

A Forest Preschool for the Bay Area:
A pilot study for a new nature-based curriculum

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Abstract

Forest kindergartens are a new idea in the United States but have been around in Germany, Norway, and other European countries for decades. Forest “kindergartens” are preschools for children ages 3-6 and focus on being outdoors and learning through interacting with nature. Instead of building with blocks or doing puzzles at a table indoors, children are outdoors for the majority of the day in all kinds of weather, working cooperatively to build a dam across a stream, for example, or making forts with sticks and leaves, or looking at bugs. The normal activities that make up a school day at a traditional preschool-- circle time, song time, snack and lunch-- are still a part of the forest kindergarten, but those things are accomplished outdoors.

Because full-time forest kindergartens are a new concept in this country, there is little formal research available into their effects on childhood development. In addition, though there are a few curriculum guidelines available from programs in Great Britain and Germany, there is no set curriculum or structure. The purpose of this paper is to develop a set of best practices for a new California-based forest kindergarten program with the goal of opening one of these types of schools in the Bay Area in five years.

Chapter 1 Introduction

I am the mother of two young boys, and we are a very outdoorsy family. I joke that I have the ultimate “rocks-and-sticks” kids. They love to putter in the backyard and each have their own little garden plot (my older son even asked for a rosebush for Christmas this year). My boys spend hours building rivers and dams with the hose, swinging in the hammock, gathering rocks, chewing on sourgrass, and observing blue jays, roly-polys, and the other little bits of wildlife that cross our suburban backyard. And we spend tons of time in the Marin Headlands, riding our bikes to secret areas where the kids have built makeshift forts in the oak scrub and can explore for hours on their own terms. My entire family relishes these types of unstructured nature experiences and finds them so much more engaging than a morning spent on the playground at the town park.

Three and a half years ago, an article in the *New York Times* about an upstate New York forest kindergarten program caught my eye (Leyden, 2009). I immediately emailed my husband the link and wrote, “If I could choose any type of preschool education for our boys, this is what I would want it to be like.” I started to research outdoor preschools and was surprised to find that very few schools of this type existed in the U.S., and none in the Bay Area, though this type of education is a natural fit for this part of the country. The “nature deficit” and the importance of children having free time outdoors has gotten a lot of attention in the media in recent years (witness the popularity of Richard Louv’s *Last Child in the Woods* from 2005), but these types of full-time, nature-based preschool

programs seem slow to catch on in the United States. I've been thinking of someday opening my own preschool, so this paper is a feasibility study for opening one of these schools in the Bay Area. I'll investigate the history and goals of this type of education, the regulatory guidelines in California, and develop a suggested set of best practices for a school of my own. In addition, I'll explore the ability of these types of schools to encourage 21st century thinking skills, such as creativity, resilience, perseverance, and out-of-box thinking.

Statement of Problem

Though the benefits of unstructured time in nature for young children are clear, children these days are clearly getting far too little of it. Outdoor preschools provide one important way for young children to gain the many benefits of unstructured nature play, but these types of schools are few in number. There are several problems or barriers to more widespread adoption of this method of preschool education, such as licensing, risk and liability, and site selection. I will be addressing the lack of a formalized set of best practices for outdoor preschools and develop my own set of guiding principles for a Bay Area-based outdoor preschool program.

Purpose Statement

The purpose of this paper is to discuss the history and theory behind outdoor preschools, including their widespread adoption in Germany and other European countries and the current lack of these types of programs in the US. Using this history, video-based observations of forest school programs, and interviews with educators, I develop my own set of best practices and pedagogical guidelines for a new Bay Area outdoor preschool in the tradition of a German "forest kindergarten." I also investigate

some of the barriers to the more widespread adoption of this type of outdoor learning in this country, including issues of licensing, liability, and access to the outdoors. I also discuss the clear benefits of unstructured nature play for children of all ages, with a focus on the preschool years.

As a corollary to the discussion of the benefits of unstructured outdoor play, I investigate the link between nature play and childhood creativity. We hear a lot these days about the importance of developing 21st century thinking skills in our children, skills such as creativity, resilience, perseverance, and thinking outside the box. It is my belief that nature preschools, with their back-to-basics approach and emphasis on unstructured time to explore and lose oneself in nature, offer an old-fashioned solution to a modern, 21st century problem.

Theoretical Rationale

The idea of children benefitting from time in nature goes back to the time of Plato, who wrote, “The most effective kind of education is that a child should play amongst lovely things” (Finch, 2013a, paragraph 1). German educational philosopher Friedrich Froebel (1782-1852) is a key figure in the development of the idea of young children playing and learning from the natural world: Froebel’s most famous contribution to education is the idea of kindergarten, quite literally, a garden for children to play and learn in (Larimore, 2011).

My concept of an outdoor preschool for the Bay Area has its foundation in constructivist, discovery-based, and experiential educational theories of Piaget, Dewey, and Vygotsky (Larimore, 2011). Children have their own intrinsic motivations to learn and, when given the freedom to explore, will create their own learning opportunities.

Teachers at these types of outdoor preschools are present not in a didactic sense but primarily as facilitators. The type of preschool education I am focusing on is child-driven and play-based, with few pre-planned curriculum objectives or outcomes. I believe in an approach which places confidence in the children themselves to know their own goals and limits, and which allows teachers and preschoolers to co-construct knowledge together (Waller, 2007).

I investigate the framework of California state law as it relates to locating child care centers and licensing preschools, as finding the right location for a school of this type and overcoming obstacles in liability is key to the success of any future program development.

Finally, I include information on the concept of flow in childhood creativity as described in research by noted psychologist and anthropologist Mihaly Csikszentmihalyi (pronounced “chick-SENT-me-hi”) (Csikszentmihalyi, 1997). I believe that unstructured time in nature promotes flow experiences described in Csikszentmihalyi’s work, and that allowing the time for children to forge these flow experiences in preschool years will lead to more well-rounded, creative adults with 21st century thinking skills. In essence, these very old-fashioned, back-to-basics nature preschools where kids play with sticks and splash in mud puddles promote exactly the types of resilient and creative problem solvers who will be successful in our busy modern world.

Assumptions

My assumptions at the start of this research are:

1. That all children benefit from unstructured time in nature, and that there is a growing body of research that supports this notion.

2. That children as young as three years old have the ability and the desire to create their own opportunities for learning, and that children should be allowed to explore their own limits and develop their ability to evaluate risk.
3. That the role of adults in the education of preschool age children is to facilitate and guide learning, and not to lecture.
4. That a successful nature preschool reaches out not just to the child, but to the entire family.

Background and Need

Several researchers have explored the importance of unstructured nature play for children, and others have focused on measuring certain effects of time spent in nature on the children's physical and psychological development. A few studies have measured effects of the specialized outdoor school curricula on students in outdoor school programs in the United Kingdom and Norway (Fjortoft, 2001; O'Brien & Murray, 2007b).

