the school environment so she does not have difficulty working with her students' parents. When it rains, the children are supposed to bring extra clothes since the children still can go out to explore the different weather as long as it does not rain heavily. Many of her students like being barefoot; she believes that it is good for their sensory development, so she lets the children go barefoot if they feel more comfortable this way. She said all of their experiences with nature become a part of who they are.

## Chapter 6 Data Analysis for Teacher C

This chapter will describe the in-depth teacher interview data for teacher C, including her personal play history, her ways of implementing play in natural settings, and her beliefs about the value of play in natural environments.

*Section I. Personal Play History*

Teacher C teaches a multi-aged pre-kindergarten class during the summer and a multi-aged class with students ranging from kindergarten to 1<sup>st</sup> grade during the academic year. During the interview, she recounted play stories from her childhood and said that her favorite thing to do when she was a kindergartener was playing outside. She enjoyed playing on the playground at her school, and she particularly loved being on the swings. One of the reasons why she liked being outside was that she was able to spend time with her friends, and since the playground was very open, she had much freedom to run around. Nature provided many things to do outside, but also just being outside made her very happy. Her regular recess was approximately 30 minutes everyday, and she had two extra hours of outdoor play because of her involvement in an after school club. During this extra play time, she would play outside with a group of children under the supervision of a teacher. She absolutely enjoyed being outdoors. She particularly liked swings and she often played sports such as soccer.

Teacher C was raised by her mother, and she had to spend more time inside than outside after she came home from school. However, she was able to explore nature outside at school and said that playing outside on the playground during recess helped her to be a more outdoorsy person who really likes to go fishing, camping and do various outdoor activities. She thinks those outdoor experiences helped her discover that she is a person who enjoys the outdoors most.

*Section II. Preferred Ways of Implementing Play in Natural Environments*

During the academic year, teacher C usually plans to take her children outside for 30 minutes in the morning and for another 30 minutes at recess after lunch. She would like to incorporate more outdoor time into the curriculum in the coming academic year; but for now, she is able to provide between 30 minutes and two hours of outdoor time for the group of children in the after school club. During summer camp, the recess plan is different because the children do not receive academic instruction, so the teacher's plan for recess during the summer is very flexible; for instance, the day when I interviewed teacher C, she and her children went outside to play for about four hours. She indicated that her children are still learning in nature because by playing outside they are exploring new and different ways of being creative and solving problems. Teacher C thinks that she and her children are very blessed since the school provides an enriched natural environment. On the day when I visited her class, she and her students were discussing ideas for a long term project during summer camp. A majority of the children wanted to build rivers on their playground, and now the children are interested in studying rivers and investigating how they can build one. Through discussion, they decided to visit different kinds of rivers for field trips, and they will continue to focus on building rivers on the playground at school throughout the summer. Teacher C strongly believes that her students are going to learn a lot through these experiences because that kind of investigation includes reading, writing, math, science and art. Therefore, the children will be able to obtain academic knowledge in diverse areas without teacher-centered academic instruction.

To encourage her students to play with nature, teacher C gives her students great responsibilities to take care of the animals in the barnyard at school. The children learn how to feed them, and they know that they need to treat the animals kindly. Furthermore, she uses the enriched outdoor environments at the school, which contain both a vast natural

playground and a man-made playground, as much as possible to give her students opportunities to explore their interests. If her students want to investigate natural elements, the children can bring them into the classroom and then talk further about the natural materials during group time in class. Often the children continue to investigate these elements as part of their class research project.

Teacher C provides a wide range of natural materials, such as pinecones, pieces of wood from different trees, sticks, and seashells in the classroom to help children to be able to access nature even when they are in their classroom. She also offers milk bottles and other plastic materials even though they are not natural because they can demonstrate the importance of reusing and recycling. They are encouraged to generate ideas about reusing them in different ways instead of just throwing them away. According to her, many of her students like to experience nature even in the classroom; for instance, when they play in the art area or the construction area, they often use natural materials to enhance their play; therefore, she tries to offer as many natural elements in her classroom as possible. Teacher C puts them out in various centers around her classroom but never asks the children to play with those materials. Interestingly, her students seek the nature by themselves and are eager to use the materials during center play time in their classroom. She said that providing a variety of natural materials in a classroom is wonderful for the children because they are still very interested in exploring the natural environment inside. She thinks that interacting with nature and playing outdoors in early childhood are much more valuable than playing video games or spending time with digital products. The children's eagerness to play outside suggests that they too prefer natural experiences to digital ones.

Teacher C described some of the activities that she and the children do in the art area with the natural materials. During the academic year, a lot of times she plans art projects with natural elements for her students, but the curriculum of her summer camp class is very

flexible and open-ended for the children. They can start various art activities based on their own desire. The children have the freedom to draw, paint, and make other forms of art, and they always have access to natural materials to include in their creations. She believes that giving children choices creates both a love and a sense of responsibility for what they do. They clean up the items they used and they are so careful when they use any materials in their classroom. Through her viewpoint, she sees the classroom itself as a second teacher. Her students know that the classroom is theirs not the teacher's and they are in charge of taking care of it. She stated that the teachers at the school are facilitators and exist to make sure the children are safe and to watch for potential problem. Her opinion is that children become their own teachers and the classroom is provided to help them do so.

### *Section III. Teachers' Beliefs about the Value of Play in Natural Environments*

Teacher C explained that when playing outdoors, the children in her class become totally different people, and she assumes that since they have more freedom than when they are inside, they tend to become more active and more accepting of complex tasks and challenges. She said, there are always some restrictions and boundaries inside; for instance, the children are not supposed to run inside and they need to be a bit more calm and quiet than when they are outside. Unlike indoors, when they are outdoors, children can run around, scream, make up their own games, and challenge themselves on the equipment that they have on the playground. She said that she cannot imagine a school that does not have access to a playground that includes nature because exposure to nature is very important for children's learning and development. Outside, she encourages a lot of teamwork, and at the beginning of every semester, she and her students discuss the appropriate guidelines for outdoor play and for working together. She stated that children are very proud of creating the guidelines by themselves and they follow the rules well. She said if she asks children about what they are and are not supposed to do outside, the children would say, "Treat your friend nicely," and

“Don’t pour sand on friends.” They were talking as a group, and the teacher said, “Ok, so for outside, what are some things that maybe we can’t do?” And the children respond with examples of inappropriate behavior. She pointed out that since the children make the rules by themselves through discussion, they are more likely to keep the guidelines with a sense of responsibility.

When discussing her idea of ideal early childhood environments, teacher C explained that the classroom needs to have more white walls or spaces than colored ones because as the year progresses, children’s investigations, including picture of them doing projects and any kinds of sketches and documentations that they have done, will be hung on walls, and they should be the main focus in the classroom, not structured alphabet posters. The wall should not be crowded, too colorful, or overwhelming. Children are able to choose which pieces or art work will go up on the wall. In addition, a variety of manipulative materials and textures need to be provided to encourage children to explore various materials. For example, beginning this summer, she was able to add a sewing center to her classroom, and so far her children love exploring this center and manipulating various types of thread and fabric. She insisted that the early childhood environment needs to be very open, and the curriculum should provide enough time for children to go outside and explore and investigate. She believes that play in natural environments enables children to gain better self-esteem and self-confidence. She explained that being outside and challenging oneself absolutely helps children build self-confidence. Teacher C said that she and her students are very lucky since their school has an amazing natural environment and they are able to go hiking on the hill, climb the trees, and even just roll around in the grass. Children are actively engaged in outdoor activities, and she is always absolutely ready to accept the children’s requests about performing outdoor activities based on their interests. They sketch on the hill or sometimes incorporate writing up there.

Teacher C believes that interacting with nature in early childhood allows young children to ask questions about phenomena and to become actively involved in finding the answers to their questions. Whenever her students have questions, she encourages them to find ways to investigate them through discussion. The children generate ideas such as obtaining information on the Internet and reading books, and she intervenes as little as possible, letting them explore the materials and gain resources which they need to answer the question by themselves. By actively engaging in the investigation, they will naturally be able to further their knowledge of the problem. For this reason, she does not give her students answers directly because she believes that it will limit the children's learning and they will lose their interest. Instead, she supports them to become investigators and helps them to perform their research. She also emphasized that one of the strongest relationships between children's play and nature could be gaining self-confidence through interactions with nature. Furthermore, the children who are exposed to experience nature learn more about science than those who have not had authentic experiences with nature.

Teacher C believes that playing in naturalistic settings allows the children to acquire a sense of responsibility because when children are outside and in the natural world, they know what they can do and what they want to do by themselves and they are in charge. She also mentioned that interacting with nature is both calming and challenging at the same time; in addition, she said that natural settings help children not to become over stimulated. She explained that once children start getting into their classrooms which have a variety of colors and a lot of plastic materials, children tend to think with certain limitations and sometimes the children do not feel very comfortable with that. In sum, teacher C thinks that the effect of children's interactions with nature allows them to feel calm and to attain a sense of wonder, responsibility, and ownership.

Except having some allergies, Teacher C did not have major distractions that she

faces in regards to connecting her students with the natural world. She did have difficulty helping her children to understand that the expansion of their school meant altering the natural environment in some ways. Since the school has been growing, the administrators of the school decided to cut down some trees at the school to extend their campus; however, it is hard for the children to understand this because they love nature. They continually asked her about the reasons why the school is cutting down trees even though they want to save the trees.

In addition, since the school supports recycling, and teachers and the students are doing recycling all over the school, her students are very aware of the things that can be recycled and those that cannot. The children in her class are very concerned about recycling; for example, if they see one of their friends throw a plastic water bottle in the trash, they will be upset and strongly recommend that the friend put it in the recycling bag. She said that the children know that they have a responsibility to take care of their environment, and even at home, the children tell their parents about the importance of recycling. She said even younger children, between two and three years olds, also talk to their parents about different materials and recycling, and teacher C stated that the cycle begins because she thinks that the children have grown up recognizing the importance of recycling, and she believes that they will keep up the way until they become parents and will teach their future children how to protect the environment.



## Chapter 7 Data Analysis for Teacher D

This chapter will describe the in-depth teacher interview data for teacher D, including her personal play history, her ways of implementing play in natural settings, and her beliefs about the value of play in natural environments.

*Section I. Personal Play History*

Teacher D teaches a multi-aged class with students ranging from three to five years olds at a private school. As a child, she often stayed with her grandmother and she had two favorite things to do there. One of her favorite activities was going outside and making mud-pies by gathering up mud, dirt, rocks, and flowers and mixing the materials. Afterwards, she would find little cups and pretended to eat the mud-pies which she had made. Another favorite activity of hers was making paper dolls in her grandmother's house. Her grandmother drew all of the paper dolls and dresses, and she dressed the dolls in different kinds of clothes. She grew up in a metropolitan area and her grandmother's house was in a mid-town area; however, the neighborhood seemed rural because they had a great natural environment surrounding the houses. She always went outside to play and often did planting and gardening. From when she was five until twelve, teacher D traveled with her grandparents every summer for about a month. She and her grandparents went to rural places, so she had many opportunities to experience nature in the form of national parks, farms, and open land.

When asked why she enjoyed these types of play most, she said that making mud-pies was open-ended and by using her imagination, the mud-pies could be anything, such as a cake, and she was freely able to choose what she wanted to put in them. She enjoyed making paper dolls for the same reason. Even though there was a form to follow, she was able to design the dresses of the paper dolls in the way she wanted. Teacher D described herself as an artistic child and now still she is. She does not like the feeling of being boxed in; she likes to

think outside of the box, just as she did as a child. She loved coloring and painting, yet she always created her own ways of doing them.

Teacher D believes that interactions with the natural world in her young age gave her a love of nature that she now passes on to her own children and students. She loved being outside, and she noticed small things and small changes when sitting in her grandmother's backyard as a young child. She remembers one time watching a caterpillar for hours, and she still does the same things with her children. She believes that having the background of being open-ended and being out in nature helped her to become a person who wants to give similar experiences to other people. Now, as both a parent and a teacher, she tries to foster in her own children and students the same love of nature that she gained through her experiences with nature. She enjoys encouraging children to notice the changes of trees and clouds, and other tiny things that easily go unnoticed. She taught her students things that she learned as a child and told them that even small insects breathe like us, and that they have hearts and lungs the same as we do, only smaller than ours. She stated that her students do not step on bugs but rather try to take them outside and let them find their home. Also, teacher D and her students raise a couple of guinea pigs in their classroom, and the children do take care of animals inside and outside of the classroom.

Teacher D had 30 minutes of recess a day when she was in primary school. She felt that this was not enough time, and often they did not even play outdoors but normally stayed indoors. Also she did not go outside very often at her house and usually watched television. However, she was able to play outside as much as she liked at her grandmother's house. She enjoyed being outside, and particularly both sun light and fresh air made her happy. She usually played on the swings and dug in the dirt, and she mostly enjoyed imaginative play with her peers and created play by discussing what games they could play, what characters they can be, and how the characters relate to each other during play.

*Section II. Preferred Ways of Implementing Play in Natural Environments*

In teacher D's class, the ages range from three to five, and generally the students have about an hour of recess a day during which the teacher and her students play outdoors. Their recess time is very flexible, so sometimes it can be longer depending on what they investigate and sometimes it can be shorter. Her class is particularly interested in their woods at school, so they go out to the woods at least once a week and they usually stay about three hours per visit. They do hike in the woods, and look at all the kinds of nature they can see outside. Their investigation for this year is a 'Big Hill' in the woods, and they go out to the woods often to explore this hill. Yet even when she does not have an investigation related to the woods, she still goes out to the woods every single week with her students. Additionally, she plans a field trip once a week and tries to go out somewhere with her students. She does not let her students spend the entire school day inside because she thinks that there is value and validity in learning outside the classroom as well as inside. For instance, she believes that the things that the children in her class can see on a field trip downtown are very different than what they can learn about in a book in a classroom. Hence, she tries to give her students broad opportunities to obtain first hand experiences and she also pointed out that she definitely will continue going out to the woods because she recognizes the fact that she and her students need to take advantage of the beautiful huge acreage at the school. According to her, every class at the school has at least an hour recess outside. Sometimes they split into two groups and the recess will be about an hour inside and an hour outside. Sometimes they spend an hour inside all together then all go outside for another hour. Since her curriculum is flexible, the recess depends on what they have planned for that day.

Teacher D talked about her outdoor plan for various weather conditions and said if the weather is sprinkling, cold, or hot, she and her students still go outside as long as it is not too hot or too cold. Last year, she and her students went outside when the temperature was

below 32 degrees, as long as the temperature was not negative, since she thinks the children need to explore and feel the differences. If the temperature is near 100 degrees, her class can still go outside and enjoy water play; however, if it is too hot, such as over 100 degree, she does not plan outdoor play for safety reasons.

Teacher D provides natural materials in her classroom including a construction area and a home-living area. Instead of providing plastic fruits in home-living area, she provides natural materials, such as corks, pinecones, and nuts to encourage the children to use those materials when playing in the home-living center, such as when pretending to cook dinner. In addition, she and her students created an area for the leaves, seedpods, flowers, feathers and other natural materials that they collected from the 'Big Hill.' The children call those gathered materials treasures. In these ways, teacher D tries to reconnect children with nature even inside. The children in her class can use all kinds of natural materials in the classroom, depending on what they want to do; for instance, the children can continue to observe the materials with magnifying glasses or they can use them as resources for artwork.

Teacher D also takes a lot of photographs, about 150 pictures a day at school when important events occur, especially when children play in nature. She uses those photographs for further activities or discussions at group time in the classroom. She shows her children the best pictures at group time and encourages them to talk about what they remember and helps them to think a bit further about what they have found or observed. In addition, teacher D utilizes the natural environment when conducting activities involving parents, such as family camp on the 'big hill,' and children share their experiences on the 'Big Hill' with their parents.

As described above, teacher D includes a variety of nature items in her classroom so the children are able to use them in diverse areas, such as construction, mini atelier, and house-keeping areas. Her classroom environment is not limited but very open for children to

use anything that they want in order to represent or to make their learning and ideas visible. For example, her students like to use clay and put various sorts of natural materials on it, and over time they continue to develop the artifact by adding other materials whenever they want to. She insisted that as long as children have some intentionality with what they want to do, her classroom environment is very open-ended for them to explore their interests. Outside of her classroom, there is storage for a large amount of natural materials that they have collected together from outside, and children are free to use any of these materials, such as pinecones and seashells, to create their own activities. If the children cannot find the materials when they need, teacher D and the children discuss how they can obtain the materials and find answers; for example, writing letters to parents and visiting other classrooms. However, she makes an effort to provide abundant natural elements as much as she can and to store them in a place where the children can easily reach them. Teacher D thinks that this availability enables children to express what they have been creating or what they have learned.

Teacher D and the children in her class do planting, and they care for their gardens outside; however, since the recent interest of her students has been birds, they have not been very engaged in gardening, so now they are trying to figure out how all of them can more get involved in gardening. They are interested in learning about birds lately so they have been sketching and observing many types of birds and also, they have brought bird feathers to their class for observation; hence, children in her class know about various kinds of birds. Her students also enjoy working with clay, and they create artistic works using the clay and other natural materials. Teacher D puts diverse natural elements, including pinecones, wood cookies, and seashells in the sand boxes because the children can utilize the materials in their play; for instance, instead of using shovels, her children use the different kinds of seashells when they scoop sand or mud.

Teacher D always tries to provide as many natural materials as possible both outside

and inside, and now she is in the process of gaining new materials. These materials always encourage children to think because they can be used in multifunctional ways such as utilizing a shell as a shovel. Additionally, she and her students raise two guinea pigs in their classroom, and all of them take care of the animals, feeding them, giving them water, and playing with them.

Teacher D stated that the curriculum of her school is very flexible since it is inspired by the Reggio Emilia education system, and she works to accomplish a team-approach between the teacher and the students. She believes that her interests influence her students' interest. For example, she has an interest in birds so she brought bird feathers or birds close to her classroom, and her students started to become interested in birds from that time and said, "Oh, look at the birds!" Although her interests affect those of her students, there is no pressure. She mentioned another class which has a rabbit, and she said the children and the teacher have been working on how they can make a family for the rabbit and how they can change the cage to help the rabbit feel more comfortable. She said that she often sees children's involvement in raising animals and their love of creatures. Therefore, she and her co-workers try to include animals in the classroom and to develop supportive natural learning curriculum and environment for their students. She said that teaching in a natural environment is wonderful and she loves teaching in these ways.

### *Section III. Teachers' Beliefs about the Value of Play in Natural Environments*

Teacher D regularly plans outdoor play because she does not think children today go outside enough when they are at home. Interestingly, even though she loves nature and spends a lot of time in nature with her students, she does not go outside often with her own children when she is at home. After watching her students' interactions with the enriched natural environment at school, including the beautiful acres and the woods, she realized that she needs to take her own children outside more. When children play outdoors, she noticed

that discipline problems and personality differences that are apparent in the classroom disappear when children are outside. The children get along better by collaborating with one another in more constructive ways, and she said observing children's outdoor play and finding those differences helps her to develop better ideas to continue to support children's outdoor play with nature. She emphasized that letting children be in open spaces without limitations involves a lot of potential benefits in children's learning and development. She indicates that if there are restrictions or tasks that are mandatory, the children will lose their interest in them. She insists that allowing children to play freely in an open area enables children to express themselves to others in various ways. For example, when children have the same interest in building ant houses, the children are able to spread out all the materials that they need and collaborate to build the houses.

Teacher D stated that she is so honored to be able to teach in this way and at this school because to her being outside has always seemed the best way of teaching and learning for young children. Teacher D shared her project files which contain a variety of documentations and pictures that show the process of the children's investigations in nature, especially on the 'Big Hill.' She was very excited that her class continues the investigation and by looking at the documentations and pictures in the project files, she said that she and her students are able to see the steps of how they went through the process of interacting with the natural space and with one another. She emphasized that the children in her class have a sense of appreciation for everything outside, not only nature but also for people. She believes that her students are able to see the bigger picture, to look at things in different ways, and to be more open .

When asked how the ideal early childhood environment, she named the school where she teaches now. She mentioned that all the teachers in the school are eager to become partners with their children and to help children gather information by themselves rather than

giving information or answers directly. In this way, they encourage children's interest in specific topics. In addition, the environment of the school is open to the ideas and interests of the children, and the children can manipulate the environments to suit their needs. She stated that if the children in her class are not interested in the 'Big Hill' any more, she is ready to transform her curriculum or topics to meet the children's needs. She said she will be very open to help them find ways of investigating new topics and will discuss how they can incorporate the new topics into their classroom. She believes that being open-minded, listening to children, and observing their play are essential in getting to know more about her students' development and learning process.

Furthermore, she answered that including nature in educational curriculum is definitely a crucial element to enhance children's learning and development in early childhood. She explained that open, unrestricted space in nature enables children to have the freedom to choose what they want to do in the natural environment, and she thinks that both children and teachers feel less stressed than staying inside doing tasks with limitations. She is very satisfied with teaching at this private school because it contains her ideal early childhood environment elements.

As mentioned before, teacher D believes that children learn differently when they are in nature. She explains that her students often find a variety of natural elements in the woods and bring them into their classroom; however, unlike their active involvement with those materials outside, after bringing the natural materials inside, the children have difficulty establishing smooth transitions and sometimes they do not know what they can do with the materials inside. Her opinion is that children think in a different way about those materials when they are inside, and the children are more close-minded about how to use the natural elements than when playing outside. According to teacher D's experiences and observations, her students are open to natural interactions but she has yet to discover why



their attitudes about including natural materials into their play are different between inside and outside. She set up some rocks and sticks and other natural materials on the table in her classroom and told her students, "Oh, look at the rocks and sticks!" , but the children were uninterested and walked off the other way. She said that the children seemed not to want to work with the natural materials.

Teacher D is currently trying to figure out how she can help her students to reconnect with those natural materials in a constructive learning way inside the classroom. Sometimes, the children in her class use the materials in classroom activities. For example, when she and her students worked on making the map to the 'Big Hill,' the children started putting and glueing some of the natural materials on the map together. Teacher D's goal for next year is to see how she and her students can rearrange classroom activities and environment to help them better use and interact with natural elements when playing inside.

Teacher D pointed out that when her students are out in nature, such as at the 'Big Hill,' they tend to listen better. When she and her students return to the classroom, they have a reflection meeting, during which they explain what they observed outside. During the reflective discussion, they usually talk about their favorite outdoor activity, and she tries to ask them open-ended questions and encourages them to explain more about what they did outside. She said that the children's reflective discussion is often deeper than her expectation, and she thinks that the relationships between nature and their learning goes deeper through discussion, which to her is a heartfelt experience.

Teacher D hopes that her students continue to increase love of nature to maintain their wonder, curiosity, and questions about nature, and to never stop observing it. In addition, she wants them to keep everything in creative, out-of-the-box thinking. She remembers one student in her class who was looking out the window during lunch and said, "Now, the tree looks like a pig. I can see the nose, I can see the eye..." She looked outside yet she could not

find a tree that resembled a pig; however, she understands that he is able to see nature in a different way by form and shape. She hopes that her students continue to grow up as they are now and that she has planted the seeds that will grow as they go on. Her goal as a teacher is to help children to love learning.

Teacher D stated that she does not have many difficulties or distractions. The only obstacle she foresees is severe weather. Other than that, she does not have any problem because she and her students can go outside anytime they need or want to. If her students want to go out every single day to the 'Big Hill' to investigate their research topic, they are allowed to because their curriculum is flexible. The only limitations which she has are personal ones such as if she is too busy with other work and can not go outside. Another limitation would be during assessment period in a particular time of year because they have specific tasks to do, and both she and the children in her class do not feel free to be out. However, she does not think these are serious distractions, and once she and her students go outside, there would be no problem.

Teacher D discusses outdoor safety with her students. The teacher and the children talk about how to use the equipment on the playground, how they can appropriately work with natural materials, and how they can play in a safe way with those materials and equipment. She said having a multi-aged class is beneficial when dealing with safety rules because the older children who have been in the class for two years are able to lead the discussion and to teach the younger children a lot about safety. During the discussion, she asks the children questions such as "What are some agreements we can make for our safety to be outside?" and the children say, "We need to use our walking feet, we need to use our listening ears, and we need to use our quiet voices." Sometimes, they also say, "We need to stay on the path, and we need to be quiet if we want to see deer." Teacher D said that interestingly, their agreements are almost always the same as she anticipates. She also stated

that the children know the appropriate ways to treat even small insects; for example, they show concern for the lives of other living creatures, so they never step on the bugs and let them find their place.

Teacher D mentioned parents' involvement in children's activities with nature. Her students' families are always welcome to come to the 'Big Hill' anytime, and she plans three major activities each year that encourage family members to be more involved in their children's learning in naturalized settings. When winter comes, teachers, the children, and their families decorate trees together, and families have the opportunity to experience the enriched natural school environment and to enjoy learning with their children. At the end of this year, she invited her students' families to an outdoor activity, and 24 of the 28 families attended this event. She said almost all of the families in her class are very supportive of their child's learning in natural environment. According to teacher D, the families had a wonderful time on the hill at the school, playing frisbee and exploring the open space with their child. She also enjoyed time with the families and said inviting families into their outdoor activity is a valuable bonding experience for all the families.

Teacher D pointed out the benefits of a multi-aged class when conducting outdoor activities or outdoor play. First of all, the older children who already have experiences in the class are able to help the younger children to figure out their problems. In particular, when they are outside at the beginning of the school year, older children can explain about the ways of taking care of the animals and gardens, and also they can help each other when they encounter problems. She said that she would say it is a great mentoring. According to teacher D, these relationships provide great mentoring experiences. She believes that both older and younger children help each other socially, academically, and emotionally. Secondly, she can more effectively support the children's learning because she has spent much time with them and has been able to observe their developmental stages and interests; hence, she is able to

discover better ways to help them further their learning. The more she knows her students, the more she can help them academically, socially, and emotionally. For instance, she knows one of her students has a particular love of nature, and because she has had this child in class for two years, she has been able to effectively facilitate his learning when he is engaged in his interests in nature. She often has conversations with him and asks him open-ended questions to broaden his perspective about nature. She emphasized that having older students who help younger ones is always wonderful, and she loves teaching a multi-aged class.

## Chapter 8 Data Analysis for Teacher E

This chapter will describe the in-depth teacher interview data for teacher E, including her personal play history, her ways of implementing play in natural settings, and her beliefs about the value of play in natural environments.

### *Section I. Personal Play History*

Teacher E teaches a multi-aged class with students ranging from two to three years old at a private school. When teacher E was a child, she liked reading books and playing with dolls. She lived in a suburban area near the country; however, she rarely went outside to play. Particularly during summer, she did not like to play outside at all because of the hot weather in Oklahoma. She preferred being by herself rather than being with many peers. She spent a lot of time as a child reading books because it allowed her to be able to stay by herself and to use her imagination. At school, teacher E had recess three times a day, but each recess was only 10 to 15 minutes. During recess, all children went out to the playground, and she spent most of her recess by playing with her friends. She loved swings and making up games such as chasing games.

### *Section II. Preferred Ways of Implementing Play in Natural Environments*

As an early childhood educator, teacher E goes outside with her students everyday unless the weather is severe. Even it is raining, they sometimes still go outside in order to experience different weather and feel the differences. The recess is usually about an hour a day, but sometimes she provides two hours or three hours of recess, during which the children play outdoors. The recess is very flexible and varies depending on the plan of each day and the weather. She and her students usually spend time outside on their playground in the morning after they are dropped off by their parents. The outdoor activities of her classroom are mainly designed to match her students' interest; for instance, the children can choose what they want to do outside, including going for a walk, visiting the barnyard, going

to the hills, and playing on the playground. She usually plans those kinds of outdoor activities from 10 to 11 in the morning, and she also offers a second recess after the nap time in the afternoon. The two and three-year-old children can go up to the hill at the school cite. At first, she and the children were a bit nervous because they thought that the walk to the hill was a long way for them; however, they really enjoyed it and still like to go to the hill. They also enjoy visiting the barnyard to see and talk about the horses, goats, llamas, and the rabbits near by the barnyard, and sometimes the children feed the animals. According to her, her students really love the rich natural environment at the school.

When teacher E described her efforts to encourage her children to connect with the natural environment, she said that she uses the whole campus as much as she can and give her students a choice to decide where to play and the types of play. She thinks that this freedom of choice is the biggest provision that she could give her students at school. In the classroom, she provides wood pieces, pine needles, pinecones, acorns, seashells, rocks, stones and other natural materials in the diverse centers. Her students often use the natural materials when they create their work of art, and also they can use all of the materials for building purposes in the construction area. In addition, they also can use the natural elements in the home-living area. The children in her class are able to pretend cook with pinecones and small branches instead of using plastic materials. Furthermore, she and her students decorate their classroom with natural elements like peacock feathers. If the children want to, they are welcome to bring natural materials that they find outside into the classroom. Sometimes, she and her students go for a walk and they bring natural elements, such as pinecones and leaves inside, and put them in diverse areas to continue to interact with nature. In the past, she has provided fish and crabs in her classroom and currently teacher E and her students are considering raising other creatures in their classroom.

*Section III. Teachers' Beliefs about the Value of Play in Natural Environments*

This year is teacher E's first year in the school, and she said that through her observations when working with her students, she has noticed that the children in her class are very respectful of nature and of others. She thinks the reason is that they are always able to access all the open places at school and often interact with creatures. Her students are very respectful of animals; for example, they tell their friends "We need to touch them, softly, don't you think so?" Teacher E stated that being very respectful of the environment is the most valuable fact in supporting children to connect with the natural world. She believes that much respect is coming from their experiences of interacting with the natural world, and she said that her students do not step on bugs, but instead prefer to watch them and learn about their behavior. They also do not tear leaves from trees. Teacher E emphasized that seeing two and three-year-olds respect their environment is the best thing to see at the school. She thinks that just being outside or getting some exercise in the sun is a wonderful experience for her students because the campus has beautiful acres and an enriched natural environment. The children at the school are able to interact with plants, rocks, trees, flowers, and animals, and they have real authentic experiences instead of looking in books and memorizing. Children in her class are eager to understand more, and their curiosity deepens and more diverse because they interact with nature actively through direct observation, which stands in contrast to the indirect experiences provided by book learning.

When teacher E discussed her ideas about the ideal early childhood environment, she named the school where she teaches now because the teachers and the children in the school are able to go outside whenever they desire to, and they are offered many opportunities to explore the nature at the school. She said that all teachers at her school are very caring, and they try to give their students enough time to explore their interests in the natural world. Teacher E believes having first-hand experiences is much more valuable than sitting in the

classroom and reading, writing, and memorizing because real experiences enable children to remember longer, help children understand better, and make them more curious and more interested in learning. Her school offers the best environment and curriculum she has ever experienced, and she is very much enjoying teaching at this school. She recounted that the previous school where she taught had less access to nature than the school where she is now and the teachers and the students there spent most of their time indoors. Therefore, she said that she is experiencing a very different school environment now than she is familiar with.

Teacher E thinks that having hands on activities and first-hand experiences in natural environments help children to increase their sense of wonder about nature and also makes them want to learn. For example, in the fall, she and her students went for a walk, and they saw the leaves that were turning colors and falling down. After that, they had a great conversation about why the leaves do this in the fall. She believes that those kinds of real experiences help the children to develop a sense of wonder and make them more curious about the things they see. She repeated that just being outside is important because the scenery outside is very beautiful to see, and it is healthy and educational to feel the sunshine and the wind, to watch the worms, and to experience different types of weather, to play outside in open spaces, and just to run around outside. She said that all of these experiences teach children to respect nature. She pointed out that if children can respect nature outside, they can also respect their environment inside. For instance, if they respect animals and natural materials outside, they still will respect pets and other materials inside, both in class and at home. She also mentioned that being outside helps children think in different ways since it is more open-ended and presents fewer limitations. Additionally, being able to explore outside enables the children to think about themselves, and they want them to go outside more. She emphasized that playing and learning are not separate concepts; they are combined, and the children are still learning outside by drawing, painting, observing, and



interacting in natural learning environments.

The classroom curriculum of teacher E is very flexible and is largely based on her students' interests; for example, if they want to work on clay one day, she will provide them with clay. The children in her class decide everything by themselves, and her role is to be a facilitator to help the children to develop activities or work that they are interested in. Some children find their interests easily, yet some children do not know what to do or cannot find their interests. Teacher E helps those children to find their interests and afterwards, she supports them to start work on it. Her class generally has two or three group times a day, and during these time, the children share their findings, progress, and feelings about their investigations.

When asked her belief about supporting young children's play in natural environments, teacher E stated that the best effect is that children learn respect for nature and others. She also thinks that children in her school are healthier than those who spend most of their time inside, and she pointed out that there are not many over-weight children at her school. When she first came to the school, she noticed that the children at this school tended to be more physically fit than children at her previous school. She thinks the reason is probably that the children at her school are very active and always love being outside, going for walks or running around. In addition, she believes that play in nature helps spark children's curiosity that would not necessarily happen without exposure to and explorations of natural environments. She stated that the children always want to go outside and play outdoors. She observes the children during this outdoor play time, and she can clearly see the children are still learning outside and sometimes learn more than they do inside. According to her, play and interactions with nature help children to be more respectful and to develop a sense of curiosity. She indicated that she supports her students in their desired explorations and believes that children naturally learn a lot through authentic hands-on experiences.

Teacher E does not think that she has substantial difficulties to help children connect with the natural world. One minor distraction is the weather. For instance, although it is uncommon, sometimes it rains heavily for several days in a row, making outdoor activity impossible. When this happens, the young children in her class become frustrated because they truly love to go outside. She also said sometimes some parents do not understand why their child gets so dirty; however, most of the parents are very supportive because they already knew about the unique school curriculum and environment before they chose the school for their child, and they also love the natural environment at the school. The children in her class usually do not dress up because their parents know to prepare their children for diverse outdoor activities. Therefore, with the exception of severe weather, supporting children to connect with nature is not difficult at her school because the school provides enriched natural environment including gardens, woods, beautiful playgrounds, and friendly animals at the barnyard. Even when the weather is too hot or too cold, her students still want to go outside and play because they love nature and all its beauty.

## Chapter 9 Data Analysis for Teacher F

This chapter will describe the in-depth teacher interview data for teacher F, including her personal play history, her ways of implementing play in natural settings, and her beliefs about the value of play in natural environments.

*Section I. Personal Play History*

Teacher F teaches a multi-aged class with students ranging in age from three to five at a Tulsa cite. As a child, her favorite thing to do was to play outside with her friends. She grew up in the suburban area where children spend much of their time in their backyards and were able to run throughout the neighborhood. She remembers that she and her friends had a lot of freedom when playing outside. Her parents paid attention to them when they were outdoors but did not necessarily watch right over them. She and her friends went out in the morning and played until lunch, at which time they would return home for lunch. They usually ate lunch very quickly in order to go back outside again, and they played outdoors until evening.

Teacher F believes that she liked outdoor play the best because it allowed them the freedom and time to create anything they wanted during play. They were able to make up stories or games, and they did not feel pressured or rushed because they had a lot of time and very open spaces. They figured problems out by themselves and they used natural materials in very open-ended ways to create props for their imaginative and make-believe play. One reason she mostly played outside was that she was able to spend time with her favorite friends, and also playing outside was an opportunity to make many new friends. She also mentioned that she felt very free since she could talk loudly and move around a lot.

Today, as an adult who has learned the value of time, she feels sad that children no longer spend much time outside. She thinks that her previous experiences with nature in her young age helped her discover some of her spiritual beliefs about learning in nature and the

value of time outside. For her time spent outside is time spent in peace.

Teacher F had about a half an hour recess a day when she was in primary school. However, at home after school, her outdoor play time was very long. Almost everyday, right after she came back home from school, she immediately went outside to play with the other children in the neighborhood until dinner. On weekends or when she did not have school, she played outdoors almost all day, as long as the weather was reasonable. She said that she and her friends in her neighbor played outside a lot and that their parents allowed them to be outside as much as they wanted. Although, the place where she grew up was not in the country, she still had a great backyard with many trees and grasses.

During recess, she often played different types of ball games and hop-scotch. She remembered her school having a baseball or soccer field, and everybody was able to go to the field and play there. The ball games on the field were not necessarily structured or adult-made; the children were able to create their own games. The playground at her school had equipment; but, she usually did not play on equipment. She generally hung out with her friends, creating imaginative play together. She and her peers created stories and pretended to be a variety of different characters.

### *Section II. Preferred Ways of Implementing Play in Natural Environments*

Unlike her childhood recess length (about half an hour), she offers about an hour or an hour and fifteen minutes of recess a day. She emphasized that she plans outside activities differently than inside activities. Indoor activities tend to be academically focused, while outdoor activities are more open. But for both, she tries always to be child-oriented rather than teacher-oriented. She gives her students enough time to find their interests outside, and she also said that she wants to give the children time to just be outside. She wants her students find their own objects to investigate during recess, and she wants them to think deeply about it while they plan for recess. In addition, she mentioned that she wants the

children to have much more time outside than in the classroom because she strongly believes that there is value to being outside without formal structure. In her classroom, if children want to be involved in their interests, then they can investigate them directly, or if the children want to go outside and run around, they can do that, too.

When teacher F and her students observe or interact with animals or insects on the playground, they talk about them together. They are strong proponents of conserving animals and their natural habitats. The children know that if the creatures are outside, it is their home, and it needs to stay there; therefore, the children also know that they are not supposed to step on the creatures or kill them. One time when the teacher and the children saw earthworms on the ground while they were outside, they started talking about why the earthworms are important, and why the ground is dry or not dry. Teacher F and her students often go on walks in the woods at the school, and she indicates that there are many opportunities for those kinds of impromptu science and observation situations because as they walk along in the woods, they see different trees, flowers, fruits, animal tracks, and even animals, all of which could be the topic of a spontaneous lesson. The woods provide a variety of other opportunities as well. Teacher F and the children in her class have gone outside and painted in the woods. They took water colors and set in the spots that are rocky, and they painted trees that were around them. In her class, they expressed a desire to spend more time in the woods so now they spend as much time as possible in the woods.

Teacher F and her students also go to the barnyards once a week. They have visited the barnyard to observe animals and sketch them. Her students have been very interested in the barnyard because they have a rabbit in their classroom, and they are convinced that the rabbits in the barnyard and the rabbit in their class are related. In fact, it is not true but the children are convinced that it is; hence, they like to visit the barnyard and see the rabbits, and they are creating the family relationship between the rabbits in the barnyard and the one in

their classroom. Additionally, they like to see goats and the horses that are very personable, which makes it fun for the children to visit. Currently, her class is working on transitioning from their interest in the woods to the barnyard.

They have a peacock that hangs around outside of their classroom, and the children in her class have been feeding the peacock. The peacock has begun hanging out by the backdoor of their classroom, and he seems to know that he belongs to the classroom and seems to seek out the children. The children reciprocate this feeling, believing the peacock is part of their classroom, and the children usually feed him up after lunch. They are trying to find better food for him instead of giving crackers, and they are establishing a strong connection with this peacock that is always around the corner from them.

When describing her ways of including the natural world in her classroom, she explained that she provides a wide range of natural materials in almost every area in her classroom. There are several containers filled entirely with natural materials for children to use when they need materials for classroom activities or during free choice play. In particular, teacher F provides a variety of natural materials including sticks, cork, little pumpkins, leaves, rocks, shells, and pinecones in the home-living, mini atelier, and construction areas. In addition, underneath the loft in her classrooms, she created a completely natural materials area for the children to use when creating their own play. Also, the classroom has big tree stumps in the construction area for the children to build on. She likes to provide clay because it is a natural material and children can manipulate it in various ways, which is good for their creativity and motor development. With the exception of the message area, where she puts only leaves, each center of her classroom has diverse kinds of natural elements.