However, due to the slow development of this type of education in the United States, not a single study has investigated the benefits of this approach for American students, nor the history or lessons learned from the small handful of US-based outdoor preschools that do exist. There is a clear need to establish the history and benefits of German-style "forest kindergartens" and especially to detail the principles of this type of education for an American audience.

The idea of linking unstructured nature time to the development of creativity (exploring nature preschools within the context of Csikszentmihalyi's 1997 research on flow) seems to be a new one. At least two previous studies have studied the effects of

time in nature on cognitive resilience, a 21st century thinking skill (Wells, 2003; Roe & Aspinall, 2011).

Summary

In summary, the goals of this paper are threefold:

1. To detail the history of European-style “forest kindergartens” and the benefits of unstructured time in nature for all children, but focusing on preschool, ages 3-6.
2. To offer an assessment of where we are in the United States with respect to the outdoor preschool movement. This includes estimating how many of these schools currently exist in the US and establishing a preliminary set of best practices for a Bay Area outdoor preschool.
3. To propose a connection between the benefits of unstructured time in nature for young children and the development of 21st century thinking skills, and specifically, to the development of creativity by exploring Csikszentmihalyi’s concept of flow.

Chapter 2 Review of the Literature

Introduction

This section is an examination of the research literature relating to forest kindergartens, nature preschools, and the benefits to children of spending unstructured time in the outdoors. Information was gathered from academic library searches using online resources.

My research is organized into the following categories:

1. A history of outdoor schools in Europe, with attention to movements in Germany, Scandinavia, and the United Kingdom, including formal, qualitative research into the benefits of outdoor schools.
2. Research into the importance of access to nature and the outdoors to healthy child development.
3. The status of children's time outdoors and outdoor schools in the United States, including an examination of the new movement towards including preschools within established community nature centers.
4. Research into the concept of flow as a means of fostering creative development.

1: The outdoor school movement in Europe and European research into the effects of forest schools on child development

The outdoor school movement began in Europe in the early 20th century. It spread to Denmark and Sweden in the 1950s, growing out of a common tradition in constructivist educational theory and the Waldorf-Steiner approach to early years education (Knight, 2009). In the early 1980s, a formal, nationalized early education curriculum adopted by Denmark put forest schools at the forefront of its mission (Forest Education Initiative, 2010).

Knight (2009) discusses the evolution of the outdoor school movement within the context of other early childhood educational philosophies, drawing particular connection to the Waldorf-Steiner approach. Learning is child-led and play-based, and adults are facilitators not teachers. Steiner believed that imitation and example were more important than words and his approach aimed to “honor and protect” the wonder of early childhood. The Montessori approach gave outdoor schools the connection to the importance of natural materials and of repeating tasks to master them, and the Reggio Emilia theory aligns with outdoor schools through its child-centered approach which emphasizes listening and observing the child, and allowing the child to dictate and later document their own learning (Knight, 2009).

The outdoor school movement took hold in Germany in the 1960s, growing out of the strong traditions of Friedrich Froebel and his ideas on kindergarten and the importance of play-based education (Knight, 2009). Today, Germany has the world’s most established formal forest kindergarten (*Waldkindergarten*) program, with over 700

forest kindergartens in the country (Kane & Kane, 2011). The forest kindergartens are immensely popular; according to one observer, there are long waiting lists for at nearly every school (Kane & Kane, 2011).

In 2010, two American preschool educators went to Germany for a week of intensive observation at four different *Waldkindergarten* (Kane & Kane, 2011). The researchers described the daily schedule at a typical Waldkinder as well as a number of operations-oriented best practices for teaching in the outdoors. Each child carried a backpack with lunch, thermos, and a foam pad for sitting. Teachers pulled a wagon with tissues, diapers, water and soap for handwashing, and art supplies. Jobs were assigned to each child at a morning circle: counting the group, picking up trash, being last to look for stragglers on the hike, and carrying the tissues. The researchers described the rich imaginative/fantasy play exhibited by the preschoolers, including naming their favorite play areas, incorporating natural materials into their play, and cooperating with others. The teachers wanted the children to play and explore on their own, using a constructivist approach to learning supported by the research of Piaget and Vygotsky (Kane & Kane, 2011).

In *Mothering* magazine, Sarah Mills, an American mother of two preschoolers, described her experience with a *Waldkindergarten* in Switzerland with the goal of introducing her American audience to this type of school (Mills, 2008). She included important information about how the day is organized: there is morning meeting, then an hour trek to the class's *Waldsofa* (forest couch), the group's home base and center of operations, with a small stick-built shelter, a circle of stumps, storage for tools, and a place for cooking lunch on an open fire. According to Mills (2008), the teachers helped

children “respect the fire and learn how to be around it safely,” and they are also “allowed to use real knives and saws to sharpen sticks and create play figures” (p. 74). The *Waldkindergarten* creates “a natural, sensory-rich environment in which children can play, explore, learn, and grow. The philosophy is that children learn best when they are able to develop creatively in the most open and natural setting: the outdoors. Direct teaching is minimal, in the belief that children who are permitted to freely explore nature’s resources will naturally develop the skills they will later need for more formal schooling” (Mills, 2008, p 74).

In 2007, education writer Reynolds described a day at the Secret Garden nursery school in Fife, Scotland for a Canadian newspaper. The Secret Garden school is an all-outdoors preschool for ages 2-5, where children spend their time hiking, gardening, and raising chickens and lambs at a nearby farm. The students learn colors and shapes from natural materials like leaves, mushrooms, and bird feathers. The school director has recently received a grant to expand her service and further study the benefits of outdoor preschool education. The newspaper author links this Scottish program to new research in the US on the benefits of place-based education. Collaborating with local governments and small local farmers can help rural communities engage and retain their young people. Donald Sobel, a professor at Antioch University New England in Keene, NH, was quoted in the article as stating that place-based education “helps train kids to engage in civil society. It makes them better citizens” (Reynolds, 2007, p 42).

Several countries in the United Kingdom have made outdoor learning part of their natural curriculum and set forth guidelines for how outdoor preschooling can help achieve these learning goals. In 2010, the Scottish Ministry of Education’s Curriculum

for Excellence through Outdoor Learning initiative sets forth a national vision for outdoor learning and goals for every Scottish child. Here is an excerpt:

Our vision for outdoor learning in Scotland is that:

*All children and young people are participating in a range of progressive and creative outdoor learning experiences which are clearly part of the curriculum.

*School and centers are providing regular, frequent, enjoyable, and challenging opportunities for all children to learn outdoors throughout their school career and beyond.