Teacher F often plans art activities related to nature; for example, her students have made collages using leaves, shells, dried flowers, and other natural elements. Additionally, her students draw paintings in the woods at the school. She stated that she does

not decorate her classroom with natural materials, instead, she and the children in her class have used the works that they have created with natural materials to decorate. In this way, the children's work becomes visible to themselves, families, and others who visit the classroom. For instance, above of the windows in her classroom, she hung up the children's paintings from the woods and the collages that include paintings and natural materials.

Next year, teacher F and her team teacher strongly want to work on creating provocations; for example, if there are clay and sticks in the mini atelier, she and her team teacher are going to see what the children do with those materials as a provocation. She explained two reasons why she plans to do this. First, it is going to be interesting to see what the children do with those materials. Secondly, she and her team teacher can give the children an opportunity to explore the different materials and to obtain some information from the teachers; for instance, after their exploration with the materials, teachers can come to the mini atelier area and show their explorations with clay and sticks, such as making decorative artifact, and the children will be able to learn that they can create different things using clay and sticks. She hopes that the children try to think deeper and use their knowledge in a way to further their future learning.

Teacher F has a pet, a rabbit in her classroom. The children in her class are very involved in taking care of the rabbit throughout the school year. Part of their investigation is to come up with a new environment for her because they thought her cage is too small. The cage is not too small, yet they think the rabbit might be uncomfortable; therefore, the children would like to create a more enhanced environment for her, and teacher F and the children have developed diverse plans for the new place of their rabbit during the second semester. She hopes that she and her students will be able to do further works towards it during this summer and provide new environment for their rabbit to move into at the beginning of the new school year. Teacher F stressed the benefits of having a pet in a classroom. She believes

that raising pets in a classroom can bring a sense of peace because it obviously requires gentleness, caring, and love, and also it enables children to develop responsibility since the children learn how to take care of animals and how to protect them. The children know that most of the creatures that they have inside are entirely dependent on them, particularly their rabbit who cannot gain food any other way but through them. She also stressed that having a pet helps children to develop their science knowledge including observation skills. She said that the children in her class sit down in front of the rabbit and can explain what she is doing to others. She repeated that having a pet in a classroom provides an opportunity to develop a sense of peace, caring, love, and responsibility.

### *Section III. Teachers' Beliefs about the Value of Play in Natural Environments*

When asked her beliefs about the value of supporting children to play outdoors, teacher F stated that through her personal experiences, being able to play outside with open-ended materials or natural materials that the children find out in nature allows them to engage in deep creative thinking and play. Interacting with nature without restrictions is an opportunity to express their divergent ideas. For example, if children want to make the materials in a beauty shop, they can use sticks to create a brush, a comb, and scissors. She also thinks that being outside, breathing the fresh air, feeling the grass, and being directly connected with the earth has some kind of power that, although not scientifically formulated, attracts us to being outdoors. She said that she sometimes wonders why people go to parks, beaches, and walk in the woods, and she believes that there is some sort of unseen and unformulated relationship between nature and people.

Teacher F thinks the ideal early childhood environment is one that primarily includes natural spaces and materials. In her ideal early childhood environment would be the back wall that is all glass with a door leading outside, through which children can come and go freely. The door would provide them access to an outdoor mini atelier and art studio. The



atelier and art studio should be covered so the children will still be able to go outside and use them if it rains or snows. In addition, this outdoor area could be closed up in the case of severe weather. The individualized ideal early childhood of teacher F is focused on children's freedom and smooth transitions between play outside and inside. She wants the children to have the opportunity to go back and forth inside and outside freely, and this way they are completely protected because she will still be able to see everybody outside through the big windows even when she is inside working with other children. She emphasized that going outside or inside would generally be the child's choice, providing an absolutely child-centered environment.

When discussing the relationship between children's learning and their interactions with nature, she insisted that people feel some sense of connection to the earth when they go outside, and she thinks this feeling brings people a peace of mind that allows us to be open to learning. According to teacher F, interacting with nature allows each one of us to be ready and open to different forms of learning. She indicated that being outside and play in nature affords children the opportunity to be very creative and to tap into the creative areas of the brain. She claimed that every child is creative and able to create stories that they can act out. Furthermore, teacher F mentioned that children in her observation have an easier time learning math and science outside, and the children are more receptive to learning when they have a significant amount of time to be outside. She also said that children's minds are more open both inside and outside as long as they have had time to be in nature, this openness promotes increased learning.

Teacher F thinks that one of the effects of children's play in naturalized environments is that children are able to develop more of a sense of confidence and self-esteem. Because they have been given time to be outside, the children become more open and accepting of challenges. Additionally, she believes that play outdoors helps children to gain a

sense of calmness and a sense of peace. When the children are able to put their feet on the grass, there is something mysterious, something that encourages them to connect with earth. In brief, playing in naturalistic settings provides children opportunities to enhance their sense of connectedness and supports their self-esteem and confidence.

When asked about difficulties that she faces in regard to connecting her students with natural environments, she answered that the difficulty is in herself, that it can be difficult to create provocations and to plan engaging and open-ended outdoor activities. She sets up various materials for provocations for her students, and she is still finding the balance between providing provocations as activities for children and letting them choose their own play that is not necessarily related to provocations. Finding the balance is her challenge for the next school year. She talked about schools that do not have vast of open spaces and that only provide equipment that is not very challenging, and she stressed that a lot of schools including her school to some extent have not thought about how to make being outside more independent. She said that teachers need to think about how they can make that work because an independent environment for children will allow them to gain a sense of confidence and self-esteem and to not be afraid.

## Chapter 10 Data Analysis for Teacher G

This chapter will describe the in-depth teacher interview data for teacher G, including her personal play history, her ways of implementing play in natural settings, and her beliefs about the value of play in natural environments.

*Section I. Personal Play History*

Teacher G teaches an infant class at a private school in Tulsa. When she was a child, she spent most of her time outside, especially in the backyard and the front yard of her house. She had a big yard so sometimes she played baseball and other organized sports in the back yard, but she usually liked unstructured outdoor play, such as watching insects and playing with flowers. She enjoyed reading books outside, and she remembers day dreaming often.

Teacher G thinks that outdoor play allowed her to become “constructively lazy.” Being outside with a book on a blanket, smelling the grass and flowers, and watching the clouds go by were open activities that were both calming and thought provoking. She stated that those experiences enabled her to have more creative thoughts. Her backyard was a second home for the other children in her neighborhood, and almost all of her neighbors came to her yard to play because her place was big enough for baseball and tether ball, and it provided great hiding places for hide-and-seek. Her environment was manicured nature, she lived in an urban setting so she did not have a lot of green spaces, but she remembers that there were several patches of flowers and her father had a vegetable garden.

To teacher G, outside is a preferred place to relax. She enjoyed gardening a lot. Her father had a vegetable garden, and he showed her how to plant peppers, corn, herbs, tomatoes, squash and other plants. When she runs, she prefers to run outside rather than inside on a tread mill. She said outdoor experiences enabled her to develop her creativity because of the open spaces and because the activities were unstructured. She was able to make decisions on her own and to explore her own interests, including observing insects and watching birds. As

an adult, she still likes to go outside, and she often takes her son outside to play in nature. She believes that outdoor experiences also taught her son to appreciate and enjoy nature. Her philosophy about supporting children's outdoor play is to help children to feel comfortable outside and to give them opportunities to be outside so they can discover the joys of nature. Because of her affinity for nature, her children have come to appreciate nature as much as she does. They love the buggy rides outside, the playground, the walks on the field, and running around the field.

Teacher G remembers that as a child she and her friends went out in all weather conditions. She had recess twice a day and played outside in the cold and heat. She and her peers were able to go outside in all seasons, as long as they were dressed appropriately to play in different weather. Currently, many schools only provide an organized physical education class and do not offer free play time; unlike today, she just played outside freely, and she mostly played tether ball, hop-scotch, and also she enjoyed sitting in a circle with her friends and talking.

### *Section II. Preferred Ways of Implementing Play in Natural Environments*

Teacher G and the children in her class go outside everyday as long as the weather is reasonable to be outside. If the weather is not too rainy, stormy, too hot or cold, they continue outdoor play because she thinks that experiencing diverse weather is a great opportunity for the children to develop their common sense. She offers a buggy ride everyday for about 20 minutes, and during this time, her students are able to visit the trails, and also stop near the barnyards to observe the animals there. Then they visit the woods, the bridge, and the little area in the back of the school. The infants are allowed to get off the buggy and run in the field for a few minutes, and then they continue on the buggy ride. Sometimes, they visit the preschool playground to see older children's outdoor play. Teacher G's routine is to take the buggy ride outside two or three times a day in good weather. In addition, she and the infants

spend snack time outside from 8:30 and play outside until 9:45 in the morning.

Teacher G and the infants in her class dig in the dirt, and they have opportunities to plant a garden. Currently, her class is working on an herb garden and a sensory garden. All the infants do planting and gardening together with age-appropriate gardening tools. They use plastic shovel tools and small watering pots. Even though they are very young, under two years old, they really enjoyed planting and gardening. The infants are interested in texture, so when they arrive at the sensory garden while on the buggy ride, they can get off from the ride and experience the plants, particularly in spring when everything is blooming and flowering. They can use their sense of smell and touch, and sometimes they can even taste the herbs. They often bring the herbs into their classroom so that they are able to continue to touch them and interact with them in various ways.

Teacher G tries to include natural elements in her classroom as much as possible. She also encourages intended provocation. Provocations are a concept from Reggio Emilia (New, 2007) which refers to a teacher provoking children's thinking with materials, questions, or in other ways. Most days, she offers clay in her classroom and supports the infants to use the materials in diverse ways. For example, teacher G provides clay in a sensory table so the children can manipulate the clay with their hands, and she also puts clay in the mini atelier area with various other objects including natural materials so that children can make their own art artifacts and incorporate clay and other natural materials in their projects. She also sometimes offers clay on the floor, and the infants can take their shoes off and wiggle in it with their toes. Her classroom also includes chunks of woods that they can use for stacking. There is a bucket of leaves, and the infants like to put their arms in there to crinkle the leaves. She also brought rose petals and put them in a bucket to encourage the infants to immerse themselves in that. She also brought safe plants into the classroom, and children are able to smell and touch them.

Teacher G and the children take care of the mini hamster which is a part of the natural world in the classroom. The teacher and the infants feed their pet as a group every morning. She stated that she tries to offer children a variety of natural objects, and she tries to give the children enough time to explore the objects and to make up their own activities using those natural elements. She plans to collect feathers as a big outdoor activity for the children, especially in winter because many feathers blow during the season. In fall, they collect leaves and acorns, and they gather blooming flowers outside in spring. She pointed out that her class has a challenge of making everything safe for the infants, who are at an age when they will put any object in their mouth; therefore, she has to pick natural objects that are large enough so that the infants cannot put them in their mouth. She said that as long as natural elements can be clean and safe for the infants, she wants to include them inside as much as she can.

### *Section III. Teachers' Beliefs about the Value of Play in Natural Environments*

Teacher G thinks that one value of supporting children's outdoor play involves their level of comfort. Offering opportunities for children to be outside and to experience outdoor environments helps children become comfortable in outdoor space. She certainly believes that they grow up with a comfort, interest, and love for being outside, which will allow them to be better stewards of the natural environment. She stressed that if teachers and parents want their children to be environmentalists or want them to take care of the world when they grow up, teachers and parents have to teach them to love the environment. Only in this way will children grow up with an affinity for their land and the desire to take good care of it. Teacher G sees great value in a variety of situations throughout her teaching experiences at her school. She believes that the children with behavioral challenges feel more comfortable in a natural setting, and that interacting in nature helps all children develop better problem solving abilities. In addition, she indicated that when they are given an opportunity for unstructured play outside, they become more creative. They make up their own games and

entertain themselves, rather than being given manufactured toys or structure play that does not encourage children to think.

When asked to describe her beliefs of the ideal early childhood environment, she said that she would have to describe the school where she teaches now because the children at the school have countless opportunities to interact with nature both inside and outside. Through exposure to nature, children are able to develop their creativity and a sense of collaboration. Natural materials truly allow the children to think outside the box. Also, all the teachers at her school are very creative and nurturing. Additionally, she said that providing enough materials is important so that each child has the opportunity to use them; however, she thinks that providing too much is unreasonable because children will think that there is endless supply. This could lead them to waste materials, and in the future, they might have difficulty understanding that there is a limited supply of green space, water, and other materials. She stated that children need to be aware of the fact that the materials or environments we have in the present will not last forever; therefore, we need to take care of them and appreciate them. She thinks that some children who have an abundance of toys do not care for them, and they do not have a strong sense of appreciation because they have too many of them. She speculates that children who have fewer toys have a greater understanding of taking care of what they have and appreciating their belongings.

Teacher G reiterated that unstructured play outside offers children an opportunity for more creative thought in activities because they create new objects to use in their own play rather than just being given props or toys to play with. She stressed that being outside for unstructured play is very different from being outside for soccer, baseball, and tennis because unlike those games that are highly structured, unstructured play enables children to use their creativity to create new objects for their play with the resources that are available to them in nature. She was concerned that children today are not given enough time to just hang out

outside and use their creativity.

Teacher G believes that generally children feel very good when they are outside, and she anticipated that children who usually do not grow up outside might have anxiety about being outside. They may be concerned about getting dirty, and they might not be comfortable touching grass with their bare skin. However, children who interact often with the natural world will retain their sense of appreciation for nature as adults, and they will be involved in preserving our environment and protecting nature. She believes that the children in her school are very aware of the many kinds of ecosystems because they learn about them from school, through theory, and they experience nature and love nature from an early age.

Teacher G said that she does not have any major difficulties in regard to connecting the infants with natural environments other than the challenge of thinking of new and different ways to provide great experiences for her students. She continually asks herself how she can be more creative, what new experiences she can share with her students, or how she can turn her ideas into classroom activities. She mentioned that she is constantly learning along with children. She thinks that by observing her students, she can discover what the infants are interested in and then she and the children can build on that.



## Chapter 11 Data Analysis for Teacher H

This chapter will describe the in-depth teacher interview data for teacher H, including her personal play history, her ways of implementing play in natural settings, and her beliefs about the value of play in natural environments.

*Section I. Personal Play History*

Teacher H teaches a toddler class at a private school in Tulsa. When she was young, her favorite play was singing and hosting little music concert. She and her little brother had a very close relationship, so they were good playmates to each other. She liked to pretend she was on stage conducting a concert. When she performed a little concert, she made her brother act as her audience. In contrast to her enjoyment of nature as an adult, as a child, she did not do a lot of outdoor play. She usually stayed inside because her mother was not a very outdoorsy person. Her mother preferred an urban lifestyle and did not enjoy outdoor activities, and she did not let her children go outside often. Therefore, teacher H and her brother had to spend most of their time inside. She was raised in a very small town in Texas and she remembers that her town had many beautiful natural environments. Sometimes, she went outside with her father because he liked being outside very much. He would catch tadpoles, and teacher H and her brother enjoyed observing the tadpoles and other creatures. She and her little brother had many questions about everything that they saw or experienced outside, and they continually asked their father questions. Her father sometimes gave them the answers but normally he encouraged them to search for the answers or solutions by themselves or together.

Teacher H pointed out that even though she did not grow up in the natural world, she really likes being outdoors as an adult, and she loves the natural environment at the school where she now teaches. If it is raining, she still likes to go outside with her students because she thinks that the children should feel different weather conditions, which provide many

opportunities for problem solving, discovery, and illustrations of cause and effect. She stated that as an adult she has been exposed to a completely different environment from that of her childhood, and she has become a very outdoorsy person.

When teacher H was in primary school, she had one main recess for 30 minutes everyday, and also she was able to go outside and play after lunch. However, since many refineries were located in her town, she could not go outside very often because the air was not very clean. Furthermore, sirens from the refineries indicated it was not safe to be outside, and these sirens often interrupted her outdoor play time. Therefore, she could not spend a lot of time outside even at school. During recess, she liked to swing, and she remembers picking flowers that grew in the field at her school, to make rings and necklaces. She sometimes rode her bicycle after school but not very often.

### *Section II. Preferred Ways of Implementing Play in Natural Environments*

As an early childhood teacher, teacher H plans to take her children outside everyday. The recess time varies each day because her classroom curriculum is very flexible. She said the average recess length is about three hours a day. If it is raining or storming heavily, her class cannot go outside, but if it is just lightly raining and there is no thunder, her class still goes outside. Her class generally goes outside all together; however, there are some cases when children would prefer to stay inside or are not comfortable interacting outdoors. In such cases, she divides the class into two groups, and half of them go outside and half of them go to the library where they can observe the other children, which helps them to be outside with joy. There are pear trees on the toddlers' playground, so the children can watch the leaves as they bloom, change colors, and fall from the trees. She stressed that such experiences are great opportunities for children to see how nature changes. Also, the toddlers can see frogs and worms on their playground and the children observe them. The toddlers sometimes feed peacocks that come to their playground. During recess, the children usually use all their

energy performing these various types of investigations.

Since their campus provides a wide range of natural materials, teacher H and the toddlers in her class go outside and gather natural objects and bring them inside, for classroom activities. When they go for a walk, they can pick up leaves, special rocks, sticks, and anything else they are interested in, and bring them into the classroom. Her classroom also has many seashells that the toddlers brought back from vacation with their families, and these are spread throughout her classroom. In the mini atelier area, the children can glue and paint, or they can create their own art works with different types of materials including seashells, pinecones, and clay. The children can use natural elements in all the areas in the class. They sometimes pretended to cook with seashells in the home-living area. Teacher H mentioned that each classroom has an area that consists of all kinds of natural materials. She and the toddlers carry small baskets on their nature walks, and they gather natural materials together. This is the main way she replenishes the natural materials in her classroom.

Sometimes teacher H sets up some materials for provocations. For example, she set out a slab of clay with natural materials indoors, and she and her children have also taken a big slab of clay out to the playground. The children gather materials from nature to put in the clay or to make their own creations with the clay. As a classroom activity, she often uses natural elements; for example, she and the children made their own birthday ornaments by glueing various natural materials to a piece of wood. They can continue to add new materials to it such as dried flowers or seashells. She tries to use and include diverse natural objects in every area in her classroom. She said that children are very creative when they use those materials, and she is always excited about the new combinations and new objects they are making.

### *Section III. Teachers' Beliefs about the Value of Play in Natural Environments*

Teacher H believes that there are some things that children only learn from hands-on

experiences, and in general she believes that children think deeper when the activities are hands-on. For instance, in schools that do not support being outside, children probably learn about the changing of the seasons through pictures in a book or on TV; however, it is more meaningful for children to be outside and to watch the real changes of trees throughout the year instead of seeing illustrations in books. By being outside, children can experience the different feelings of air when the trees change and watch the trees turn colors. Teacher H loves the nature at her school, and she said that the school environment is the “natural park” of their learning environment. Currently, her class is building special relationships with the barnyard animals. Her students want to visit there as much as possible, and they love observing and taking care of the animals. The toddlers talk to the animals and feed them, and she stated that those authentic experiences are completely different from book learning. She clarified that books are wonderful learning tools, particularly for studying concepts that cannot be experienced directly, but that real experiences bring many more connections with the world we live in than any book can provide on its own.

Teacher H provides food containers, such as empty yogurt containers and certain bottles, in the home-living area to support her students' play. She does not provide any plastic foods, such as fake eggs or fruits, in the area. When the children play in the home-living area and pretend to cook their meal, they do not use fake food props, only natural materials. They cook with shells, leaves, and acorns, or they reuse milk cartons. The toddlers sometimes tell teacher H, “This is my chocolate pudding and macaroni cheese,” and try to feed her. In the home-living area, she provides both real materials such as drink bottles and natural elements, and she thinks that children can be more creative and use their imaginations in this environment. She said that the children love to symbolize those natural materials and to recycle props.