*Teachers and educators embed outdoor learning in the curriculum so that learning in the outdoor environment becomes a reality for all children

(Scottish Ministry of Education, p.7)

In Great Britain, where the forest school concept is well-developed, the Forest Education Initiative (FEI), a nonprofit organization boosting the status of outdoor schooling in the UK, has partnered with the New Economics Foundation (NEF) to fund a program of results-oriented studies to quantify outcomes of this type of schooling. UK forest schools follow a general model where students attend regular schooling four days per week and spend one day a week outside the classroom in a forest school program. This time-split approach can stretch from the foundation years (the term for preschool in the UK, beginning at age 3) through the equivalent of the high school level. In recent years, the funding partnership between the Forest Education Initiative and the NEF has resulted in at least two major research papers, discussed below.

O'Brien and Murray (2007a) studied seven forest schools in Wales in three different case study areas, serving students aged 3-9. The children attended normal school four days per week and participated in forest school once week throughout the 2004-05 school year. The study used a participatory action model in which stakeholders (teachers and parents at forest schools) were invited to participate in workshops which invited them to create a narrative about how forest schools were benefitting their children. O'Brien and Murray (2007a) found that forest schools:

- *increase students' self esteem and confidence
- *improve their ability to work with others
- *increase students' motivation and concentration
- *help develop language and communication

In terms of physical capabilities, the researchers noted an increase in stamina and both fine and gross motor skills. Even four year olds could handle a three-mile walk. All children became familiar with the woodlands and learned about natural phenomena, increasing their engagement with and respect for the natural world. There were also benefits to the students' families, as siblings and parents spent time in nature learning about what their family members accomplished at forest school. There were family barbecues in the woods and one family even described how they'd created their own family forest school treks on Saturdays. O'Brien and Murray (2007a) also discuss how forest schools take a constructivist view on learning: that priority is given to the mental life of the child and the ways children construct an understanding of their world based on personal experience. A constructivist approach is suited to forest schools because it

allows for experimentation and problem solving in both a personal and a social or group setting.

In a separately-published study, O'Brien and Murray (2007b) evaluate key themes emerging from their group's data collection and reflections at the seven Wales schools in 2004-05. They set out eight broad areas in which their work demonstrates how forest schools benefit learning:

1. **confidence**: children had the freedom, time, and space to learn, grow and demonstrate independence
2. **social skills**: children show an increased awareness of the consequences of their actions and a better ability to work cooperatively with others
3. **language and communication**: children show more sophisticated use of language due to exposure to varied visual and sensory experiences
4. **motivation and concentration**: children were excited to participate in exploratory learning and had the ability to focus for longer periods of time
5. **physical skills**: increased stamina and gross motor skills, increased fine motor skills through making objects and using tools to construct shelters
6. **knowledge and understanding**: increased respect for the environment and an interest in the natural world
7. **new perspectives for teachers**: teachers gained new understanding of their students by seeing them in a different setting and identifying individual learning styles

8. **ripple effects beyond school:** children brought their experiences home to their families and asked their parents to take them outdoors.

(O'Brien & Murray, 2007b, p.8-9)

In *Forest Schools & Outdoor Learning in the Early Years* (2009), researcher and forest school educator Sara Knight took O'Brien and Murray's eight outcomes for forest school learning (2007b) and designed an identical study to this earlier work so that results could be compared. Instead of multiple sites, Knight focused on a single established forest school program that exclusively served preschoolers, 0-5 years. For these younger children, Knight documented results that supported the eight outcomes identified by O'Brien: confidence, social skills, language and communication, motivation and concentration, physical skills, knowledge and understanding, new perspectives, and ripple effects.

In 2007, Waller performed a qualitative study of outdoor school students in at two sites in England and Wales, serving students ages 3-8. Waller discusses how children perceive outdoor spaces in different ways from adults. Children who play outdoors often reject the assistance of an adult and will not necessarily use a play space designed by adults for a particular activity in the way the adults had planned. "Children will often adopt as a play space an area that is deemed unfit for that purpose by adults" (Waller, 2007, p.396).

Waller's qualitative study was accomplished via observations, video, assessment of children's "involvement levels" and parent questionnaires. He used the "Mosaic approach" to listen to young children's stories, which allows children to document their own learning, enabling children to create a living picture of their lives.

In the findings section, Waller describes how the children have constructed the world of their school: by naming their trees and paths with descriptive names-- the “trampoline tree” is one with low branches that were good for bouncing on-- and making maps of their woodland space. He describes how children created stories to explain natural features and how those stories were taken up and added to by other kids-- the “swamp monster” who lived in the muddy swamp.

Importantly, children in these two outdoor schools had no pre-planned curriculum ideas or desired outcomes. Waller believes in a child-led approach where teachers “co-construct” knowledge with their group of children. He describes a “role reversal” (Clark & Moss, as cited in Waller, 2007) where “children are the ones with the unique knowledge to impart and debate with adults” (p.403). These methods allow children to establish their own educational priorities and play a more important role in their own learning. “Meaningful early years practice requires a cultural shift...to a sustainable participatory culture with children, leading to the construction of knowledge through shared reflection and collaborative enquiry” (Waller, 2007, p. 404).

M. Vandewalle’s descriptive study of a forest school in Great Britain begins with an evocative description of a typical rainy morning:

It’s a miserable day. Truly awful. The rain is pouring down, I’m covered in mud and, as I look around the woodland, I see children covered head to toe in sticky mud and soaked to the skin. It’s brilliant! It might be a grotty day, but all I can hear are the whoops of delight and excitement as the children shelter in their dens to escape the worst of the weather. They have spent all

morning outside making rain-proof dens while others decided to create tree spirits using mud and natural materials. They slap a handful of gooey, messy sludge on a tree trunk, find leaves for hair and sticks and berries to create faces. One boy has created a lion, using yellowing, fallen leaves as the mane. Another group of boys are building a wall using logs, bricks, and their own homemade cement. Over on the other side of the woodland, a group of boys and girls are climbing trees under the watchful eye of another adult. This is Forest School and the children absolutely love it! (Vandewalle, 2010, p.43)

Vandewalle (2010) believes the main difference between the forest school and general outdoor learning is that in forest schools, children are not taught but shown. They are shown skills that can be useful to them and then allowed to find out for themselves. The author describes how he implemented forest schools one day a week at his British primary school. He began with simple activities such as den building, whittling carrots, tree spirits, games in the woods, woodland mobiles, and dreamcatcher crafts. He then incorporated campfires, peeling potatoes, and toasting marshmallows, and allowing kids to use real knives and peelers. He has a log cabin in the woods as a base for activities and has hosted a hugely popular day of Forest School activities for families.