When discussing the effects of supporting young children's interactions with nature,

teacher H stated that the biggest effect that she has seen from her class is that the children slow down and take time to observe their surroundings. For example, when they see some object or creatures outside while they are on the sidewalk, the toddlers in her class slow down and talk about it. Their communication was very nonverbal at the beginning of the school year; however, now their language is becoming more complex so they can ask more questions, such as "Where do you think it came from?", or when they see some bugs, they ask, "Where's his mommy and daddy?" or "Where do you think they could go?" If they see an airplane, the toddlers will say, "I wonder where they are going." or "Where did that come from?" Teacher H believes that being outside provides many opportunities for conversation and it can open up a variety of topics for discussion. In addition, she said that by playing outside, the children can develop deeper friendships and through friendship can learn to collaborate with one another. In sum, she believes that interacting with nature or playing outdoors gives children many opportunities to experience the world and various natural phenomena, and also helps them slow down. Additionally, teacher H mentioned that children's outdoor play is beneficial for children's physical development because there are open spaces in which to run, and to get rid of their energy. The enriched natural environment also provides fresh air to breathe, which is a major difference between being outside and inside.

Teacher H explained that her ideal learning environment for toddlers would support the toddlers' explorations of life. She insisted that toddlers do not need to study the order of numbers or basic arithmetic because they are not old enough to learn these concepts. At this stage, it is more important for toddlers to learn life skills, to experience how the world works, and to interact with the world around them. They are working on social skills and how to interact and collaborate with one another, and they are learning important life skills that they are going to use for the rest of their lives. Teacher H thinks that an ideal learning

environment should support the children to develop these “emergent life skills,” and she insisted that teachers need to understand individuals’ different personalities and developmental stages. She believes that the best learning environment for her students is one that helps them to be as close to real life as possible. She said that including the natural world in the learning environment, such as providing natural materials and opportunities to interact with nature, is significant for children to experience our world and all of its diversity.

Fortunately, teacher H does not have substantial difficulties connecting her children with the natural world. She said that the outdoor environment at her school is just a natural extension of her classroom learning environment and that the children connect with nature both outside and inside. She is very satisfied with her job at this school, and as long as the school directors and the parents are supportive of these learning environments and the curriculum, she believes that she will not have any problem maintaining her teaching approach.

## Chapter 12 Data Analysis for Teacher I

This chapter will describe the in-depth teacher interview data for teacher I, including her personal play history, her ways of implementing play in natural settings, and her beliefs about the value of play in natural environments.

*Section I. Personal Play History*

Teacher I teaches a class with students ranging from two to three years old. When she was a child, she liked being outside because she had access to a vast landscape and she had many neighbor children to play with. She loved riding bicycles and going up and down the hills. There was a dirt road near her house, and she and her friends would dig in the dirt and make mud cakes or other foods for their make-believe play. There was a pond in her neighborhood where she loved to play, and she often went fishing there. She remembers that she lived in a suburban area, so she and her friends were able to have many experiences which she would not have been able to have in a city. She enjoyed spending most of her time outside because she could do anything she wanted in the natural environment. There were no exact answers, directions, or restrictions, and she liked having freedom and choice in her play. Outside, she was able to run, cook with natural materials, play basketball in the big field, climb up the hills, make new friends, and use a loud voice. All of these possibilities made her feel comfortable, and she was excited to be outdoors.

Teacher I remembers herself as an athletic and social child. She did not like being inside as much as outside. She still loves outdoor activities and likes riding a bicycle as an adult. Being outside helps her clear her mind and release her stress, and it gives her an opportunity to be herself. Having that kind of time makes her feel more comfortable being outside than inside. As a child, teacher I had 30 minutes of recess after lunch everyday at her school, and she and her friends normally went outside and played together. She loved tether ball, swings, and most any other activity. She was very social, and she loved to hangout

with her friends during the recess.

### *Section II. Preferred Ways of Implementing Play in Natural Environments*

Teacher I plans to go outside with her students every day. She tries to provide them enough time to play outdoors during the school year. Currently, the children in her class are interested in the barnyard at the school, and it has become a part of their investigations; therefore, if it is not very chilly or hot outside, she and her students regularly visit the barnyard and spend time outside. In discussing her children's barnyard investigations, she explained that at the beginning, the children in her class observed the animals and had questions such as , "What do they eat?" "Do they eat hay and grass?" Later they picked grass and tried to feed the animals. They also tried to feed them sticks but quickly learned animal do not eat sticks. The children learned to find answers by themselves. Teacher I and her students go to the barnyard at least three times a week because they focus on the relationship between the barnyard and the statue which they made near the barnyard for the animals there. The children thought the animals needed a statue in their barnyard to protect them, so they made a statue, decorated it, and placed it near by the barnyard. The children believe that the animals in the barnyard can see the little statues that they made for the animals.

When asked the ways to help children connect with nature, teacher I explained that she provides a wide range of natural materials in every area in her classroom, particularly in the mini atelier area, which a large variety of natural materials. Using those natural elements has become a main part of their classroom activities. She offers pinecones, wood cookies, sticks, different colors of leaves, dried flowers, and even seashells that some children brought in from their trips to the beach. To maintain an adequate variety of natural materials, she and her students go on walks and collect different types and colors of leaves, pinecones, or other materials they desire to have in the classroom. She tries to encourage the children involved with finding those natural materials to set up their classroom. In this way, her children still



can use and interact with the natural world even inside. She also has fish in her classroom and she brought over a guinea pig into her classroom from another class during the summer. The children enjoy the guinea pig a lot, and they bring food from home, such as carrots, to feed him.

Outside, particularly during the summer, they have water play everyday, and they also often visit the backyard of the school and play in the natural environment. They can run around, play with mud, dig in the dirt, or just feel the fresh air and wind. They love to go outside and play on their naturalized playground. In addition, they sometimes visit the big hill at the school. Even though the distance to the hill could be a bit long for the children between two and three years old, they enjoy walking there. Once they reach the top of the hill and on a top of the hill, they run around or observe various flowers, grasses, and insects on the hill. Whenever they visited the hill, the children were very excited and teacher I said that this visit seem to be very meaningful and memorable to them.

### *Section III. Teachers' Beliefs about the Value of Play in Natural Environments*

Teacher I thinks interacting with natural environments is important for children to learn to respect their environment. She believes that when outside, there is a special bond between the children and nature; the children love being outside and appreciate the nature that surrounds them. Unlike at the beginning of the school year, the children in her class are not afraid of seeing bugs, and now they appreciate nature and know that bugs are creatures like us that do not like being disturbed. Play with nature enables children to think in more creative ways and to find different structures of thought. She thinks interacting with nature is essential because each child develops different interests, and they are able to think outside the box; furthermore, they can physically move around and feel comfortable outside.

Teacher I thinks her school has a supportive and rich environment to help children to connect with the natural world. The school provides a large, open area of land where the

children can go and explore, and also the school has many beautiful trees, flowers, and hills that the children can interact with. She stated that those enriched natural environments enable children to have freedom when they play outside. The children and all teachers at the school love the natural environment and being outside, and many children at her school are aware that this school is very different from traditional classroom and school settings.

Teacher I mentioned that if the school did not have the enriched natural environment, the children in her class would not be able to create relationships with the barnyard animals and the statue near the barnyard. Whenever she and her students are outside, they continue to visit the barnyard and build deeper relationships with the animals and the statue there.

Teacher I said that as she observes the children throughout the year, they seem to appreciate nature more and more, and the children are able to see objects outside with a different perspective when they interact with nature.

Teacher I believes that having natural materials inside enables children to use their imagination and symbolic thinking to transform natural materials into whatever props they need for their play. Therefore, providing natural objects encourages children to think outside of the box, and they are able to make natural elements meet their needs when playing. She emphasized that symbolic play is a higher level of thinking, and children can easily obtain and develop these higher thinking skills in an enriched natural environment.

Teacher I does not think she has significant difficulties to help children interact with the natural world because the school has a wonderful natural environment, and children are able to be involved with nature. She insisted that her school and the teachers there are on the right track to support children to connect with nature. The directors and almost all of the parents of the children at the school are very supportive, and they love the natural environment there. She remembered one child who kept calling the school an animal school because he and his parents had never seen a school with a barnyard outside. Parents do not

mind that their children get dirty because the parents understand the special curriculum of the school.

## Chapter 13 Data Analysis: Indoor Environment Checklist

The indoor environment checklist data will be described in this chapter. The classrooms of the nine teachers at the two schools were observed by the primary investigator to examine how the teachers include the natural world in the classroom to support children's continued interactions with naturalized environments inside. The indoor environment checklist designed by the researcher was used as a formal mechanism for recording characteristics of the indoor environments. The researcher observed the indoor environments during the school visits to determine the environmental value of each area and the materials present inside. The checklist items for indoor environments include 1.) naturalized materials, 2.) plants and flowers, 3.) creatures, 4.) books about nature, 5.) wooden chairs and tables, and 6.) nature and environmental classroom decorations. The quantity of certain items was recorded by the principal researcher.

*Indoor Environment Checklist for Teacher A*

For naturalized materials, teacher A provides various kinds of beans and seeds, pinecones, leaves, and tree branches in her classroom, especially in the science and the art areas, and her students are encouraged to continue to observe the natural elements or create new objects using those materials. The classroom has three kinds of plants, including two kinds of flowers, that are located in front of the windows by the science area. Teacher A encourages the children to take care of the plants and flowers, and she helps them to observe the changes and the growth of the plants and the flowers every day. There were no creatures in teacher A's classroom; however, the children in her classroom are able to interact with many kinds of creatures outside, and these interaction will be analyzed in the next chapter.

Teacher A provides many books about nature in the literacy area and the science area, and the topics of those books include plants, animals, earth, weather, and farms. Most of the books contain pictures that help children to learn about natural phenomena and to enhance

their better understanding of nature. The quantity of the books about nature in the classroom was five. The classroom offers wooden tables in all areas but the chairs are made from plastic materials; however, the classroom had wood floors, walls, and ceilings, and most of the learning materials in each area were wooden. Most of the indoor environments of the school are made of natural materials. Teacher A and her students decorate their classroom with the work that they have done with natural elements, particularly on the walls or windows of the classroom where children can easily see their work.

*Indoor Environment Checklist for Teacher B*

The naturalized materials in teacher B's classroom include pinecones, tree branches, sticks, seashells of various shapes, leaves, bird nests, beehives, fossils of ducks and raccoon tracks, and other natural materials. The natural elements were spread throughout the areas in the classroom, in particular, teacher B provides access to natural elements in the science area. The classroom did not have any plants or flowers; however, she plans to include some plants or small trees in the classroom in the near future. Teacher B currently does not offer any creatures in her classroom but sometimes insects or other creatures are brought in temporarily depending on the children's interests or class topics. Outside, the children are able to interact with animals or other creatures, and this will be described in next chapter.

Teacher B's classroom contains six books that discuss nature, two books about various types of animals, two books about lizards and insects, one book about weather, and one book specifically about horses. Those books were located in the science area to encourage the children to read to gain fundamental knowledge about nature and to maintain their interests about science, particularly related to nature. The classroom contains wooden chairs and tables in every area. Other furniture in the classroom, such as drawers and bookshelves, and various learning materials were made from natural materials, mainly wood. In addition, the floors, walls, and ceilings in the classroom were wooden. In comparison to

most schools, this classroom provides more exposure to naturalized environments, and the children have less access to artificially manufactured materials, including plastic, that may contain toxic substances. In terms of nature and environmental classroom decoration, teacher B has tried to design her classroom to provide a more naturalized setting rather than a structured environment with man-made materials; therefore, she has decorated the classroom using sticks, leaves, bird feathers, and other natural elements, and she also displays the decorative works created by her students using the natural objects in her classroom.

*Indoors Environment Checklist of Teacher C*

Teacher C provides various natural materials in her classroom including pinecones, seashells of various shapes and sizes, corks including cork stoppers, stones, rocks, marbles, chunks of woods, and other materials that have grabbed the students' interests. Almost all the areas in the classroom contain those natural objects, and they are particularly abundant in the construction, home-living, and mini atelier areas. Teacher C also provides materials like empty bottles, tiles, disks, CD-ROMs, plumbing pipes, bottle caps, even though they are not naturalized because she wants her students to reuse the materials and to develop the concept of recycling. The classroom of teacher C has eight kinds of plants, including a flowerpot with flowers. The children in her classroom are responsible for taking care of the plants, and they are encouraged to observe the different types of plants and flowers inside. Teacher C did not offer any creatures in the classroom; however, one wing of the school, which is very close to her classroom, contains four rabbits and one snake in cages, so children are able to watch the animals and the reptile, and interact with them.

Teacher C provides books that discuss nature mostly in the literacy area but also in the science area. There is a total of six books, three of which are about animals, two about plants, and one about seeds. The books in the science area include many pictures that help children better understand about nature. The classroom of teacher C had both wooden and

plastic chairs depending on the area. The classroom also provides both wooden tables and one made of tile. Many of the learning materials in her class, including games and puzzles, were generally wooden. Teacher C does not decorate the classroom with naturalized materials simply for show. Instead, she displays her students' art works or any creations that the children make with natural and non-natural elements in her classroom to share the children's works and to promote their sense of self-confidence and accomplishment. During my visit, there were a variety of children's artifacts or works were hung on the walls and exhibited on the shelves in the classroom.

#### *Indoors Environment Checklist of Teacher D*

Varied natural elements were spread throughout the classroom, and the children in her class were able to access the natural elements in almost all of the classroom areas. Teacher D provides pinecones, an assortment of seashells, different kinds of seeds, tree branches including small sticks, a mixture of leaves, grass, stones, pine needles, acorns, meadow foxtails, cork stoppers, wood cookies, clay, and other miscellaneous natural materials. Those enriched natural objects were visible everywhere in the classroom. In addition, three flowerpots, were located near the science area, the mini atelier, and on the teacher's table. Those flowerpots were used in the classroom environment to establish as close a connection as possible to the atmosphere outside. Teacher D offers two guinea pigs in her classroom. Her students have a responsibility to take care of the animals, including feeding them and cleaning up after them. Many children were observing the guinea pigs and interacting with them. The wall around the guinea pig area was entirely covered with children's active investigating documentation of their guinea pigs. Some of the children even brought food for the animals.

The classroom of teacher D includes a range of books that discuss the natural world including plants, animals, weather, earth, insects, guinea pigs, birds, and trees. There are big

books, regular books, and mini books, and the quantity of the books about nature is 17. Many of the books in the classroom were made by the teacher and the children in the class. All the children in teacher D's class are both authors and readers. The books that were created by the children and teacher D contain their investigations of nature, particularly about the woods, hills, and animals at the school. Those books show their progress in investigating their interests, and these books enable readers easily to see the entire process of each project dealing with the natural world and the children's interactions at the school. The classroom of teacher D offers wooden chairs and tables, and the learning materials of each area were generally made of natural materials, especially in the construction area, which only contains wooden materials and recycled materials. The floor of the classroom was also wooden. Teacher D does not make the classroom decorations herself; instead, she always decorates using her students' works that are made with natural materials. A variety of the children's works were hung on all sides of the walls in her classroom. In addition, children's *provocations* were visible in the classroom, especially in the mini atelier area. For example, children's work are made with clay and other natural materials, such as wood sticks, seeds, seashells, and other recycling materials were exhibited on the shelves in the mini atelier area. Another of the children's group provocations consisted of wire and seashells, and it became a mobile hung on the ceiling in the classroom.

#### *Indoors Environment Checklist of Teacher E*

Teacher E provides different sizes of pinecones, diverse seashells, tree branches, stones, rocks, feathers, chunks of wood, logs, wood cookies, clay, and other natural elements. Those varied natural objects were mainly visible in the construction, mini atelier, and home-living areas of the classroom. A wide range of reusable materials were visible, including pipes, drink bottles, and caps because the teacher wants the children to learn that reducing waste by recycling is crucial to protect our nature and environment. The classroom has



one plant, and some dried bouquets were hung on the walls in teacher E's classroom. The plant was located between the science and the mini atelier area. There were no animals, insects, fish, or reptiles in the classroom. Teacher E previously had fish and crabs in her classroom; however, since they died she and the children in her class are thinking of getting new creatures soon but they have not decided yet.

Teacher E provides three books about nature to enhance children's curiosity. Those books were located in the book reading area. Two of the books mainly discuss various animals, and they include many pictures; the third book is about a farm. All of the chairs and the tables in the classroom are wooden. Additionally the classroom had wooden floors, and the learning materials in each area, including blocks, puzzles, language game tools, were made from natural materials, mainly wood, rather than providing materials that are artificially manufactured materials such as plastic. Displayed on shelves throughout teacher E's classroom are seashells of various shapes and sizes, big feathers with diverse colors, chunks of different trees, and leaves, and these materials provide children the opportunity to observe the differences and the diversity of the naturalized materials. In addition, a mobile made with tree branches and bird feathers were hung on the ceiling of the classroom.

#### *Indoors Environment Checklist of Teacher F*

Teacher F provides pieces of logs, bark, corks, stones, clay, pinecones, various types of seashells, many kinds of seeds, and tree branches from different trees in most areas in the classroom. In particular, all of the materials in the home-living area and the construction area were natural elements, and the children were actively using those object when they engaged in their play in those two areas. The classroom of teacher F contains seven plants, all of which are green, and they are spread out around the classroom. Teacher F tries to include green places inside to help children observe plants every day and also to create an environment that is healthier than a classroom consisting entirely of man-made materials. The

children know that they need to give the plants love and not hurt them. The classroom has a rabbit which gives the children the opportunity to interact with an animal and to take care of it. The children in her class feed the rabbit as a group or individually, and they are in charge of helping clean the rabbit's house to provide him a better living environment when the children interact with the rabbit, they often hug him and talk to him nicely.

Teacher F offers a wide range of books about nature that mainly discuss weather, animals, seas, plants, insects, reptiles, and earth including outer space. The quantity of books that deal with nature is 11. Most of the books contain many authentic pictures that help the children to remember natural phenomena or shapes better than drawings or illustrations. Those books are located in the book reading area, the construction area, and the science area. The classroom provides wooden tables in every area. Additionally, almost all of the learning materials and tools in each area in the classroom, including puzzles and games, were made of natural materials that expose children to a healthy environment inside. Teacher F wants to share the students' works to all who visit the classroom; therefore, a wide range of children's works and provocations using natural materials were displayed throughout in the classroom. Moreover, children's works and artifacts that were made with natural objects were exhibited on the walls, along with the documentation of the children's investigations.

#### *Indoors Environment Checklist of Teacher G*

Teacher G's classroom contains several naturalized materials including pinecones, tree branches, chunks of woods, and feathers. Big pinecones were displayed on the shelves in the classroom, the tree branches were hung on the ceiling as a type of mobile, and the chunks of woods were provided for stacking, which the infants love to do, and the feathers were hung on the walls. The natural materials in teacher G's classroom were more likely to be used as decorations or exhibitions rather than for children's use in their classroom activities because the children in this classroom are infants and tend to put objects in their mouths. However,

there were several buckets of leaves and rose petals, and the infants put their arms in the buckets and crumple the leaves and rose petals, which helps promote their sensory development. The infants in the classroom were encouraged to immerse themselves in this behavior. Teacher G provides safe plants such as herbs in her classroom, and the infants have opportunities to smell, see, and touch the herbs. The quantity of the plants in the classroom was two. Teacher G also has a mini hamster in her classroom. The children and the teacher take care of their pet together. The infants in the classroom feed the hamster every day as a group with the teacher's assistant, and they talk to the hamster, observe him, and give him their love.

Teacher G provides various books about nature in her classroom. There were nine books available, and they focus on barnyards, earth, weather, and animals. Since her students are infants, the books about the nature mainly contain pictures or illustrations of nature, instead of containing big words or complex sentences. The classroom contains wooden chairs and tables in all the areas, and the classroom also has wooden floor. A wide range of learning and play materials such as blocks are made from natural materials, mainly wood. Additionally, the classroom includes mobiles that are made of tree branches and feathers which the infants and teacher G gathered outside together, and the natural mobiles were hung on the ceilings as natural decorations in the classroom.

#### *Indoors Environment Checklist of Teacher H*

Teacher H offers diverse naturalized materials in her classroom. There were various types of seeds, leaves, stones, rocks, feathers, stalks from different plants, corn flosses, clay, wood cookies, tree branches, and seashells of different shapes and sizes. Those natural materials were displayed all around the classroom, and also provided in each center for children's use during their play. There were no plants and flowers available in the classroom. The classroom of teacher H includes one hamster. The toddlers in the classroom have a

responsibility to take care of their hamster, and they often interact with the hamster by feeding him, observing him, and talking to him with love.

Teacher H's classroom contains a wide range of books that deal with nature. There were eight books that discuss nature, especially about fish, animals, insects, flowers, farms, and the seasons, and these books were located in both the literacy and the science areas. The classroom of teacher H has wooden chairs and tables in all area. Additionally, almost all of the learning materials, including arithmetic games, puzzles, dominoes, and blocks, were made from woods.

Teacher H tries to establish a naturalized environment inside and brings natural materials as much as possible into the classroom. She displayed various natural materials such as different shapes of seashells, stones, and feathers on the top of several shelves in the classroom in safe and appropriate forms. Teacher H made a mobile using tree branches and hung it from the ceiling, and she put her children's drawings or artifacts on it. In addition to natural materials, she used a variety of reusable materials for the classroom decorations to encourage children to reuse materials and to help them develop the concept of reducing waste from a young age. For instance, she made a mobile using the wheels of a bicycle and other reusable materials including cork stoppers and drink caps.

#### *Indoors Environment Checklist of Teacher I*

Teacher I's classroom contains abundant natural materials. The science, the construction, and the mini atelier areas include many different sizes of pinecones, and seashells of various shapes and sizes are spread throughout all the areas in the classroom. Additionally, most of the areas in the classroom contains stones, bird feathers, pine needles, wooden chopsticks, rocks, clay, and leaves, branches, and sticks from different trees. The children in the classroom were using these objects in their own way while playing in the classroom.

There were four plants in the classroom and these plants were spread around the classroom. Teacher I provides nine fish to give her students opportunities to observe and to interact with living creatures, and the fish in the basin have different shapes and various colors. The children in her class love to observe them. In addition, the teacher brought over a guinea pig from another class for the summer. The young children in her class love to feed and observe him, and they try to talk to him. The children interacted with creatures even inside, and the children actively engaged in taking care of these living beings.

Eight books about nature are available in teacher I's classroom in the literacy area and the science area. Five of the books discuss animals, one is about insects, another about weather, and one book deals with nature in general, including animals, insects, and seashells. All of the chairs and the tables in teacher I's classroom were wooden, as were materials such as blocks in the construction area in the classroom were made of wood, and there were no artificial materials such as plastic. The indoor environment of teacher I's classroom is very naturalized and provides an eco-centered environment. Teacher I decorated the classroom, including the walls, ceiling, and shelves using her students' art crafts that are made with clay, sticks, leaves, seashells, and other naturalized materials.

**Table 1. Indoors Environment Checklist**

Indoors Environment Checklist	Teacher								
	A	B	C	D	E	F	G	H	I
Naturalized materials (e.g. pinecones, seashells, seeds, tree branches, and others)	+	+	+	+	+	+	+	+	+
Raising plants and flowers	+(3)		+(8)	+(3)	+(1)	+(7)	+(2)		+(4)
Creatures (e.g. Turtles, fish, hamsters, rabbits, and others)				+(2)		+(1)	+(1)	+(1)	+(10)
Books about nature	+(5)	+(6)	+(6)	+(17)	+(3)	+(11)	+(9)	+(8)	+(8)
Wooden chairs or tables	+	+	+	+	+	+	+	+	+
Wood floors	+	+	+	+	+	+	+	+	+
Other wooden materials (e.g. wooden walls, learning materials)	+	+	+	+	+	+	+	+	+
Nature and environmental classroom decoration	+	+	+	+	+	+	+	+	+

Note. A plus sign (+) indicates each category of the indoor environment was shown and displayed during the classroom visit. In addition, a number in the parenthesis (#) points out the quantity of certain categories of the indoor environment during the visit.

## Chapter 14 Data Analysis: Outdoor Environment Checklist

This chapter will provide outdoor environment checklist data. The outdoor environment, including the playgrounds at the two schools, were observed by the researcher to determine how the schools and the teachers provide naturalized outdoor environment to support young children's interactions with nature for their early learning and development. The outdoor environment checklist created by the researcher was utilized to record information formally about the playgrounds and the outdoor environments of the two schools. The researcher observed the outdoor environments during the school visits to examine the value of providing enriched outdoor environments for young children's learning and development. The checklist items for outdoor environments are 1.) playgrounds for early childhood, both natural and man-made, 2.) naturalized environment, 3.) animals, 4.) water and sand areas, 5.) gardens and age-appropriate tools for gardening, and 6.) shaded places and shelters for rest. Some of the observed classes share the playground areas together, so a total of five outdoor environments for the nine classes at the two schools will be described below.

### *Outdoor Environment Checklist for Teacher A and B*

Teacher A and B teach at the same private school. Teacher A teaches preschool, and teacher B teaches K-1 grade. The school is located in a suburban area in Oklahoma, and it sits on a huge and beautiful plot of land. The school contains a playground and very open outdoor spaces, and students from preschool to sixth grade share the playground together. This school provides enriched natural environments, including abundant and diverse trees, plants, grass, flowers, stones and rocks. In addition, the outdoor environment includes ponds where children can go fishing, observe ducks, and even take boat rides when the weather is appropriate. There were age-appropriate life jackets, mini boats with paddles, and tools for fishing. The school is home to a variety of animals including ponies, horses, goats, chickens, frogs, and a dog. Additionally, the school has a blue bird house, so the children at the school

have a great opportunity to observe the birds. Sometimes the children watch the birds from the birth, so they are able to see the process of the birds' growth. Also, the school recently added homing pigeons. There were hibernacula on the backside of the school where the man-made playground is located. The children and the teachers built the hibernacula to provide a place for the animals that hibernate during the winter. Furthermore, the children and teachers A and B recently created a small pond for tadpoles. They poured water in the pond they created, and they brought rocks to make the pond firm. The children often can visit the pond, and observe the tadpoles as they grow. Sometimes they can see frogs there, which make them very excited and talkative about the frogs. Compared to many other schools, the children at this school have more opportunities to interact with those animals at school. The children have the responsibility to feed and water the animals, and to clean up the farm area on a daily basis. The children are also responsible for regularly cleaning up their outdoor spaces to protect nature and its beauty. The playground includes water and sand areas, and the teachers provide age-appropriate tools for water and sand play.

The school contains a garden for the children. There were age-appropriate tools for gardening. Unlike gardening tools for young children that are made of plastic, these tools were authentic but smaller to fit children. The children know rich soil, water, and sun light for planting or gardening, and the gardening area provides all of these resources. There were a variety of fruits and plants that the two teachers, and their students had planted together. These fruits and vegetables include cherries, strawberries, and egg plants. The fruits and vegetables in the garden are organic; no chemicals are used in this garden. The children are responsible for taking care of the garden, and they often visit the garden to water the plants. Each row is labeled with the plant's name and the date it was planted, so children can observe the fruits and vegetables compare the differences among the plants. By observing the plants in the garden, the children have learned the different shapes of each plant's leaves and stems.



The playground at this school contains shaded places and shelters for children rest. Some of them are man-made but the school also has great naturalized shaded places because they have many big trees around the campus. Many children were resting under the trees, and as they rested they talked to each other and discussed their play.

*Outdoor Environment Checklist for Teacher C*

Teacher C teaches at a private school located in a suburban area in Oklahoma. This school serves preschool students including infants and toddlers, through 12<sup>th</sup> graders, and they also offer multi-aged classes that consist of three to five year olds. This school provides a secure and enriched naturalized environment, which encourage children to continue to learn and to develop their creativity, curiosity, and exploration. This school supports children to build in-depth relationships with the natural environment they have at the school and encourages the children to interact with the natural world according to their own inspirations or interests. The school offers an outstanding environment in an eco-centered atmosphere, and the children at the school are exposed to and supported by the caring natural environment surrounding them. The school is located on 120 acres of open land, and the children can run around, hike, observe the trees and flowers, experience the various change in nature throughout the seasons, and many other outdoor activities that are possible in the open natural learning environment. Not including the huge open space, this school provides four playgrounds that are man-made but that include abundant natural materials and learning environments. Each playground was designed to be age-appropriate for a specific age group. There is a playground for infants, toddlers, pre-kindergarten, and kindergarten to first grade children.

The playground used by teacher C is for the children ranging in age from kindergarten to first grade. The playground includes many trees, grass, flowers, plants, stones, rocks, and flowerpots. The children in teacher C's class have exposure to nature to foster

their outdoor exploration and investigation; these are essential experiences to learn about nature, and they promote their knowledge, particularly related to science area. The playground for the K-1 class is located in a area covered by trees, so it seems to be a forest playground. Teacher C decorated some parts of the playground with both natural and reusable materials. The school is home to various animals, including horses, goats, llamas, donkeys. These animals live in the barnyard, and all the children at the school share and take care of them together. There were appropriate cleaning tools for young children, so they help clean up after they feed, water, and groom them. In addition to the barnyard animals, the school has peacocks, geese, chickens, and chinchillas that inhabit the surrounding area.

The playground also includes both a water and sand area. The water hose is long, so teacher C and her students can choose where they want to have the water. Because the location of water is changeable, the water play can be flexible and diverse. There were appropriate materials for water play, and there is a specific water place that is often used for more scientific experiments. The sand area contains a variety of age-appropriated tools such as shovels. There were wooden tables and chairs available in the sand area. Chunks of wood and pieces of logs were also available, so the children can use those natural materials when they design their own play in the sand area. Some children were making a water way in the sand area by pouring water and using the tools in the sand boxes. There were gardens available near teacher C's playground, and age-appropriate gardening tools are provided for the garden area.

The playground for the K-1 students contains shaded places and shelters which provide children a comfortable place to rest and to think. There were two kinds of shaded sites. One is a naturalized under a big tree, and children are able to rest on the benches under the tree and feel the cool wind. The other shelter is a man-made structure located near the classroom entrance and the sand area. Wooden chairs and tables are available to help children

relax. Additionally, near the man-made shaded place, teacher C provided a mini outdoor atelier. There were some art materials including water colors, paper, crayons, and some natural materials such as seashells and stones; therefore, children can also be engaged in art activities outside. The playground also has equipment for children, such as swings and horizontal bars, and some parts of the play equipment are made of natural or reusable materials. The naturalized outdoor space and the man-made playground are well-harmonized because the man-made shaded area includes a range of naturalized environment such as trees, grass, flowers and flowerpots, wooden materials, water, sand and mud, and reusable materials. Children were using their imagination, creativity, and inspiration without any restrictions outside.

*Outdoor Environment Checklist for Teacher D and F*

Teacher D and F teach multi-aged classes with students ranging from three to five years old at the same private school, and these two classes share the playground designed for the three-to-five-year-old children. The mutual naturalized outdoor environment is the same as the described above for teacher C. The specific playground for these two classes contains supportive natural environment for children's outdoor play, including many trees, grass, flowers, plants, stones and rocks. In addition, the playground includes several wooden chairs, wooden mini tables, and pieces of logs around the playground. The ground of the playground is covered with grass and soft wood cookies, so it is safer play area than one made of asphalt or cement. Many of the materials for the man-made outdoor play equipment, such as the slide, swings, and horizontal bars, are made from wood. Between the classroom and the playground, there is a woodworking area for young children. Various age-appropriate tools and reasonable sized pieces of wood are available in this area. there is also an outdoor mini atelier located close to the woodworking area. There were several materials and art tools including wooden tables and chairs, water, paint brushes, water colors, and color pencils. The

storage for cleaning tools is located close to the woodworking and mini atelier area outside. Most of the cleaning tools in the storage were age-appropriate and authentic. All of the children at the school are responsible for cleaning up their outside environment, so the children at the school regularly clean up their playground and outdoor spaces together. The animals that inhabit the land surrounding the school campus including the barnyard are the same as the described above for teacher C. The animals further children's interactions and connections with living creatures.

The outdoor playground for the children in teacher D's and F's classes provides both a water area and a sand area. Teacher D and F offer age-appropriate tools and materials that help children to be more involved in playing with water and sand. There were various materials, such as funnels and goggles that helped children to explore and experiment with the water. The various objects help children to distinguish floatable and non-floatable materials, and to understand the flow of water. There were several buckets in the sand area that contain age-appropriate tools, including shovels, watering pots, and mini buckets, and also there were authentic kitchen materials to help the children to enhance their imaginative play in the area. Additionally, chunks of woods and wooden chairs and tables are available in the sand area. Gardens and age-appropriate gardening tools are available; however, both of the classes are engaged in projects this year other than gardening, so there were no vegetables or fruits being grown by the teacher and the children. Four shaded places, including both man-directed and naturalized ones, were available on the playground. The naturalized shaded place is the site under the big trees with wooden chairs and tables which allow children to sit down and rest. The man-made shelters also contain wooden chairs and tables. Some children were relaxing on the chairs, and as they rested in the shade, they were talking to each other, sharing their investigation or play stories.

*Outdoor Environment Checklist for Teacher E and I*

Both teacher E and I teach multi-aged classes with children ranging from two to three years old at the same private school. The general naturalized outdoor environment of these two classes is the same as the one described above for teacher C. The specific playground for the two and three year olds will be described. The playground for these two classes has an enriched naturalized environment including numerous trees, flowers, grass, plants, and diverse shapes of stones and rocks. Most of the equipment, including the swings and slides, were made of reusable materials and wood. Wooden tables, benches, and chairs were spread out in various areas around the playground. Mobiles made from naturalized materials were visibly displayed in various sites on the playground. There were a large number of age-appropriate bicycles, and a bicycle track went around the playground.

The school contains a barnyard that is home to diverse animals, and the animals in the barnyard are the same as the described above for teacher C. Even the two-year-old children help feed and groom the animals, and also clean up the areas of the barnyard. The children love to observe the animals. The children in teacher I's class visit the barnyard often, and they are building deep relationships with the animals in the barnyard. The children at the school are not afraid of interacting with those animals, and they enjoy observing the animals and giving them love.

In the water area, there were a variety of materials including funnels and floatable toys. The children love to explore the water with those materials, and these experiences enable the children to develop their scientific knowledge. In addition to the specific water area, the children in the classes are able to play with water because there are water hoses in various places around the playground, and these hoses are long enough to be moved all over the playground during outdoor play. The playground also includes a sand area with buckets and a wide range of tools and materials that enhance the children's play in the area. Chunks

of woods were also available and the pieces of logs were used as mini benches in the sand area. Additionally, a mini house made of wood is included in the sand area. The children can go inside the mini wooden house and make their own objects using sand, water, and natural materials, and they often create imaginative play in the area. There were no gardens or gardening tools for young children on this playground. The playground provides shaded places and shelters for the children who need rest during outdoor play. The shaded areas provide wooden benches and chairs that help children to relax while they spend time outside.

*Outdoor Environment Checklist for Teacher G and H*

Teacher G teaches an infant class and teacher H teaches a toddler class at the same private school, which is located in a suburban area with an enriched naturalized outdoor environment. The general natural environment of the school is the same as described above for teacher C. The children in teacher G's and H's classes use the mutual playground that is designed to fit their developmental needs. The specific playground for these two classes contains trees, grass, plants, flowers, stones, rocks, sand, water, and other natural materials, such as seashells, chunks of wood, and pinecones. The equipment and the naturalized environment are well-harmonized at the site. The animals that inhabit the land surrounding the school campus including the barnyard are the same as the described above for teacher C. The infants and the toddlers love to observe the animals that live on campus and in the barnyard at the school. The infants and the toddlers usually observe the animals rather than directly interacting with them; however, they love to watch the animals, so each class regularly visits the barnyard or goes outside to see the other animals.

Both the water and the sand areas located on the playground contain age-appropriate tools and materials which help children to develop their own play. In particular, teacher G uses water both inside and outside for the infants' learning that is related to their sensory development and scientific knowledge. The infants in teacher G's class were actively

engaging in their play and activities with water using the materials that the teacher provided in the area. Those materials in the water area, including floatable and non-floatable objects, are safe for the young children's use, and also the tools and the materials in the sand area were safe, diverse, and age-appropriate for the children. The tools and materials in the sand area were authentic, and many of those materials were made of natural materials including wood. There were gardens, and the gardening tools were the right size for the infants and the toddlers. Even though the infants and the toddlers are very young, they are involved in planting and gardening using age-appropriate gardening tools with the teachers' assistant. They regularly visit the garden, and love to take care of it. Shaded areas and shelters are available in several places, and they contain wooden benches and chairs. Sometimes, the infants and the toddlers have snack time outside in these shaded places. They sit down on the wooden benches or chairs and enjoy their snacks outside.

**Table 2. Outdoors Environment Checklist**

Outdoors Environment Checklist	Teacher								
	A	B	C	D	E	F	G	H	I
Playground area for classroom	+	+	+	+	+	+	+	+	+
Naturalized Environment (e.g. trees, grass, flowers, plants, and stones/rocks, and others)	+	+	+	+	+	+	+	+	+
Animals	+	+	+	+	+	+	+	+	+
Water areas	+	+	+	+	+	+	+	+	+
Sand areas	+	+	+	+	+	+	+	+	+
Gardens	+	+	+	+		+	+	+	
Age appropriate tools for gardening	+	+	+	+		+	+	+	
Shadow place and shelters for rest	+	+	+	+	+	+	+	+	+

Note. A plus sign (+) indicates each category of the outdoor environment was shown and displayed during the school visit.



## Chapter 15 Data Analysis: Reflective Researcher Journal

The analysis of the researcher journal is described in this chapter. The researcher made notes during each teacher interview and each outdoor play observation, and she wrote reflections based on her personal perspective during each school visit. The key concepts/thoughts of the researcher were extracted from these notes and reflective journals and are presented below.

*Safety.* While I was observing two schools, I was clearly able to see that the teachers at the schools carefully consider children's safety and provide secure environments. Teacher G's classroom is age-appropriate, and the learning and play materials are the right size for the infants to play safely. For the infants' safety, there were not very many naturalized materials in the classroom, but the natural objects and other materials that were provided were enough to stimulate the infants' learning and curiosity.

During recess, teacher A carefully watched her students' play and monitor their behaviors to ensure they were playing safely and appropriately. She regularly emphasized 'safety' during outdoor play, but since the children are aware of the safety rules, contrary to my expectation, there were not even small accidents outside while all the children of various ages played together in the same area. It seemed that the children knew what they could do outdoors, what they should not do, and what appropriate behaviors are for outdoor play. In addition to the lead teachers, there were one or two assistant teachers available on the playground at the Tulsa site, so two or three teachers were carefully observing the children outside at all times. Teacher I was monitoring the children's conditions during recess, regularly asking if they were thirsty, and she kept their water bottles near. The teachers carefully watched the children during outdoor play, and they helped them when needed.

*Enjoyment/Comfort.* Throughout the school visits, it was visible that all of the children enjoyed their outdoor play and playing with nature. It was not only the children who

loved being in nature but also the teachers. Besides, the children seemed to feel comfortable with the atmosphere while playing in naturalized environments. When I visited teacher A's classroom, the students of the class seemed comfortable and enjoyed the classroom activities with natural materials. In addition, the atmosphere outside was very calm and peaceful, and the children on the playground seemed to enjoy being outdoors.

Teacher C's class had almost three or four hours of outdoor play. They seemed to really enjoy the outdoor play, particularly water play and digging in the dirt. When I visited teacher H's class, she, one teaching assistant, and the toddlers in her class played outdoors. Several toddlers played in the sand area. They touched the sand, and enjoyed trying to scoop it and pour it out. Some toddlers drew on big pieces of paper using crayons in the shaded area.

Many of the toddlers played in the water area with beach props, and they seemed very happy. I realized that all children, including infants and toddlers, love playing outdoors, and their behaviors seemed more active than when they were inside. I was amazed by the comfortable and free outdoor atmosphere, and I felt that the teachers enjoyed the time outside as much as their students.

*Freedom.* While I collected my research data, I felt that the children at the two schools had a great freedom with a low sense of anxiety in taking risks and few restrictions. For example, by the time I observed teacher C's class, two boys were playing in the sand area, and one of them said to me, "You can help us, I mean if you want to. Are you going to help us?" He also said, "Are you worried about getting dirty? It's okay if you get muddy on your body. We all are muddy." The two boys really enjoyed playing with water and sand. It seemed that they were never afraid of getting dirty or wet. They had a lot of freedom, and they were just concentrating on their play at the moment. The children outside sometimes

yelled and used their loud voices. It seemed that they have more freedom than when they were inside.