Roe and Aspinall (2011) studied the ability of forest schools to promote restorative behavioral outcomes in children. The researchers studied whether forest schools could improve both mood, ie energy, stress, anger, and sense of pleasure, and ability to plan and set goals. There were 18 participants, all 11 years old. All children

showed greater positive change in the forest school setting. Forest school helped children have lower stress, higher energy, less anger, and a greater sense of well-being and pleasure. Children were also able to feel significantly more able to plan and realize personal goals after the forest school experience. The study suggests that forest schools have an important role to play in promoting the positive mental health of young people.

Two Scandinavian studies have also attempted to define some of the benefits of outdoor learning for preschool age children. In 2010, Angaard published a study of 32 Swedish preschoolers, accomplished through ethnographic observations such as interviews and videos. Her purpose was to identify how preschool age children like to be outdoors, ie, how they use nature. Angaard defined three main ways preschoolers engage with nature:

- *As a classroom to learn about science
- *As a home and place for peaceful imagination
- *As an enchanted fairyland place for magical, imaginative play

(Angaard, 2010, p.24)

Complementing Angaard's study of the psychological aspects of preschoolers' time in nature, Fjortoft studied how preschoolers in Norway reap physical benefits by playing outside (2001). Fjortoft discusses how natural environments present challenging and diverse landscapes that greatly influence motor development. Natural obstacles such as slopes and rocks challenge young children in ways that more tightly-controlled, manmade play environments cannot. Trees are for climbing, meadows are for tumbling, and vegetation is for fort-building. The natural environment is a stimulating environment for learning in general, and for motor fitness in particular. In the qualitative part of her

study, Fjortoft compared improvements in physical fitness tests between children who attended a nature-based preschool and those at a traditional preschool. Preschoolers who played outdoors more showed greater improvement in physical fitness tests that measured balance and coordination and, overall, acquired motor skills more quickly (Fjortoft, 2001)

2: Research into the benefits of time spent in nature

In 1991, Israeli researcher Rachel Sebba completed a retrospective study of children's relation to the environment. The investigator questioned 198 adults and 174 children about what types of spaces they enjoyed being in and the nature of their experiences in the outdoors. Nearly all adults identify "the most significant place in their childhood" as a place in the outdoors-- a fort, a lake, a campsite. Both adults and children engrave nature experiences in their memory deeply due to their active involvement in the experience, using all senses and the entire body. Sebba writes, "children experience the natural environment in a deep and direct manner, not as a background for events, but, rather, as a factor and stimulator" (Sebba, 1991, p. 420).

R. White is the CEO of an organization that consults on the design of children's play spaces and schools, with a focus on integrating the natural world. In a 2004 position paper, White provides a summary overview of decades of previously published research into the benefits of the natural environment on the well-being of children.

- Children with symptoms of Attention Deficit Hyperactivity Disorder are better able to concentrate after contact with nature.
- Children who have contact with nature score higher on tests of concentration and self-discipline. Preschoolers in schools with well-integrated outdoor environments have better attention spans.
- When children play in natural environments, their play is more diverse with imaginative and creative play that fosters language and collaborative skills.

- Exposure to natural environments improves children's cognitive development by improving their awareness, reasoning and observational skills.
 - Nature buffers the impact of life stress on children and helps them deal with adversity.
 - Nature helps children develop powers of observation and creativity and instills a sense of peace and being at one with the world.
 - Early experiences with the natural world are linked with the development of imagination and the sense of wonder.
 - Natural environments foster positive social interaction between children.
 - Outdoor environments are key to children's development of independence and autonomy.
- (White, 2004, p. 6-7)

In Australia, researchers Malone and Tranter (2003) compared outdoor learning opportunities and play behavior patterns at five different primary school campuses, varying from an urban campus with very little outdoor space to a Waldorf school with an educational garden and forest space. Too often, they believe, the natural environment is used as a place to blow off steam (ie, do this work inside and then you can run around outside for recess) as opposed to viewing the school grounds as important sites for children to develop cognitive and social skills that are integral to the learning process. In summarizing the work of Titman (as cited in Malone and Tranter, 2003), Malone and Tranter identify four elements children looked for in school grounds:

*a place for doing- recognizing their need for physical activities, extending themselves, developing skills, taking risks

*a place for thinking- intellectual stimulation, things they could explore and learn about, by themselves and with friends

*a place for feeling- presenting color and beauty, gives a sense of ownership and pride, a place where they could care for the place and people and feel cared for themselves

*a place for being- allowing children to be themselves, for privacy, for being quiet outside the classroom, recognizing their individuality

(Malone & Tranter, 2003, p. 291).

One of Malone and Tranter's conclusions is that it is not enough to have child-friendly school grounds. It is also vital to have a "philosophical commitment to the value of school grounds for developing children's environmental cognition" (Malone & Tranter, 2003, p. 300). The forest is a great asset that can be used by schools to maximize curriculum opportunities.

In 2003, researcher Nancy Wells published an important American study on the ability of natural environments to create healthier, more mentally resilient students. She studied 337 3rd through 5th graders in upstate New York. Through in-person interviews and a formal assessment comparing recent stressful events with the children's perception of how stressed they were, Wells found that the presence of nature nearby "moderates or buffers the impact of life stress on children," essentially, creating more resilient kids. "The psychological effects of stressful life events such as family relocation, being picked on or punished at school, or being subject to peer pressure varied depending on the amount of nearby nature to which the children had access" (Wells, 2003, p. 321). Wells

hypothesizes that there are two main mechanisms through which nature can act as this buffer. One is through social support: natural areas draw children together and help them to make friends and build a support system. The second mechanism is the idea that exposure to nature helps children restore their ability to focus their attention and recover cognitive resources that were interrupted by the stress. Wells finishes by viewing her findings within the socioeconomic context of the urban poor, lamenting that “if access to nearby nature is indeed a protective factor contributing to the resilience of children, it is one more strike against poor children who already face tremendous disadvantage” (Wells, 2003, p.326).

Carolyn Galizio runs a laboratory preschool at Kent State University in Ohio. The school is adjacent to a wild meadow and children spend time outdoors in natural spaces everyday. Galizio and a team of researchers describe how a mixed age preschool class discovered a previously-unknown stream in the meadow, investigated it, mapped landmarks, and built a bridge to cross it. The authors describe the students’ creativity and problem-solving abilities and the effect being in nature had on those abilities. They describe how the natural world offers opportunities for preschoolers to develop theories and further their skills in observation, inquiry, and discussion. The authors also discussed how the students’ behaviors changed as they spent more time outside: “Children who had difficulty cooperating in the classroom worked well with others...Children who were not careful with their bodies inside the classroom worked quite carefully with tools and with each other while building the bridge” (Galizio, Stoll & Hutchins, 2009, p. 47). Galizio goes on to say that to offer children this kind of environment helps all of us see that school can be anywhere. “An open quiet environment in the natural world promotes real

listening. Outdoor spaces, like the wetlands, are rich with possibilities for children and teachers alike. As each day changes and the seasons change, the children notice subtle differences in nature and also in each other. Their relationships grow and change, both with each other and with the earth around them” (Galizio et al, 2009, p.42).