During my visit, I also observed the outdoor play of teacher I's class. The children in her class wore swim suits and enjoyed their outdoor play. The weather was hot but still reasonable for being outside, so teacher I prepared water play for the children using long water hoses. When she opened the water tap, many toddlers began yelling, laughing, and running into the water areas. Some children were interested in making their own objects using sand, and they came to the water area with buckets and watering pots to obtain water to use in their sand play. All the children in her class seemed excited, and able to play freely with less restriction. They loved playing with water, exploring play equipment, riding bicycles, and constructing their own objects with sand. They were allowed to explore their interests and some toddlers enjoyed going back and forth between activities.

*Creativity/Imagination.* Every time I visited the schools, children's use of their creativity and imaginations were often presented while playing outdoors and indoors, particularly when using naturalized materials. During one of the school visits, I saw that teacher B let her students play freely outside, and she supported them in exploring nature and developing a sense of wonder. Teacher B often mentioned that outdoor play and exposure to natural environments stimulate children's imaginations, and she remembered using her own imagination a lot when playing outdoors as a child. To help children use their imagination and their creative and divergent thinking, teacher B developed open-ended curricula designed to fit the individual interests of her students.

During my visit to teacher E's class, three boys were playing in the construction area, and were making farms with animals using wooden blocks and several natural materials including pieces of logs, sticks, leaves, and pinecones. They seemed familiar with using natural materials in creating their own play. I think that providing various natural materials

helps children use their imagination and develop their creativity more than if they use artificial objects, and the children themselves seemed to prefer natural objects to artificial ones.

When I visited teacher F's class, a wide range of children's projects and art works were visible on the walls in the classroom. In addition, some of the children's provocations using natural and non-natural materials were displayed around the classroom. It seemed that teacher F supports provocations because she provides a variety of materials together especially in the mini atelier area. During center play time, several children in her class used those materials and created their own work.

*Symbolization.* While I observed the children's play at the schools, many of the children could symbolize one material to another to continue or develop their play both inside and outside. For example, the children in teacher F's class played with mud. One boy added small rocks to his mud creation, and he said, "It's cake for my mommy with lots of candles!" "See, there are candles," he emphasized, pointing to the stones. One girl who was passing by saw what he was making and said, "Oh, mud cake, that's gross!" The boy responded, "Nope. It is a chocolate cake. Chocolate cake for my mommy!" Shortly after, the boy asked me, "Do you think my mom will like this?" He used his imagination while playing with mud, and he also symbolized his creation, pretending the mud cake was chocolate cake for his mother and the small stones were candles. The children were able to create play by themselves using the naturalized environment, the natural elements, and their own imaginations.

I thought that symbolic play was often apparent when they used natural materials. For example, shells were not only used for art activities; the young children were using the shells as shovels and scoops in the sand area outside. Both non-natural and natural tools were available in the buckets in the sand area, and there were many natural materials such as

seashells in this area. I realized that natural materials can be used in various ways when children play with them.

*Problem Solving.* Children were able to develop their problem solving skills while playing with nature. For instance, teacher C's students said to his playmate, "We are going to make the biggest dam, right, K?" I remembered that the children in teacher C's class were also currently engaged in making a dam, and they are interested in rivers. The children poured water in the sand to make a water way. When they noticed that the water was flowing all the way down to the drainage, they thought that they needed to build a dam to prevent water from escaping.

They started finding solutions by themselves; for example, they brought some tools and materials, such as drink caps, from the sand box and tried to cover the drain, but since those were too small, they did not work well. They went back to the sand box again, and found bigger materials then returned to the drain to try them out. The plastic dishes worked better than the drink caps but still they did not completely cover the drain, so they repeatedly tried other materials to find the best way to maintain the water in their water way. I think these attempts are an excellent example of how children try to find solutions when they encounter problems. In this instance, the children developed their problem solving skills while playing outside. Their efforts to solve problems enabled them to think deeper and deeper, and I believe that those experiences will help them become great thinkers with creative ideas.

*Exposure to Nature.* When I arrived at the school in Edmond to collect my research data, the children in the playground were constantly moving around and exposed to nature. They walked, ran, jumped, rolled on the grass, and climbed the trees. I felt that nature is not something unique to these children, but nature is the thing that exists around them all the time and that it is their close friend. Interestingly, even though the school has a constructed

playground, nobody was playing in the directed playground. It seemed that they preferred to play in the naturalized playground. The children in the naturalized playground played with branches, leaves, stems, stones and many other natural materials. Some children held small baskets on their arms or hands, and they put the natural materials which they found in the baskets.

When I visited the Tulsa school to conduct research, I immediately understood why the school is well-known in the field of early childhood education. The school has a great outdoor environment, including woods with various types of trees, flowers, and grass, a barnyard with animals, ponds, and both naturalized and man-made playgrounds. I was struck by the green, enriched, natural environment. When I arrived at the school in the morning, many children and teachers were already outside, playing with nature or conducting outdoor activities.

The curriculum of teacher E's class is flexible, and most of the activities that she designs are connected with nature. For example, she planned to take her children to climb the hill in the woods at the school. She anticipated that the activity would not be easy; however, contrary to her expectation, the children had no difficulty climbing. When I visited the class, I saw the children walk to the hill, and it seemed that visiting the hill had become a part of their routine school life.

During outdoor play time, I observed the children in teacher F's class. Since the school has a very enriched natural environment, the children had great exposure to the natural world. Some of the children fed peacocks that hung around their playground. They looked very excited; they talked to peacocks, and they talked about the peacocks' behaviors and responded to one another. Even inside, the children in Teacher C's class used naturalized materials to create their own artifacts, and also those materials were used as props in the construction area and the home-living area to enhance their form of play.

*Love of Nature.* During the outdoor play observation, it was apparent to see that all of the children and the teachers love and appreciate nature. For instance, I saw that one child was picking up trash on the playground and put it in the trash can voluntarily. It seemed that she was aware of the importance of the nature that surrounds her school. I was able to understand teacher B's belief that the children at the school have an appreciation and respect for nature, and try never hurt it. This school promotes recycling, so all the children and faculty at the school were aware of separate garbage and recycling bins. Furthermore, the children in teacher B's class bring a wide variety of materials which are recyclable to the classroom so that they can reuse the materials in various ways, especially during center play time.

While I observed the children in teacher F's class outside, one girl found a snail in the naturalized playground near the mini garden, and she showed the snail to her friends and asked, "Hey, can you guys find some safe places for this snail?" The other children suggested some ideas and said, "Here, how about letting him stay in this place?" I realized that they really care about all creatures, even the really small ones. They did not want to bother the snail, they cared about the snail's safety. It was amazing to see that the children know that small creatures are the same as us and that they are not supposed to bother them. In addition, in teacher D's classroom, there were guinea pigs, and the children interacted with their pets. They talked to the guinea pigs and brought them food. They loved observing and interacting with the animals.

*Outdoorsy Teachers.* Throughout the in-depth teacher interviews and observations of outdoor recess, I realize that all of the teacher participants love being outdoors and still they enjoy being with nature. Teacher A has loved being outdoors from her early childhood. She grew up in a suburban area that had an enriched natural environment, and she loved spending time outside. Teacher B grew up in an area that provided access to a great natural

environment, so she was exposed to play in the naturalized outdoors. She loved being outside as a child, and she continues to love spending time outdoors. Her teaching strategy focuses on children's interactions with nature and play outdoors, and I think her personal background and experiences with nature influence this strategy. She seemed to be very aware of the importance of recess and children's outdoor play because she provides recess everyday at least for an hour.

Teacher E did not have a variety of outdoor play experiences as a child. Instead she preferred to read books inside, which enabled her to use her imagination, and also she liked being alone. Interestingly, contrary to my expectation, even though she did not grow up as an outdoorsy person, she likes being in nature as an adult, and she is passionate about providing her students opportunities to explore nature. Teacher H also did not have many experiences with nature as a child; even still, she has become a very outdoorsy person, and she believes that children learn a lot through nature when they actively interact with natural environments.

Teacher I was a very athletic child, so she always went outside and played sports such as basketball and volleyball, and she continued to play basketball during her high school and college years. As an adult, she is still athletic, and she loves outdoor activities, especially riding a bicycle and running. She does not enjoy spending time inside very much, and when possible, she brings her work, including personal matters, outside. She feels great freedom outside and enjoys the calm and peaceful atmosphere.

*Teachers' Roles as Facilitators.* During the school visits, I thought that the teachers' most significant role was to serve as facilitators. All teachers were very encouraging, supportive, and facilitated the children's play by providing enough time, abundant naturalized spaces and materials, and leading discussions. For instance, teacher A often helped the children satisfy their curiosity about the tadpoles by leading a discussion and creating a new class plan to find the correct answer to the children's questions. In all things, teacher A



helped her students to continue their sense of wonder in this area.

Teacher A really attempted to interact with her students appropriately and to get them involved in their outdoor play by asking them open-ended questions and allowing them to have enough time to think and explore nature. I think the kinds of open-ended questions she asks will definitely foster the children's divergent thinking and creative ideas. The observations reaffirmed the importance of teachers' roles in facilitating their children's play and supporting and encouraging the children to maintain their interests for further investigation about nature. Teacher A is very supportive, and she tries to interact with each child both inside and outside by understanding each child's individual development and perspective. She often asked questions like "Can you explain...?," "What do you think about...?," "How do you feel about...?" and so on. Teacher A's classroom was well-organized. It included creative activities using natural materials that enable children to explore nature indoors.

When studying the life cycle, the children in teacher B's class were able to explore their own interests, and some investigated the development of baby birds, while others focused on tadpoles. She gives her students enough time to think and explore on their own, and she waits for them to find their own answers, particularly when they investigate problems or become curious about natural phenomena. I think that teacher B's open-minded attitude and interactions with her students encourage the children to investigate aspects of the natural world that inspire them or foster their curiosity.

In addition, teacher C and the teaching assistant in the class encouraged their students to be researchers and investigators. When I was in the classroom, I watched teacher C's interactions with her students; she often said to the children, "You are going to figure it out," and she regularly asked questions such as, "What do you think?," "How can we get some information about this?," "Let's think about how you can find the solutions," and "Are you

going to investigate that?" Teacher C continually gave her children choices and respected their ideas, thoughts, and decisions, so the children in her class were encouraged to think independently rather than being given direct answers to their questions. Sometimes, the children talked to one another about their play, and together they devised new play ideas and created their own play.

Furthermore, Teacher G wants the infants in her class to obtain many experiences to go outside and play in the natural world. Therefore, she seizes every opportunity possible to take infants outside and to show them the great outdoors. During my visits, I often saw teacher G pulling a buggy filled with the infants around the school, both inside and outside. While pulling the buggy, she continually talked to the infants, giving them information about the places they visited and the things they see there. It seemed that teacher G was a mediator between the infants and nature, and I recognized the crucial role that teachers play to enhance or maintain children's curiosity and wonder. During their meal time, teacher G sometimes pointed out the window and had the infants look outside, and she explained natural phenomena such as why the branches and the leaves on the trees are moving. She was always interacting with the infants and making an effort to understand their responses.

Teacher D is very artistic, and she likes creating unique art activities for her students. The children's drawing and artworks incorporated the woods, hills, and playground which told me a lot about their engagement in art outside. The children loved to bring paper, colored pencils, easels, clay, and other materials outside for their art activities. The children's creative artworks were hung on the walls and displayed on shelves all around the classroom. I felt that I was attending a small art exhibition in the class. They used natural materials and made collages and drawings of natural scenery, especially the hills, trees, and flowers in the woods.

When I visited teacher E's classroom, she was replenishing the construction, mini atelier, and home-living areas with reusable materials, such as drink bottles, pipes, and cereal

boxes. Since she wants her children to learn about reducing waste and protecting nature, she encourages them to use natural and recyclable materials. Several children in the home-living area and the mini atelier area used those materials, and I thought they had learned naturally that many materials surrounding them in their lives can be used in various ways to accomplish various tasks. I believe that if they grow up in this way, they might become adults who know the value of recycling and understand that reducing waste protects nature.

Teacher H's classroom has huge windows, but she did not decorate the windows at all because she wants her children to see the great scenery of nature without any distractions. She seemed truly to want the toddlers to see and feel the world as much as possible, and she tries to help broaden their experiences and develop their thinking.

## Chapter 16 Data Interpretation

A coding process, commonly used for qualitative data analysis (Goodwin & Goodwin, 1996), was used to analyze the data. A three-tiered coding method was used to interpret the narrative information attained from the in-depth teacher interviews, outdoor and indoor environment checklist outcomes, and researcher journals. An open coding process, which includes classifying, determining, comparing, and categorizing data (Goodwin & Goodwin, 1996), was utilized for the initial interpretation of the interview descriptions and environment checklist results. The next coding process, known as axial, was utilized for further analysis and refinements. The researcher concentrated on the themes obtained from open coding, and identified correlations among them in aspects of the concepts, interactions, and conditions, and additional categories found during this procedure. As a final process, selective coding was used to further rearrange, elaborate, and develop the major themes of the data.

Four core themes were identified from the data. The four major themes are: 1.) Teachers Experience, Valued, and Implemented High Quality Outdoor Play, 2.) Teachers Experienced, Valued, and Implemented Practices to Promote Environmental, Psychological, and Intellectual Freedom, 3.) Teachers' Perceived that Naturalistic Environments Naturally Integrate Learning and 4.) Teachers Expressed Similar Attributes and Philosophies of Teaching. The themes identified from the study can inform the early childhood profession regarding 1.) pre-service and in-service early childhood teacher development, 2.) the connection between teacher's beliefs and practice, and 3.) teachers' perceptions of teaching and learning in natural environments. In addition, the potential to begin the conversation regarding the value of naturalistic environments for young children's learning and, thus, expose teachers to and broaden their perspectives of best practice for young children exists.

*Teachers Experienced, Valued, and Implemented High Quality Outdoor Play*

The collected data indicates that all of the teachers played outside when they were young children. They had recess at schools, during which the teachers had their own favorite play to entertain themselves. With the exception of two, the teachers experienced rich outdoor play at home as children. Of the nine teachers, eight grew up in small towns or suburban areas that provided great natural environments that included unfenced yards, large land areas, living creatures, creeks, ponds, beaches, woods, trees, and flowers. One teacher grew up in an urban area, but she had access to a big yard, insects, flowers, and gardens and was able to explore nature surrounding her house.

The in-depth teacher interviews solicited information about their favorite things to do as children. For example, one teacher grew up with nature and spent most of her time outside, and her favorite play was climbing trees. Another teacher often went outside and enjoyed pretend play best; in particular, she made 'mud-pies' and pretended to eat them. Information about the effects of the teachers' parents' beliefs and attitudes about children's outdoor experiences was also gained through the interview. One of the teacher's parents who preferred to live in an urban area, did not often allow their child to play outside, and another teacher who was raised by her mother, had to stay more indoors rather than being outside. However, most of the teachers' parents were supportive of their children's outdoor play, so the teachers were allowed to go outside and play in nature as children.

At school, all of the nine teachers who participated in the interviews had recess everyday. During recess, they loved playing with their peers on the playgrounds. Normally, the playgrounds at the schools were constructed of equipment, and some of the teachers liked playing in equipment-centered areas on the playgrounds, especially the swings; however, playing in non-natural environments such as on man-made play sets was not dominate in the teachers' play as children. They tended to create their own games such as chase, and they also

enjoyed make-believe, and simply chatting together. One teacher stated, "I played with my friends during recess. We loved swings and also liked to make up games like chasing games." The average recess time of these nine teachers was between 30 and 45 minutes per day, and some teachers mentioned that the length of the recess was not long enough for them. One participant's comments included, "We had 30 minutes of recess a day, and it wasn't enough because I loved being outside." The teachers did experience time limitations and inflexible lengths of recess. Also, at some of the teachers' schools, there were weather restrictions that limited outdoor play during recess. One teacher mentioned that she and her classmates did not like rain because they had to stay inside instead of going outside at recess. On the contrary, teacher G indicated that her teacher encouraged them to experience different weather so she was allowed to go outside in all kinds of weather during recess. The basic components of naturalized play areas for young children include ways of experiencing the changing seasons and weather, ways of exploring invisible nature, including wind, light and sounds, natural places to explore, and shade in which to relax (White & Stoecklin, 1998). Four teachers reported that if the weather is reasonable and not severe, they will go outside in all kinds of weather so the children can experience various weather patterns and conditions. All four of the teachers indicated that they still go outside when it is rainy as long as there is no lightning or major storms. One of the four teachers said, "Children need to experience various weather conditions and feel the differences." Another teacher stated, "If it snows, what a great time to go and play outside!"

*Teachers Experienced, Valued, and Implemented Practices to Promote Environmental, Psychological, and Intellectual Freedom*

The teachers' perceptions expressed in their play histories and their beliefs about learning in natural environments focused on ideas about freedom. These ideas included experiences and perceptions of environmental, psychological, and intellectual freedom.

*Environmental Freedom.* Environmental freedom refers to free access to the enriched naturalized learning environments and the freedom to explore and investigate those environments according to one's own interests. Most of the teachers were able to freely explore the natural worlds at home as children, and now as teachers, they always encourage their students to explore the abundant natural resources surrounding them at schools. One teacher stated, "I grew up playing outside in the woods...I had a lot more freedom than today...I lived in a really small town and I was outdoors all the time." The teachers described their experiences of catching tadpoles and observing them as they grew into frogs. According to Sobel (1996), giving children time to interact with the natural world will help them reach their full potential. The teachers did not have time limitations when playing at home, and they had large blocks of time to play outside. Teachers commented that as long as the weather was reasonable they would spend long periods of time outside almost every day as children. The environmental freedom experienced by the teachers as children might explain their interests in providing children with natural environments.

The two schools where the nine teacher participants work provide enriched natural environments. Both of the schools are located in suburban areas on expansive plots of land that contain ponds, gardens, woods, pastures, various species of trees and flowers, barnyards that are home to diverse animals, and living creatures, such as insects and reptiles that inhabit the campuses. According to White and Stoecklin (1998), the fundamental elements of naturalized play settings for young children include water, sand, and abundant vegetation, such as trees, flowers, and grasses which enable children to experience and interact with, living creatures, such as animals and insects. The teachers insisted that having access to nature and open spaces on campus enables children to become interested in a wide variety of natural elements and phenomena and to explore their interests with few limitations. The participants explained that when the students in their class go outside, they have the

opportunity and freedom to interact with animals, such as horses, chickens, blue birds, and pigeons. Sobel (1996) supports the idea that generating children's relationship with animals is a highly recommended way to promote children's regular interactions with the natural world. Teacher B stated, "They can feed the animals, brush the horses. . . .They have lots of interactions with the outdoor environment from the beginning of the school year." The teachers discussed the variety of different opportunities that are available to the children outside; for example, the children can see different trees and flowers, animal tracks and animals, and different fruits in the gardens. Many participants use the naturalized outdoor environment when conducting art activities; for example, sometimes teacher F's class goes into the woods and paints the trees they see around them. Supporting children to be exposed in discovering and exploring learning environments is more valuable than using directed instruction for children's interests about the natural world and for individual way of understanding (White, 2004).

*Psychological Freedom.* Psychological freedom indicates the children's explorations and investigations of their interests in naturalized places without fear, judgments, limitations, and adult directions. The participants believe that the children who are exposed to this kind of learning environment display less fear or anxiety and are not afraid of taking risks of challenging new activities. Throughout the in-depth teacher interviews, each of the nine teachers appeared genuinely happy to be outdoors. They loved the calm and peaceful atmosphere, and they expressed feeling safe in nature. According to Crain (2001), nature inspires children to build up a sense of peace and supports children to develop observation skills and creativity. Teacher B mentioned that she likes the quiet atmosphere because it enables her to focus on her internal state of being; she also said that "When I am outside, I am a lot happier. . . ." Another teacher recounted that being outside, especially with her friends, was great and joyful, and she insisted that just being outside makes children feel very happy.



Children who regularly have contact with nature show more positive feelings toward one another (Moore, 1996). The teachers mentioned the freedom of choice that accompanies outdoor play. They explained that because nature is spatially open and conceptually open-ended, the children had more choices about their play, and they loved being able to choose their play freely. Teacher F often used the word 'freedom' during the interview. She pointed out that when she was a child playing outside, she was not the only one who had freedom. Her parents enjoyed a certain freedom too because the outdoor environment was open and safe so they did not need to supervise all of her play.

In addition, teachers felt free outside because they were allowed to use a loud voice and they had fewer restrictions and limitations than when playing inside. The participants stated, "There was a lot of freedom and a lot of time. . . . There was no pressure to rush...spending time outside was spending time in peace. . . ." For the teachers, the sense of freedom that they had as children positively affected their level of confidence. Wells & Evans (2003) indicates that nature eases children's life stresses and assists them in handling difficulties.

The teachers' ideas included that children today grow up with a sense of fear rather than confidence; they are afraid of bad things happening to them such as somebody snatching or kidnapping them. Teacher F pointed out that she did not grow up with those fears and she thinks that the big difference in her life is that when she grew up, she was able to go inside and out and play freely without having those fears. Another teacher also stated that she felt peaceful when outside and that being in nature helped her to release stress and relax. Experiencing nature or being outside gives children an opportunity to think about themselves. Teacher E stated that being able to experience the outdoors helps children think more about themselves than just being inside and watching TV or playing video games; the peaceful

atmosphere and open space outside enables children to focus on themselves and even broaden their perspective and develop a sense of self-consciousness.

The teachers' positive outdoor experiences affected their teaching strategies as teachers. For instance, all participants provide recess everyday and spend time outside with their students. The duration of outdoor play and activities each day is flexible; therefore, the children do not need to rush. Teachers comments included, "...we spend time in the woods as much as we want..." The data collected from the in-depth teacher interviews suggests that the teachers believe that being outside and interacting with nature positively affects children's emotions and attitudes. When children play with a variety of natural environments, their inappropriate social behaviors are decreased or reduced (Coffey, 2001; Malone & Tranter, 2003). Most of the teachers pointed out that being in nature influences children's attitudes and helps them to improve their listening skills, to express themselves out loud, to perform self-regulation, and to experience feelings of peace, joy, calmness, and happiness. The teachers' ideas included that early childhood environments that support children's safety, that encourage children to explore nature, and that provide relaxed learning environments without pressure, stress, or limitations facilitate children's learning by making it enjoyable, meaningful, and interactive.

Fjortoft (2001) studied Grahn et al.'s research and emphasized the fact that children who play outdoors become sick less often than those who play in traditional environments. The teachers speculated that the safe, open-ended spaces and the enriched natural materials outside help children to stay healthy both mentally and physically because they always can move around, run, climb trees, or walk to the woods, and they feel calm and peaceful and enjoy the comfortable atmosphere when they are outside. The participants indicated that giving children the opportunity to decide the play or activities that they want to engage in is significant for enhancing their interests and reducing pressure. Teacher F insisted that when

children are outside, there are “no walls”; the outdoors is open, and children are “free of restrictions.” Teacher A said, “[children] can decide what they want to do and where they want to go out there.” The children were able to explore their own interests and design their individual plans for the day. Teacher C supports each child’s individual investigations rather than providing specific activities that are required for all the children. Similarly, Teacher E described her classroom curriculum as being “very flexible. It depends on children’s interests, and they can decide what they are going to engage in. . . .”

Four of the nine teachers emphasized the importance of their open-ended natural materials and the vast amount of space available on campus. The enriched and open-ended areas and materials offer children more choices for their play, and with flexible recess times, children are not pressured or rushed in their play and outdoor explorations. One teacher mentioned that natural materials such as seashells and wood pieces are “always available for children to use.” Additionally, another teacher indicated that she tries to provide “open-ended materials” outside as well as inside so that the children can have the freedom to use the materials at any time. The data collected from the outdoor environment checklist documents that naturalized materials are well prepared and available for children to use to develop their play or the activities that they are engaged in.

Four of the nine teachers indicated that children are more likely to be comfortable and gain peace of mind when they play outside and interact with nature. Some of the teachers provided evidence that connecting with nature enables children to feel calm and peaceful. The teachers stated that learning in naturalized settings helps children feel calm and interacting with nature, particularly taking care of animals, bring a sense of peace because such interaction requires gentleness, caring, and love. One of the teachers said that “...being outside helps children develop a sense of calmness and a sense of peace.”

Another aspect of outdoor play concerns children's attitudes about their own abilities. Three teachers stressed that children actively challenge themselves when they are exposed to nature or the outdoors more generally. One teacher stated that her students are completely different people when they play outdoors; they are more open to risk-taking, and they even challenge themselves on the equipment on the playground. Another teacher sees value in children's interactions with nature, particularly with regard to children's behavioral challenges, because some children with behavioral problems tend to act out less and to be more comfortable when they are in natural settings. She mentioned that the children who are exposed to the outdoors have many opportunities to challenge themselves, including challenging the way they behave; therefore, they tend to become more comfortable taking risks rather than being afraid of doing so. Teacher F pointed out that children tend to be more open-minded when they are given time to be in nature. She stated, "[Being in nature] allows [children] to be able to learn because they are more open." Teacher D also commented, "[children] are more closed inside while outside they are more open."

In addition, the unstructured play which the children engage in outside encourages them to use their imaginations and creativity to develop their play and these experiences help children to be more comfortable with the natural environment outside because they become more friendly with utilizing the natural materials and the open spaces outside to enjoy their play. Teacher F said that regularly experiencing a natural environment helps children to be peaceful and to be more open in learning. The participants also mentioned that children tend to slow down when they are in nature. Often children's play is fast-paced and dynamic, but when children become interested in some element of nature, such as an insect, they often slow down and begin careful observation. Indeed, this behavior was seen during the outdoor play portion of the observation of one class. For example, one toddler was playing on the

playground when he noticed some worms on the ground, so he stopped his play and spent a while observing the worms cautiously and curiously as they moved across the ground.

*Intellectual Freedom.* Intellectual freedom refers to children's unrestricted opportunities to use their imagination, be creative, problem-solve, investigate and inquire. The teachers perceived that naturalized play areas foster children's development and their sense of time, space and need to interact with the natural world. These naturalized environments accelerate children's natural curiosity, imagination, wonder and active learning by nurturing children's contact with nature (White & Stoecklin, 1998). The data collected from the interviews provided information about intellectual freedom. Two teachers indicated that exposure to natural environments and opportunities to be outside encourage children to use their imaginations often. When discussing her own childhood play experiences, teacher B said, "I really liked to use whatever I found outdoors and use my imagination and create new things to play." Four of the nine teachers mentioned creativity and open-ended thinking when recounting their play histories during the interviews. Teacher D stated that playing outdoors was very open-ended, and she loved outdoor play because she liked to think outside of the box. She said that she is a naturally creative person and that the natural environment outside enabled her to generate more creative ideas. Children's creative play and imaginative play are more varied when they play with natural environments (Taylor et al. 1998). Teacher F described being able to create anything she desired or needed, and she particularly liked creating stories using her imagination and enjoyed imaginative and pretend play with her peers as a child. Additionally, she stated, "My friends and I used the natural materials outside in very open-ended ways to create the props for whatever we were playing." Fjortoft (2001) thinks that interacting with the natural world has a positive effect on children, and he believes that such interactions foster children's creative play. The teachers' ideas included that unstructured and child-directed play helped them to develop their creativity, and the open

spaces, unstructured activities, and freedom of choice outside enabled them to have more creative ideas.

In the in-depth teacher interviews, all nine of the teachers reported the belief that children are able to develop their creativity and problem solving skills when open-ended spaces and materials are available to them with minimal restrictions or limitations. Teacher F indicated that having few restrictions and time limitations affords children opportunities to be more creative. Two teachers stated that children often use their imaginations when exposed to nature, which is a major benefit of play in natural environments because exercising the imagination is important for the development of creative thinking. Fjortoft (2001) studied Frost's (1992) study and indicates that natural environments provide children diverse opportunities to learn. Teacher A explained that exploring nature helps children to learn, and to use their imagination, the latter of which she thinks is most important in enhancing children's learning. A large number of playgrounds that influence environmental learning were unstructured rather than intentionally constructed for children's play (Malone & Tranter, 2003). Teacher G was very direct in articulating the benefit of children's unstructured play with naturalized materials in open-ended environments; she stated that, "When [children] are given an opportunity for unstructured play...they create things to enjoy rather than being given a toy..." By contrast, she pointed out that sitting in front of structured games that are made of plastic does not encourage children to think much.

Three teachers described the belief that being able to play outside with open-ended natural materials such as natural elements promotes the development of deeper creative thinking. Teacher D stated that the abundant naturalized materials outside are not limited, and children often use the natural objects in different ways. Five of the nine teachers indicated the increased presence of creative thinking when children play in naturalized settings. When children spend time outside, they often create their own games or stories to develop their play,

use natural elements outside in innovative ways, and are more receptive to learning. During the interview, Teacher H stated, “[Children] are very creative. We never know what they are going to combine and make. . . .” The spatial openness of the outdoors fuels this innate creativity because children can adapt the unstructured environment to meet their needs and desires during play, and further, nature provides an almost endless supply of materials that children can manipulate and combine to accomplish their play goals.

Of the nine teacher participants, five indicated their belief that children think outside of the box when they interact with nature and spend time outside. The teachers stated that one of the effects of children's play in naturalistic settings is that the children who have many opportunities to play in nature acquire broadened thinking skills, suggesting a direct, positive correlation between exposure to nature and cognitive development. In addition, they insisted that children who spend time in naturalistic settings have the ability to see the world from multiple perspectives, and their multidimensional thinking and creative ideas are not hindered by restrictions. One example of such unrestricted thinking comes from a child in Teacher D's class who, upon observing a tree on the playground, said “The tree looks like a pig, I can see the nose, I can see the eyes...” According to Teacher D, this is a good example of how children see and experience nature in different ways.

Frost et al.(2008) point out that by providing raw materials adults can still support children's interaction with nature and help them to enhance creativity. One participant stated, “ Natural materials really allow children to think outside of the box. . . .” Three teachers indicated children's deeper thinking and broadened ideas when involved in play in the natural world, and this type of cognitive activity is related to their creativity. The teachers indicated that letting children be in open spaces helps children to think in more constructive ways, and the children are more curious and demonstrate better understanding when they actively investigate their interests.

Five of the nine teachers believed that children develop their problem solving skills when they play outside. For example, during their outdoor play, teacher C's students were making a dam to prevent water from escaping their water way, and they actively generated ideas to find the best solution. The children began with authentic trials such as covering the drain with various materials in the sand area. They tried various materials to find the most appropriate way to retain the water. Most of the teachers regularly conduct group discussions with their students for their further learning, and they said that solutions are often found during the discussions in nature by generating open-ended questions and creating ideas through in-depth thinking.

*Teachers' Perceived that Naturalistic Environments Naturally Integrate Learning*

Naturalistic settings seem to naturally integrate learning. The in-depth teacher interviews, outdoor and indoor environment checklist, and the researcher's observations all provide information about children's integration of learning. All participants stressed that children are actively learning when they play outdoors and interact with nature. The teachers' ideas maintained that the children learn about the world through hands-on investigations, and further that children's interests in hands-on projects can facilitate their academic learning, such as reading, writing, math, science, and art. Two of the nine teachers echoed the sentiment when they said, "[children] are gaining academic knowledge without realizing it," and "I think [children] can discover, create, and learn as much outside as they can inside." Gardner (1991) mentions that academic knowledge connects to school settings while outdoor education facilitates connected learning where education is a part of life. Teacher E mentioned that learning and being outdoors are not separate activities; they are absolutely combined and each supports and facilitates the other. Children truly still learn outside by engaging in their interests and involving themselves actively in outdoor play or activities.



Children today are more likely to experience media, written language, and visual images rather than to interact with the natural world (Chawla, 1994). Three teachers insisted that hands-on experiences in nature make more of an impact than reading a textbook. The teachers also pointed out that most of the activities, investigations and play that children experience and engage in outside with nature are hands-on, which helps children to remember longer and think deeper. Teacher E indicated that experiencing real situations helps children understand more deeply and better stimulates their curiosity than reading, writing, and memorizing. In her words, "first hand experiences make [children] wonder and want to learn." Teacher H emphasized that children think deeper and have opportunities to gather diverse sorts of information when they are outside engaged in hands-on activities; for example, directly experiencing different types of weather is more authentic and meaningful than looking at pictures in books or watching TV. Nature itself is a more valuable teacher for children than books or lectures (Coffey, 2001). In addition, the authentic experiences such as observing the process of growth from tadpoles to frogs helps children retain information and store their learning in long-term memory. Teacher B stated that "the more [children] interact with nature, the more they remember it," and further that hands-on experiences outside teach [children] a lot about nature..."

All of the nine teachers who were interviewed provide their students with a variety of hands-on activities, such as gardening, taking care of animals, experiencing different weather conditions, and observing the life cycle of butterflies and birds. Eight of the nine teachers mentioned their children's interactions with animals as an example of hands-on learning. For children, animals can be an open-ended resource for developing children's curiosity, caring attitude, and sense of respect toward creatures. Children are naturally able to interact with animals, try to speak to them, and share their emotions with them (Sobel, 1996). Teacher C

reported that by taking care of animals, children are able to observe their traits and behaviors and also they learn to treat living creatures kindly. Young children are absolutely attracted by animals, particularly baby animals, and they naturally have a comfortable relationship with nature (Sobel, 1996). Teacher D provides guinea pigs in her classroom, and her students take care of them. She said, "we try to include natural learning things with nature with the animals as much as we can." Teacher I mentioned that access to the outdoors and various species of animals enables her children to build deep relationships with the animals in barnyard. Her class regularly visits the barnyard to observe and interact with those animals by feeding, grooming, and talking to them. In addition to interactions with animals, gardening is a valuable source of hands-on learning. Gardening stimulates children to attain new concepts from play and innate wonder (Frost et al., 2008). Three of the nine teachers provide gardening activities for their students, and the children at the schools engage in planting and gardening as a group activity. By taking care of gardens, children are able to observe and learn about the growth of plants, and by working together, children can learn cooperation and other important social skills.

Four of the nine teachers discussed children's development of scientific and mathematic knowledge through their exposures to nature. Coffey (1996) suggests, gardens in outdoor school learning environment promote learning in wide ranges of areas, such as mathematics, banking, business practices, mechanical drawing, entomology, chemistry, botany and physical geography. Teacher C insisted that the children in her class learn science content more effectively because they can actively investigate topics, solve problems, and their curiosity by themselves. Teacher B stated that all content that children learn—including math, science, and social studies—should as often as possible be presented in a hands-on manner because children learn through their own explorations and also because such direct

engagement in learning teaches problem solving skills in addition to academic content.

Teacher B reiterated the importance of “hands-on” activities outside in regard to learning science, and she takes her children outside for science class and uses natural materials and naturalized environments for scientific experiments. The schools’ enriched natural environment provides endless opportunities for children to develop scientific knowledge through active exploration, experimentation, and observation.

During the outdoor play observations at this school, children’s play involving science learning was widely visible; for example, several children were making a waterway in the sand area and observing the water as it flowed through the channel, and this type of observation helped the children understand concepts like current and directionality of water flow. All of the nine classrooms include natural materials in the science areas, and the teachers use these materials, as well as the various living creatures that are kept in these classrooms, to create science activities and to support children in having authentic hands-on experiences that improve their scientific knowledge. One teacher stated that the children in her class tend to have an easier time learning math and science outside, and further that being outside develops their observation skills. Pyle (2002) points out that children’s contact with natural worlds promotes their cognitive development by developing children’s knowledge, reasoning and observational abilities. Another teacher pointed out that her students are very aware of different types of ecosystems because they are able to learn through real experiences, interactions, and explorations in the natural environments at their school.

Interacting with the natural world helps children to develop both a sense of cooperation and language skills (Moore & Wong, 1997). Teacher H made reference to children’s language development when they are outside. At the beginning of the school year, the communication among the toddlers in her class was nonverbal, but their language has become increasingly sophisticated and they recently have been asking more questions about

their interests and are able to verbally express themselves with more sophistication and precision than at the beginning of the academic year. Children who regularly interact with natural worlds have more advanced motor skills, including harmonization, equilibrium and nimbleness (Taylor et al. 2002). Two teachers discussed benefits of playing outdoors for children's physical development, indicating that having space to run around, trees to climb, and places to go fishing enhances their physical development and helps them use their surplus energy. White (2004) indicates that play should occur outside where children can consume their energy by physically moving around during recess.

During the teacher interviews, three teachers described how various natural materials are used for children's provocations both inside and outside. Teacher G said that she includes natural materials inside in various stations throughout the classroom and that she supports children to be engaged in intended provocations. For example, the infants play with the clay, focusing on manipulating it with their hands, or they can create new objects by combining the clay with various other objects, including other natural materials available in the classroom. The teachers believe that provocations help children to develop in-depth thinking and that those experiences will further their advanced learning in the future. Based on the indoor environment checklist, children's provocations using natural and non-natural materials were visible in six classrooms.

Of the nine teachers, three teachers noted that children's symbolic play and representation occur frequently when they play with naturalized materials; for instance, if the children are in a natural environment and decide they want to play beauty shop, they can use their deep and creative thinking to symbolize sticks and other natural materials as brushes, scissors, and other tools they desire for their play. To promote children's representation and symbolic play, the teachers generally do not provide plastic food props; instead when children are engaged in pretend or imaginative play in the home-living area, they use natural

materials such as shells and pinecones, instead of plastic food props, to act out tasks like cooking a meal. Teacher I indicated that when the children in her class use natural materials, they use their imaginations to engage in symbolic play, during which one object is used dynamically to serve multiple purposes and functions. "When children engage in symbolic transformations in their play, the use of objects which do not resemble what they symbolize calls for mental effort (Van Hoorn, Nourot, Scales, & Alward , 1999, p.47)." These authors note that symbolic distancing is a term used by Sigel (1993) to refer to the degree to which a child's symbolic transformation represents what it was intended to represent. Play is more intellectually demanding when there is greater distance in children's symbolic transformations. Therefore, when children use natural materials to symbolize objects in their play they are engaged in more intellectual demanding play.

In addition to natural materials, the children play with recyclable materials like milk caps because they can be symbolized as various objects depending on the children's play. The children enjoy symbolizing the milk caps as food items, such as macaroni and cheese or chocolate pudding. Another teacher explained that children are able to create symbolic play once they understand that one object can serve as a representation of multiple other objects, and naturalized materials give children opportunities to think outside of the box and develop their play by engaging in higher levels of thinking. Through the observations of the outdoor play, many children used the natural materials in innovative and divergent ways; for instance, the children were using shells as shovels when playing in the sand area, which demonstrates the children's ability to adapt available resources to fit their needs.

In addition to the academic learning that occurs outdoors, eight of the nine teachers who participated in the interviews reported that children are able to develop a sense of responsibility, collaboration, confidence, and ownership when they are exposed to nature and interact with naturalized environment. One of the teachers insisted that taking care of

creatures, such as feeding animals in the classroom or in the barnyard, promotes a sense of responsibility. As documented on the indoor environment checklist, the children in the classes which contain animals inside are able to interact with the creatures, and the interactions help children become more responsible and mature. Teacher C stated, "... if [children] are outside and in natural settings, they feel a sense of responsibility..." Two teachers from the interviews mentioned that children also gain a sense of ownership because they take care of the barnyards and the gardens and because they are involved in recycling and other projects that help protect the enriched naturalized environment at their school. Teacher F mentioned the ownership her students obtained through interacting with the peacock that lives near her classroom. Since the peacock was hanging around outside the classroom, the children thought that the peacock was seeking them out, so they started feeding him and in their minds he became their peacock. The children understand how to take care of him and try to find better food to feed him.