American researcher Mary Rivkin is the mother of the environmental education movement for preschoolers and authored the 1995 position paper from the National Association for the Education of Young Children titled “The Great Outdoors: Restoring Children’s Rights to Play Outside.” She writes that young children need the broad base of experience provided by being outdoors because the knowledge they gain there informs later learning in literacy and science. Children love to be outdoors, where they can use all their senses to experience the world and experiment with “big behaviors:” shouting, running, jumping, and climbing. Rivkin gives an overview of developmentally appropriate outdoor environments for different ages, including sensory stimulation for infants; sand pits, water tables, and hills to scamper up and down for toddlers; and big open spaces for running and climbing as kids get older. Rivkin believes: “Playspaces for children of all ages need to be more than playgrounds. They should be “habitats”-- places where children can live” (Rivkin, 1995, p. 62).

Rivkin also published a study of the schoolyard habitat movement for preschoolers in 1997, discussing efforts in various countries to green school grounds and provide more varied access to nature for children to play in. She believes the developmental reasons for engaging children in the outdoors are many:

Children are multisensory, physical beings. The younger the child, the more the child learns through sensory and physical activity. The variety

and richness of natural settings-- the wind, the sky, the changing clouds, the moving animals, the cycling plants, the hardness of rocks, the flow of water, the varieties of colors and sounds, the wide range of permitted behaviors (shouting and running and climbing)-- all contribute to physical, cognitive, and emotional development more than manufactured indoor environments typically can or do. (Rivkin, 1997, p. 63)

Rivkin (2000) believes early childhood practitioners, in particular, need to assert children's rights to experience nature fully. Seeing pine cones and flowers is only one part of learning about them: children should be able to touch, taste, smell, and pull them apart, engaging all their senses. Children also need private spaces to retreat to for a sense of well-being: bushes, rocks, homemade forts and dens, even a small circle of trees.

Special education professor Ruth Wilson (1996) joins Rivkin in writing for an American audience of the importance of connecting young children with nature. In "Environmental Education for Preschool Children" (1996) she finds there are only a handful of ongoing formal environmental education programs targeted to children in the preschool year. Most existing early childhood nature programs take the form of a one-time visit to a nature center. She believes support for early childhood nature education can be categorized into two main themes: future engagement and emotional need. Wilson writes, "unless children develop a sense of respect and caring for the natural environment during their early years, they are at risk for never developing such attitudes later in life" (Wilson, 1996, p. 28). She also believes that healthy child development depends upon healthy interactions with nature and that "there is a psychological and emotional need for interaction with the natural environment" (Wilson, 1996, p. 28).

In another 2011 paper, Wilson offers eight ways for preschool teachers to promote a positive ecological self in young children:

1. providing frequent outdoor experiences, including experimentation with natural materials
2. providing tools that help young children become better observers of the natural world (magnifying lenses, wind socks, rain gauges, rulers)
3. using natural materials to decorate the classroom
4. engage children in conversations about the natural world using open-ended questions
5. involve children in growing plants and caring for animals
6. share nature literature with children
7. encourage children to document their experiences with nature (drawings, dance, dictation, drama)
8. share information with families about the importance of nature education (Wilson, 1996, p. 104-5).

Wilson (1996) believes that the purpose of connecting young children with nature fosters whole development of the child and promotes respect and appreciation for nature.

According to Wilson (1996) the child with a positive ecological identity has a sense of belonging in knowing that he or she is a part of nature versus separate from it, a sense of wonder in being in touch with what is beautiful and awe-inspiring in the natural world, and a sense of security (or healing) found “in the repeated refrains of nature- the assurance that

dawn comes after night, and spring after the winter”. (Carson as cited in Wilson, 1996, p. 105)

In “Wonders of Nature: Honoring Children’s Ways of Knowing,” Wilson (2013) describes how play used to be much more natural than it is today: sticks and bark became boats to float down a stream, and leaves stirred in a bucket of water became soup. Teachers can encourage this type of play, as well as types of play where children pretend to be a favorite animal and hibernate or go through metamorphosis. Wilson writes that children’s ways of knowing nature are direct and experiential; they maintain a belief that the world is full of mystery and wonder. Children know the world through as a sensory experience, and only later as adults do they switch to a cognitive model of understanding. To this end, preschool teachers should provide frequent access to natural places, foster "natural play" activities, and encourage aesthetic representations of children's ways of knowing (Wilson, 2013).

In summary, children’s time spent in nature contributes to the development of the whole person, including mental and physical health and well-being, as well as spirituality and a sense of belonging. Those exposed to nature at a young age are more likely to fight to preserve it, benefiting all of us. And finally, time in nature is an important “buffer” for life’s stresses and a “reboot” for the thinking process, suggesting that preschoolers who engage with the outdoors can grow up into more creative, resilient thinkers as adults.

3: The status of outdoor education and outdoor play in the US

In the United States, much of the scholarship related to children and the outdoors has focused on lack of access and decreased time spent outdoors. A few articles have documented the recent trend towards establishing licensed nature preschools at existing nature centers.

In 2004, Clements' major study on the status of outdoor play among American children demonstrated some significant trends. This blind, internet-based study of 830 mothers of children aged 3-12 asked about the time children spend playing outdoors and the types of activities children engaged in. The study reported that 85% of mothers agreed that children today play outdoors less often than they did, and that 70% of mothers reported played outdoors every day as children, vs. only 31% of kids today. Clements notes, "the increase in the amount of time spent in adult-structured activities reflects the growing awareness that many of today's children have scheduled play dates, music lessons, and after-school youth sports on most days of the week, leaving them with less time to initiate their own activity in school or at home" (Clements, 2004, p. 73). Obstacles to playing outdoors included the amount of time spent watching TV and using computers, as well as concerns about crime and safety. Encouragingly, 93% of mothers did say they believe active, outdoor play has a positive effect on their child's development.

The most successful outdoor play experiences usually involve the child's free choice, which is self-motivated, enjoyable, and process-oriented.

Natural experiences such as collecting leaves, throwing stones in a pond, jumping over small brush or logs, building sandcastles, collecting sticks or nuts from the ground, or creating hiding spaces challenge the child's imagination and reasoning abilities. (Clements, 2004, p. 77)

In 2007, the US Department of Agriculture initiated the National Kids Survey to establish a baseline measure to help detect trends in children's activities and time spent outdoors. This was a random-digit telephone dial survey reaching 1450 US households with kids ages 6-15 in 2007-2009. In general, over 62% of children spent more than two hours a day outdoors, but the ways in which children spend their time outdoors is changing. Playing, hanging out, organized sports, and technology used outdoors are on the rise, and nature-based activities are less popular (Larson, Green, & Cordell, 2011).

J.A. Ernst (2012) completed a study of Minnesota licensed preschool/childcare providers and the time that children under their care spent in unstructured nature play. A questionnaire distributed to a randomized selection of centers (81 centers responded for a response rate of 23%) asked about the amount of outdoor time provided by the centers and how much of this time is unstructured nature play. The results showed that while much of the children's outdoor play was unstructured, the majority of play was occurring in developed or maintained rather than natural settings. No respondents indicated that the majority of outdoor play was in unmaintained, natural settings. The three biggest obstacles to nature play were lack of appropriate clothing, lack of access to natural areas, and safety or liability concerns.

In the Midwestern US, several nature-oriented preschools have been established at nature centers. Rachel Larimore, the director of a nature center-based preschool in

Michigan that serves 80 children, discusses the benefits of incorporating a nature preschool into the mission of a nature center, including developing more powerful outreach programs and generating income to support the center's mission. She describes the layout of her nature preschool, including two natural play areas with lots of loose parts such as logs, rocks, and leaves, plus sandboxes, a stump circle for group time, a painting easel, a wigwam frame, and hollow logs. Overall, about half the time is spent outdoors, but in good weather, the entire day may be outdoors, including rest time (Larimore, 2011).

Patricia Bailie (2010) is the former director of a well-respected nature center-based preschool in Milwaukee, Wisconsin. Her article for the *Journal of the National Education of Young Children* talks about how existing preschools can partner with nature centers to bring environmental education to very young children. Bailie covers the pro/cons of different visit options including a one-time visit to regular seasonal visits to frequent visits and family workshops, right up to actually locating a preschool at a nature center, which is similar to German-style forest kindergartens. Bailie estimates there are 20 preschools located at nature centers in the US, some over 40 years old (Bailie, 2010).

Within the last five years, attention to the idea of German-style nature preschools or forest kindergartens has gotten attention in the US mainstream media. In 2009, an article in the *New York Times* about a forest preschool in Saratoga Springs, NY described how the school's 23 preschoolers spent three hours outdoors each day regardless of the weather-- in an area of the country where temperatures are often well below freezing in winter. The writer describes how the children had built huge teepees from sticks and vines and woven trails throughout the thickets. The children had also

used stumps to bridge bogs, balanced branches on tree trunks to make a seesaw, and dug a pit to create a “monster house.” The school had licensed an abandoned farmhouse and leased 325 acres of state parkland on which to operate. On the day the author visited, there was steady cold rain, but the children played contentedly all morning until lunchtime, climbing crabapple trees, digging in sand, scooping water from mud puddles, and creating wreaths from bittersweet vines.

4: The concept of flow as it relates to child development and 21st century thinking skills

Psychologist Mihalyi Csikszentmihalyi (1997) first characterized “flow” in the mid 1970s to describe the way artists lose themselves during the creative process. In *Finding Flow*, Csikszentmihalyi states that flow happens

When a person’s skills are fully involved in overcoming a challenge that is just about manageable, so it acts as a magnet for learning new skills and increasing challenges. If challenges are too low, one gets back in the flow by increasing them. If challenges are too great, one can return to the flow state by learning new skills.

(Csikszentmihalyi, 1997, p. 46)

He characterizes flow as “getting involved in something so deeply that nothing else seems to matter and you lose track of time.” The metaphor of flow is one that people use to describe “the sense of effortless action” they feel in moments that they say are the best of their lives, as in when an athlete says they are “in the zone.” It’s important because the happiness that comes from flow experiences is not dependent on external circumstances: “the happiness that follows flow is of our own making, and it leads to increasing complexity and growth in consciousness” (Csikszentmihalyi, 1997, p.47). A

In Csikszentmihalyi’s book *The Creative Personality* (excerpted in *Psychology Today*), he states the belief that creativity is the central source of meaning in our lives. “Creative individuals are remarkable for their ability to adapt to almost any situation and

to make do with whatever is at hand to reach their goals. If I had to express in one word what makes their personalities different from others, it's complexity. They show tendencies of thought and action that in most people are segregated. They contain contradictory extremes; instead of being an individual, each of them is a multitude"(Csikszentmihalyi, 1996, p. 36).

Csikszentmihalyi then explores the idea of divergent thinking, which is the quality of thinking that most creativity tests attempt to measure and that creativity workshops try to enhance: "Divergent thinking leads to no agreed-upon solution. It involves fluency, or the ability to generate a great quantity of ideas, flexibility, or the ability to switch from one perspective to another, and originality in picking unusual associations of ideas "(Csikszentmihalyi, 1996, p.38).

In recent years, Csikszentmihalyi has explored the relationship between the Montessori style of preschool education, which emphasizes the repetition of tasks so that they become part of a child's memory, as they relate to his concept of a flow experience. This work lends support to the ideas that young children have the ability to develop flow experiences and that certain educational strategies may promote the development of a creative personality.

Chapter 3 Method

My research encompassed a review of current information relating to the importance of access to nature for young children, a history of forest kindergartens in Europe, the status of outdoor education for preschoolers in the United States, and investigations into the licensing and regulatory guidelines which will inform the development of these types of schools in California. In addition, I interviewed four experts whose views could shape the development of a new outdoor preschool program for the Bay Area.

Ethical Standards

This paper adheres to ethical standards in the treatment of human subjects in research as articulated by the American Psychological Association (2010). Additionally, the research proposal was reviewed by the Dominican University of California Institutional Review Board for the Protection of Human Subjects (IRBPHS), approved, and assigned number 10135.

Access and Permissions

Interview subjects were informed of the purpose of the study and willingly agreed to recorded interviews with the understanding that anything they said could be used in this thesis. Interview subjects also agreed to have their names and occupations stated in this document.

Sample and Site

My interview sample included the director of an outdoor preschool that is opening in the fall of 2013, the director of a traditional play-based preschool, an environmental educator who has consulted on the opening of two nature preschools, and an educational researcher currently working on a book about encouraging creative development in children.

Data Gathering Strategies

The primary data gathering strategy employed in this research was an extensive review of the existing literature. This was augmented by interviews with experts.

Data Analysis Approach

Data were collected and organized by sub-topic, read, reviewed and cross-referenced. Expert interviews were recorded, transcribed and paraphrased.

Chapter 4 Findings

In conjunction with an extensive review of literature relating to outdoor schools, nature, and children, I conducted interviews with four experts.

Diana Miller (personal communication, March 20, 2013) is the director of Sausalito Nursery School, a parent-led cooperative nursery school with an emphasis on child-led, play-based education. She has over 30 years of experience as a preschool educator and has extensive knowledge and experience directing children and nature.