It was also perceived that naturalized environments encourage social interaction among children (Bixler, Floyd & Hammitt, 2002). Teacher D indicated that when children play outside, they tend to get along better with others and are able to collaborate with one another. By working together on projects, creating group games, and even just playing together outside, the children develop a sense of collaboration, learn team work, and improve their communication skills. The good conditions of children's outdoor play can help children to experience enriched learning opportunities, especially in the field of social abilities and environmental knowledge (Evan, 1997).

Teacher C's class often works together as a team when she provides outdoor activities or when the children are engaged in investigations of their class project outside. She reported that the children are very proud of themselves when they find solutions or information through their group work. In addition, the teachers explained that outdoor play can promote

friendships because playgrounds and outdoor environments provide various opportunities for children to interact together and develop connections with one another.

Of the nine teachers, three reported beliefs that children develop self-confidence and obtain greater self-esteem during outdoor play. One of the teachers indicated that nature offers nearly endless educational possibilities for children, and she pointed out that in addition to their learning, being in nature or outside and interacting with naturalized environments promotes children's self-esteem and self-confidence, which in turn promotes their learning by making them more responsive to new information. She often hears children say "I can go and do this," or "I'm not yet capable of doing that, but I'll keep trying." She thinks that children become more challenging of themselves when they play outdoors and that these self-invoked challenges help the children to build their self-confidence. Another teacher indicated that children can attain more of a sense of confidence and attain better self-esteem when they are given enough time to be outside because nature is very open and encourages children to explore their interests. Teacher E emphasized that being outside "makes [children] have more curiosity. . . ."

Familiarity to and love of nature, along with a positive environmental ethic, develop out of children's usual contact with and play in natural settings (Sobel, 1996; Moore & Cosco 2000; Bixler et al. 2002). Throughout the in-depth teacher interview, teachers often reiterated children's love of nature. Young children have a tendency to build up emotional bonding to what is affable and comfortable for them (Wilson, 1996). The teachers pointed out that children who are comfortable being outside and who have an interest in and a love for the natural world will be better stewards of their environment. When children have more personal familiarity with nature, they tend to more actively care for natural environments (Bunting & Cousins, 1985). The participants also explained that the children who grow up feeling good

about the outdoors and about nature understand more quickly the many kinds of ecosystems, and they are aware of taking care of nature and protecting the environment.

During the school visits, children's positive attitudes toward nature and their love of nature were noticeable, especially when they played outdoors. Six of the interviewed teachers insisted that children build more of a sense of appreciation for nature when they are continually exposed to naturalistic settings and interact with nature. In support of this claim, one of the teachers mentioned that her students pick up trash spontaneously when they see some outside. During the outdoor play observation, one child at the school was, of her own will, picking up trash on the playground and putting it in the trash can. This student's action indicates that she understands both the importance of protecting the natural environment surrounding her school and the efforts it takes to do so.

Coffey (2001) insists that we should let children enhance their love and appreciations for the living world rather than supporting them in ignoring the world around them. The teachers stated that children can learn conservation at their schools. Teacher B insisted that children's learning is not just focused on bettering themselves but also on helping and improving the world; for example, children at her school take care of the natural environment together by gardening, cleaning up the barnyard, and picking up trash around the campus. Because of those experiences, they become interested in protecting their environment and they also become aware of recycling and reducing waste. Teacher C noted that the children who grow up in this kind of environment will likely carry their understanding of reducing and reusing into adulthood and will always be concerned about caring for nature.

As documented by the outdoor and indoor environment checklist and the observations, seven of the nine classrooms provide reusable materials because the teachers want their children to learn about reusing materials to help reduce waste. Recycling is crucial to preserve nature and beautiful environment, and as Teacher G explains, "[children] are not



going to take care of [nature] or understand that [naturalized environments] do not last forever without our help. . . .” Teacher E emphasized that children’s respect for nature comes from their experiences with nature. Through her observations of the children in her class during the school year, she saw that the children are very respectful of the environment, including animals and others, and they are very aware that they need to treat living creatures nicely. She thinks that the children’s authentic experiences and interactions with nature teach the children to become respectful of nature. Positive interactions with natural world are connected with the improvement of children’s environmentally responsible behaviors (Fishman, 2001).

A further indication of the children’s affinity for nature is that they do not kill or bother the bugs on the playground; instead, they just observe them. When they see injured animals outside, all of the children are saddened and want to help them. In Teacher B’s words, “[Being in nature] does make [children] want to protect nature.” Teacher D stated that children have an appreciation for everything outside, people as well as nature. One day during outdoor play, a child found a snail outside and asked her peers if they could find a safe place for the snail. After looking around, another child proposed a place for the snail and helped move the snail to stay this new place where it could be secure place from others. They wanted to protect the snail and keep it from being attacked by others, and this attitude seems to be a product of their recognition that they are not supposed to harm living creatures and that all living beings deserve to be respected. The teachers’ comments included, “if [children] respect animals and natural materials outside, they can also respect pets and materials inside, such as at home or a classroom. . . .” and “the more [children] interact with nature, the more they appreciate outside. . . .”

*Teachers Expressed Similar Attributes and Philosophies of Teaching*

Several traits of the teachers, who experienced high quality outdoor play and provide children naturalized environments, were found throughout the in-depth teacher interviews and the researcher's observations. The teachers' major attributes were presented as outdoorsy people, teachers as learners, teachers' roles as facilitators, satisfactions with their work, and use of their previous play experiences as children to their classroom curricula as teachers. The in-depth teacher interview data show that as adults all of the nine teachers love being outside and enjoy outdoor activities. Teachers should play big roles by showing themselves as people who love nature, who feel comfortable in nature and who respect nature (Wilson, 1996). The teachers stated, "I still have fun and enjoy the outdoors. I still like to do the things like gardening," and "I like being outside...I am not a very indoorsy person..." The teachers believe that nature helps clear their mind and enables them to release their stress by having enough time to relax in comfortable and joyful atmospheres. The teachers also perceived that the children in their classrooms exhibit similar traits. They noted that the children enjoy being outdoors, are natural learners who engage in inquiry, exploration, intellectually demanding play, and demonstrate respect for nature.

As recorded in the in-depth interviews, the teachers' experiences with nature as children has hugely affected their lives and attitudes as adults. In particular, those childhood experiences influenced two of the teachers to seek employment at schools where they are able to reconnect with nature. Also, their experiences with natural environments have affected their class curriculum and teaching strategies, particularly in how they help children to be able to play in nature. Teacher B said, "I've always been happy outside...because I can bring my love of nature to the children." She stated that her experiences with the natural world as a child compelled her to find a job doing what she loves, interacting in nature and helping others experience the incredible richness of the outdoors.

Sobel (1996) emphasized the importance of providing children opportunities to interact with natural environments through modeling by a responsible adult. As early childhood teachers, all of the nine teachers love to teach in nature, and their pedagogical approach is to a large extent characterized by efforts to support children's play in naturalistic settings and to provide a variety of outdoor activities for children's learning and development. These nine teachers see value and innate positive effects in facilitating young children's interactions with nature, so they incorporate natural environments and materials into their teaching as often as possible. To supplement children's interactions with nature outdoors, all nine of the teacher participants bring natural materials, living creatures, and other elements of nature into their classrooms.

The participants reported feeling lucky to be able to teach in a way that is predominantly focused on child-directed investigations, explorations, and authentic and hands-on experiences with nature. Their comments contained, "I love teaching in this way. It's a wonderful way," "... it's an absolutely wonderful way to teach," and "I am really enjoying teaching [at this school]. This is an awesome place to teach [young children]." Teacher H echoed these sentiments, saying, "I love that we're here with nature and use the natural world as our learning environment." The teachers noted that providing enriched naturalized environments is crucial to help children obtain authentic experiences in authentic environments that enhance their knowledge and development. None of the nine teachers reported having serious difficulties or distractions in supporting children's learning and development through outdoor play. Both the children's parents and the school directors at the schools—two important components of any successful curriculum—are very supportive in helping children to connect with naturalistic settings and to play outdoors. Based on the observations during the school visits, it seemed that children did not perceive nature as something out of the ordinary or something to be afraid of. Rather, nature seemed to be their

idea of the ordinary, and outdoor activities, such as walking to the woods, climbing the trees, and taking care of the animals, are routine for the children. In their lives, nature is ever-present, and it is their favorite place to be.

During the interviews, two teachers indicated that not only do children learn from nature and outdoor activities, the teachers become like their students, learning from and being transformed by their experiences with the natural world. Teacher D stressed that she opens her mind more outside, and she said that her own experiences in nature help her develop and implement better curriculum for the children. She stated, "I am learning as well as children" because she gains new knowledge from the active investigations that she focuses on with her students.

One of the most striking conclusions that can be gleaned from the observations and the in-depth teacher interviews is that these teachers act as facilitators. Instead of providing children teacher-directed activities or controlling their play, the teachers facilitate the children's interests and curiosity by asking them open-ended questions. Four teachers emphasized that they do not give children direct answers; instead, they help the children to gather information to find answers on their own or to generate the most appropriate solutions. The teachers encourage their students to solve problems and find answers on their own through active investigation rather than giving an immediate but simplistic answer to a complex phenomenon. They believe that authentic and child-directed experiences in finding solutions are more meaningful and valuable than simple answers given by teachers. Children easily can learn when they are exposed to child-oriented, play-centered, and developmentally appropriate curricula which support children obtain individually significant experiences for themselves (Bredekemp & Copple, 1997).

The teachers conduct group discussions and help the children to locate helpful resources and information, but ultimately the children are largely responsible for their

learning and the children mainly lead the process of answering the questions. Teacher B stressed that she encourages her students to figure problems out by themselves, and her roles in the class are more to facilitate and provide guidance. When the children solve problems that are related to their project topics, she encourages all the children to work together and to share their opinions or ideas. The teachers often asked their students open-ended questions that promoted the development of creative thinking skills, and they gave them enough time to think or to explore their investigations to find new information or answers. The interactions between Teacher C and the children stood out as highly significant during the observations of teacher C's class. Teacher C often asked her students open-ended questions such as "What do you think?" and "How can we get some information about this?," as well as making open-ended statements like "Let's think about how we can find solutions." Teacher D indicated that the teacher's role is that of a partner in early childhood education, and she pointed out that teachers need to provide an environment that is open to the ideas and interests of the children and that can be manipulated to meet their needs. From the perspective of early childhood educators, being open and able to listen to the children are two significant factors in assisting children's learning.

Four teachers indicated that, even though they are capable and qualified teachers, they need to develop themselves, especially their ways of thinking. Throughout their experiences including teaching in naturalistic settings and supporting children to play in nature, they realized that they need to have more inventive, innovative, and creative ideas and more open-ended thinking. One teacher noted that she does not have any difficulties to continue to connect her children with natural environments other than her own personal limitations. She stated that she is continually challenging herself to think in different ways to provide better experiences for her students; hence, she is often thinking about how she can be

more creative and also about what she can bring into the classroom to facilitate the children's learning. Another teacher reported that to maintain the unique curriculum at the school, teachers need to change their way of thinking because when the children are outside, they are very different and teachers need to let them be in control of themselves. Teachers are not supposed to control the children and have their attention all the time, especially outside; they need to be more open-minded and change their thinking styles. Teacher F explained that the main difficulty she faces in maintaining her current curriculum is her limited thinking about creating more open-ended outdoor activities and providing more creative and better hands-on experiences for the children in her class.

All nine of the teachers who were interviewed provide outdoor recess every day, and they indicated that the children need to take advantage of the enriched outdoor environment at their schools. Two teachers stressed that all children today need to be outside more because they are over-exposed to electronics and technology which encourage, or even require, them to stay inside sitting down, which diminishes the number of opportunities to be outside. Three teachers indicated that the recess time they provide is very flexible, and they try to provide outdoor experiences for as long as possible. Teacher E stated that "I sometimes give them two or three hours of recess. It depends on the day. It's very flexible." The teachers mentioned that the recess duration is mostly related to the children's interests and investigations. The recess that the nine teachers provide is spontaneous and child-centered, and the children are able to investigate some aspect of nature or just run around the playground.

## Chapter 17 Conclusions and Implications

The purpose of this research was to understand: 1.) The relationship between teachers' early lived experiences and their teaching practices in regards to naturalistic environments, 2.) Teachers' perceptions about how young children's learning and development is influenced by their interactions with natural environments, and 3.) How to identify materials and practices used by teachers working in schools located in and emphasizing the use of natural environments. The observations of the outdoor and indoor environments displayed how the two schools provide naturalized environments as ubiquitous sources of information in educational settings.

The in-depth teacher interviews offered abundant information about the teachers' childhoods, particularly their play experiences regarding exposure to nature. In addition, the interviews presented informative resources about the teachers' preferred ways of fostering children's interactions with nature, and their perceptions of how those methods, in conjunction with the characteristics of the natural environment, affected children's learning and development. Furthermore, the teacher interviews provided their perspectives on children's interactions with nature as they relate to developmental and educational goals in teaching young children. The teacher interviews and environment observations provided valuable information for understanding the teachers' perceptions of young children's play in naturalistic settings, and how they value the natural world as a main resource for young children's learning and development.

The four major themes identified in the study were: 1.) Teachers Experience, Valued, and Implemented High Quality Outdoor Play, 2.) Teachers Experienced, Valued, and Implemented Practices to Promote Environmental, Psychological, and Intellectual Freedom, 3.) Teachers' Perceived that Naturalistic Environments Naturally Integrate Learning, 4.) Teachers Expressed Similar Attributes and Philosophies of Teaching. Further analysis and

interpretation of the four major themes led to four significant conclusions. The first conclusion is that teachers' beliefs about naturalized environments are consistent with their teaching practice in those environments. Second, teachers who are teaching in schools with naturalistic environments value the natural environment. Third, teachers' personal life experiences influence their perceptions of teaching and learning in naturalized environments. Fourth, teachers' perceptions regarding the value of naturalistic environments for children's learning were that creative thinking, problem solving, and more in-depth learning occurred.

#### *Discussion of Conclusions*

*Consistent Beliefs and Practice.* The teachers' positive beliefs and perceptions of naturalistic environments for young children's learning were consistent with their practices. The teachers took advantage of the environments as educational mediums that support and enhance children's learning. They regularly implemented learning activities in the outdoor environment. The teachers were consistent in their beliefs and practices in regards to their role as facilitators of learning. They valued environmental, psychological, and intellectual freedom and implemented teaching and learning strategies that promoted children's opportunities to experience these types of freedom. They were not inclined to want to control children's intellectual actions or thinking. They implemented practices that empowered children to take physical, creative, and intellectual risks.

*Valuing the Natural Environment.* Without exception, the teachers in this study truly value naturalized environments as a learning and development medium for young children. They believe that the natural environments not only support children's development but that they also enhance children's life experiences and positively impacted their intellectual development. They believe that the environment provides additional academic and personal growth for the children that can not be achieved in regular classroom environments.



*Influence of Personal Life Experiences on Teaching Practice.* Throughout the research period, the researcher realized the importance of understanding the influence of teachers' childhood play experiences on their instructional practices and beliefs. As the research data indicate, the teachers' high-quality outdoor play experiences as children influenced their teaching strategies and interests in valuing the education of young children in naturalistic settings. The need for teachers to examine themselves as early childhood educators and to challenge their assumptions about teaching and learning are important concepts for teacher development and change. One area in which teachers need to examine themselves has to do with the relationship between their early life experiences and their beliefs and assumptions about teaching and learning. Engaging early childhood teachers in this type of reflective thinking has the potential to improve practices in early childhood classrooms.

*Teachers' Positive Perceptions of Learning in Natural Environments.* The teachers realized that they needed to take advantage of the natural settings that surround their schools in their teaching. For them, nature is not a side benefit but is a main resource for teaching and learning. The teachers perceived that this type of learning environment provoked children to think more deeply, to engage in problem solving, to intrinsically engage in inquiry learning, and to engage in more intellectually demanding play.

#### *Research Limitations*

Despite the study's own self contained limitations to generalization, the major themes that are identified from the study can still be informative resources in developing a more appropriate curriculum in the field of early childhood education.

Multiple methods of data collection that were used to ensure triangulation, such as in-depth teacher interviews, the outdoor and indoor environment checklist, researcher journaling and note-taking, and photographs taken during school visits played a key role in identifying

teachers' beliefs, teaching methods, and the effects of children's learning and play in natural settings. The in-depth teacher interviews valued the teachers' viewpoints and understandings about teaching and supporting children's interactions in naturalistic settings. The outdoor and indoor environment checklist and photographs provided the information on naturalized environments and various natural materials that young children can easily access to develop their play in naturalized learning environments. The indoor environments reflected individual teachers' unique perspectives on this topic, and the classroom designs were highly connected to the information gained from the in-depth teacher interviews.

Although the study provided ample information about children's play with nature, the study contained limitations which need to be addressed. The number of schools in which the researcher conducted the study was two. A study using a larger number of schools would offer more diverse data that could affect the gathered themes and strengthen the collected data. In addition, there were only nine in-depth interview subjects in this research. Additional subjects with more diversity in both culture and environment might have produced more diverse results in generating or developing the major themes of the study. Conducting the in-depth interviews with additional samplings, such as parents and school administrators, would provide more extended information and ideas about the relationships between a child's exposure to nature and their learning and development. Also, studying the perceptions of naturalistic environments of teachers who are not teaching in naturalistic environments would lead to further understanding of teachers' perceptions of such environments. Furthermore, developing a more sophisticated outdoor and indoor environment checklist is desired to gather more accurate information on how those environments influence children's learning and development. Comparing the children at the schools which provide outdoor recess with enriched naturalized environments to those who attend schools which have eliminated recess and offer less access to nature is recommended for further research.

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## APPENDIX A

## In-depth Teacher Interview

### ***Personal Play History***

1. What was your favorite play when you were a young child?
2. Why did you enjoy the type of play the most?
3. What effect did the natural environments you experienced as a child have on you?
4. How often and how much time did you have outdoor play and recess in school? In early childhood years, what did you play at recess?

### ***Preferred Ways of Implementing Play in Natural Environments***

5. How do you include nature or the natural world in your outdoor learning activities or experiences? What do you believe is the value of these types of experiences for children's learning and development?
6. How do you facilitate children's connections with the natural world?
7. How do you include nature or the natural world in your indoor classroom learning activities or experiences? What do you believe is the value of these types of experiences for children's learning and development?
8. What natural materials do you provide in your classroom?

### ***Teachers' Beliefs about the Value of Play in Natural Environments***

9. What are the purposes or values of supporting children's play outside?
10. What do you believe is the relationship between children's learning and their interactions with nature?
11. What do you believe are the effects of supporting young children's play and learning in a naturalistic setting?
12. What are the difficulties or distractions you face in regards to connecting children with natural environments?
13. Please describe what you believe is the ideal early childhood education environment.

## APPENDIX B

## Outdoors and Indoors Environment Checklists

### *Outdoors*

Playground area for classroom\_\_\_\_\_

Naturalized Environment

- Trees \_\_\_\_\_                      - Grass \_\_\_\_\_                      - Flowers \_\_\_\_\_  
- Plants \_\_\_\_\_                      - Stones/rocks \_\_\_\_\_                      - Other \_\_\_\_\_

Outdoors - Animals \_\_\_\_\_  
Types of the animals: \_\_\_\_\_

Outdoors - Water areas \_\_\_\_\_  
- Sand areas \_\_\_\_\_

Outdoors - Gardens \_\_\_\_\_  
- Age appropriate tools for gardening \_\_\_\_\_

Outdoors - Shadow places and shelters for rest \_\_\_\_\_

### *Indoors-Classroom*

Naturalized materials

- Pinecones \_\_\_\_\_                      - Seashells \_\_\_\_\_                      - Seeds \_\_\_\_\_  
- Tree branches \_\_\_\_\_                      - Other \_\_\_\_\_

Raising plants and flowers, quantity \_\_\_\_\_

Creatures-Turtles, fish, hamsters, frogs etc. quantity \_\_\_\_\_

Books about nature, quantity \_\_\_\_\_

Wooden chairs and tables \_\_\_\_\_

Wood floors \_\_\_\_\_

Wooden walls, etc. \_\_\_\_\_

Nature and environmental classroom decoration \_\_\_\_\_