Brianna Cutts (personal communication, March 23, 2013) is a museum exhibition designer and former director at the Bay Area Discovery Museum in Sausalito, CA. She is interested in the development of creativity in children and has recently written a book on how adults can nurture their own creativity by thinking more like children.

Ken Finch (personal communication, April 18, 2013) is an environmental educator and the founder and president of the Green Hearts Institute for Nature in Childhood, an organization that promotes children's access to natural spaces. A former nature center director, Mr. Finch now lectures on the importance of nature education for young children and has consulted on the development of two preschools based at nature centers.

Sarah Heller (personal communication, April 22, 2013) is the director of the Fiddleheads Forest School, a new nature preschool opening in the fall of 2013, which will be based at the University of Washington Botanic Gardens in Seattle, WA.

1. Miller interview, condensed and edited

On how preschool children engage with nature and how they learn through sensory experiences:

“I remember a seminar I went to five years ago, where 25 preschool teachers were all sitting in a circle and were asked to remember the first thing that came to our mind as a defining moment in our childhood, a time when we felt our childhood was at its best. For every single one of us, it wasn’t a trip to Disneyland, or an amazing vacation, or some great toy. The best moment was always something simple, when we were outdoors with someone, or at home with a favorite person-- and it always involved our senses. Where we’re really affected is through our senses: the sounds, the smells, the calm we felt when they were engaged. It’s a certain kind of security. I grew up in an era when we were allowed the time to experience that. What feeds our souls as children are very simple, all-senses-encompassing moments.”

On how time in nature can affect children’s behavior:

“When things are crazy, what do you do? You don’t try to box kids in and create more order. It’s more like, ‘Let’s get out of these four walls...’ Whenever we have a visitor come to this preschool, they’re so impressed by our outdoor space. They feel it and appreciate it at a deep level. It’s protected. It’s safe. We learn the most when we feel comfortable and secure, and our outdoor spaces help create that feeling.”

On her students in the outdoors:

“You see children totally immersed in digging in the sand, in building dams and bridges. Or in with their gardening projects. Two weeks ago, we had [our garden enrichment teacher] come in to create a topiary with the children. When we were done, I watched as

two of the Sea Otter boys [the 3-4 year old class] were completely absorbed in what they'd planted. [One student] laid down on his side, literally on the ground, and said, 'I'm going to watch mine grow.' [Another] was over here, crouching on his knees, looking at it so intently, it was almost like he was praying to it. It brought out that nurturing part of them. They put it in the soil, they were the one who had to take care of it. Anything we can do to create that bonding with our environment is important."

On how her own childhood has shaped her practice:

"When I think back to my own childhood in Kansas, all my family was in agriculture. We as a family were very connected to the seasons. It was having that sense of what the weather is and what that really meant to our lives. I remember in the summer, smelling the rain coming and knowing it was not the right time, that the rain coming then could mean the harvest would be ruined."

On how often children should be in nature:

"The benefits don't happen when you're doing it [being in nature] just 45 minutes once a week. It's like the [Native Americans]. In their souls they can tell when it's going to rain. They've had that continuity of experience, that regular exposure. All of their senses are so keen. I feel like when children are exposed to the outdoors at a young age, nature is absorbed in every sense. I don't know if as adults we have that same ability to embrace it as fully. In order to have that profound connection, you have to start as children."

On the vagaries of licensing for CA preschools:

"[Licensing inspectors] don't come here yearly anymore since we're an established school. They know us, they know what we do. For over 20 years, we'd had the same man, a wonderful man [as our inspector]. One year, he retired and we had a new woman,

someone who was clearly inexperienced. She cited me because the bark on the tree in our lower yard was too rough and kids might get hurt. I had seven days to fix it or I could be shut down. We ended up wrapping the trunk of the tree in a black cushioned foam so nobody could touch it or bump into it. Here we are celebrating our outdoor space and how important it is for kids to learn from nature, and she cited me for the bark on our tree being too rough!”

2. Cutts interview, condensed and edited

On how children build confidence through exploration and play:

“As children play, what they’re doing is building confidence. There’s a cycle:

Innate curiosity leads to children’s taking risks. They either fail or succeed in that risk, and if they fail, they try again. Either way, they build confidence. Last summer, I saw this in action when my teenage stepchildren found a 40-ft rope swing that went out over a lake. Their first jump was 2 feet. That built their confidence. Then it was 4 ft, then 6 ft. By the end of the day, they were at the very top of the slope.”

On what’s lacking in our education system.

“Sir Ken Robinson believes that schools are built on a factory model, where we are testing children at a younger and younger age. In the human lifespan, we are most creative from the ages of 0 to 5-- that’s because we don’t know the rules yet. All the testing in schools- it should be more like trial and error.”

On learning by doing:

“It’s about learning respect for boundaries. You can tell a kid a million times not to touch a fire, but they probably will test that thought out.”

On children’s time to explore on their own terms:

“We’re so far away from being progressive in our education system. The belief is that to get into college, to be successful, kids need all these organized sports, all this organized time. But what they really need is *dis*-organized time. Kids need the tinkering time, the puttering time-- that’s when they get passionate about something.”

On how the outdoors promotes creativity:

“Being outdoors gives you time to putter, to tinker, to lose yourself in what you’re doing. All these things that you learn in the outdoors, you learn because you’re breaking the rules. You can go to a playground, but you’re never going to be able to create the kind of mess that you can in your own backyard.”

On the three requirements for creativity:

1. Time, and more time.
2. A diverse set of loose parts that you can play around with.
3. The ability to make a mess!

On how children reach a flow state:

“Flow is when you get so lost in an activity you love that you achieve a state of bliss. In children, this happens in play. Play is children’s ‘work,’ play is how they reach a state of flow. They lose track of time and are wholly engaged in what they’re doing. It’s that love, that sense of really loving what you’re doing. In children, we see the effects of play in their problem-solving. They’re tenacious, they stick with something. With children, we see that they can achieve a state of bliss like that [snaps her fingers].”

On playfulness in children:

“I think the lightheartedness comes from confidence. It’s like with that rope swing... If I’d done it like my stepchildren did, that one physical act would have boosted my confidence and made me feel like I could do anything. It’s why people climb Everest, right?”

On how to quantify creativity in young children:

“One idea is to integrate parents’ observations into their own child’s development. A parent is able to see subtle changes over time. It’s important for educators to reflect on their practice, but it’s also important, equally important, for parents to reflect.”

On 21st century thinking skills:

“What I find is that it seems to be mostly about qualities, not things that are measurable: the qualities of spontaneity, courage, resourcefulness, tenacity, resilience.”

3. Finch interview, condensed and edited

On how engaging children with nature promotes better environmental stewardship and learning opportunities:

“About 25 years into my career as an environmental educator, a light went on in my head.

The model I was trained in is a cognitive model: ‘if we teach them, they will come to care.’ But the real paradigm today is: ‘if they care, they will come to learn.’ ”

On the importance of early exposure to nature:

“Frequency is important... It’s not that you can’t become a nature lover later in life, but it’s that early exposure that is key. There’s this ripe window in the early years. Louise Chawla’s work is the most influential here: that exposure to nature needs to be part of the regular rhythm of a child’s life. It needs to be more than a once a year vacation to Yosemite.”

On how exposure to nature reinforces learning:

“It’s self-reinforcing to a degree. When a child comes back to a place over and over again, they notice what’s new, they see the small changes, they see what’s different from the day before. That’s important for the learning process.”

On overscheduled kids:

“In general, with most of the things kids get pushed into, every one is good for kids individually. It’s when you have activity upon activity that it turns problematic. All the piano lessons, baseball games: they are all adult-supervised, adult-driven. The game can’t start until the coach gets there. Ultimately, this means that kids can’t develop creativity. Where, when, and how they spend their time is being decided for them.”

On video games:

“The creativity in the video game doesn’t come from the kid playing it, it came from the adult designing it.”

On how nature fosters creativity:

“Kids in nature don’t have that prepackaged experience. Give them 10 minutes outside and they will start creating play. It’s that “loose parts” mentality- they have to be creative... Nature is just this huge blank slate.”

On the role of adults at nature school:

“Teachers are in the ‘lifeguard mode.’ They are guiding children to an experience, but they are not directing the experience.”

On the risk benefit analysis for time in the outdoors:

“We have a culture out there where people think first about what the danger is instead of what the benefit is... Let’s get real: there are plenty of risks in childhood, but climbing trees isn’t one of them.”

On where we’re headed with nature preschools:

“I think there’s definitely momentum behind the opening of more schools. I see it as only accelerating. It only makes sense. Within the nature center world, it’s clearly accelerating. Most larger, more established schools either have nature preschools or are actively exploring the idea. It’s clearly something that can change lives and the missions clearly align. There are benefits to the children. It helps the center foster long-term connections to families. And they can even help nature centers make a profit.”

On the difference between nature preschools and forest kindergartens:

“Nature preschools have all the usual indoor facilities that you’d find at a normal preschool. There’s a building, classrooms. Forest kindergartens are much more wild- as their base, they may have nothing more than a simple picnic pavilion and a latrine.”

On where we’re headed with forest kindergartens:

“Forest kindergartens are going to be a much harder sell. There is a small, enthusiastic core of parents who love it. But most American parents want to see a regular facility behind the nature play; a regular school building.”

4. Heller interview, condensed and edited

On her background before becoming a nature preschool director:

“My background is in environmental education, and I also have a master’s degree in science education. I have a personal passion for the natural world. I’ve been at the arboretum [the University of Washington Botanic Gardens] for three years, developing programs that connect the community with the arboretum. And as an undergraduate, I did an internship at a nature-oriented preschool in Seattle called Discovery Kids.”

On Seattle as a hotbed of nature learning for preschoolers:

We have a lot of young families living nearby the arboretum, and the nature preschool was a natural benefit, a natural long-term benefit, with reaching out to these families. We also have CedarSong [CedarSong Nature School], which is really the pinnacle of nature preschools, one of the most well respected programs in the country. CedarSong was definitely an inspiration for our school. But there’s also quite a movement for this type of school in Seattle. We have lots of parents doing meet-up groups to get their kids outdoors in nature, putting together their own nature programs for their kids.”

On the process of opening the school with the University of Washington as sponsor:

“It was a struggle with the University. I started in January 2012, so it took more than a year to get approval. There were so many layers we had to think through. The university had to think ‘Does this meet our vision?’ We had to work our way through the layers and gain everyone’s support. They wanted to make sure it was safe.

On licensing:

“We don’t have to be licensed. In the state of Washington, preschool programs only have to be licensed if you are in charge of children for more than four hours per day. Our program runs 9-12, so we are under the category of specialty programs, which don’t have to be licensed. Regardless, we’ve been asked by the University to meet the licensing requirements as much as we can, to hold ourselves to those rigorous standards.

On insurance and liability:

“For insurance, we got a recommendation for a specialized insurance broker from the CedarSong Nature School. They understood what we are trying to do; it was actually a pretty smooth process! We are collaborating with the University on liability. The University has programs and people in place to help with administration and evaluation of things like our emergency evacuation plan, our safety plan, and our school site. They help with the administration and the documentation. There is also other infrastructure within the University [that has helped her understand some of the licensing and liability requirements]: the University has daycares on site for University staff.”

How she is enrolling her first class:

“Just last Friday, all applications had to be postmarked. We anticipate 28 applications for 24 spots, and we are going to do a lottery, not first come first served. We decided against first come first served because we wanted people to be able to take the time to get to know us and our program. “

On how she is ensuring a good fit between students, families, and the school:

“Because we are a new program, we just have to be as honest as possible. We can say, ‘this is what we envision.’ It is truly all about the family. We will work with the kids and the families to ensure success.”

On the layout of the school:

“The arboretum is right in the heart of Seattle, and you can walk from the arboretum to campus. It’s 230 acres, long and skinny. It’s not fenced. The land is owned by the city, and the city manages the lawns and trash services, while the UW staff manages the trees and plants. We have our core collections, and then large areas of wetlands and native plants. For our first year, we will be based at the arboretum’s visitor center. There is a greenhouse that we’ve adapted to be our base of operations and meeting point. It’s not heated, it’s rustic. It has bathrooms and cubbies. Each day, we’ll venture out from there. We’ve IDd a spot, which will be our home base, where we can build and dig; where the kids can build a relationship with the place. We’ll have snack there too each morning. And from the outdoor home base, we can also venture out on shorter hikes and adventures in other parts of the botanic garden. For next year, we’re working on a new outdoor classroom in a different part of the arboretum, a bit farther away from traffic, with a shelter, picnic tables, and bathrooms.”

On her hopes for preschoolers’ outdoor education:

“My hope is that every child would have the opportunity to go to a program like this if their parents choose; that these types of programs would grow to be available everywhere, with tuition support so that they would be available to everyone. Right now, this program probably doesn’t work for most families with two parents working; working families need that 8-5 coverage. I also hope that there can be more infrastructure and support for these types of schools.”

Chapter 5 Discussion /Analysis

Summary of Major Findings

Currently, there is a good amount of momentum around the concept of outdoor learning for preschoolers and the development of nature preschools and forest kindergartens. With all of the attention focused on the nature deficit and the importance of being outdoors in nature, my hope is that it is just a matter of time before this concept of schooling catches on in a bigger way. In California, and particularly in the Bay Area, our moderate climate combined with the interests of the local parent population would seem to suggest that these types of outdoor preschools would be very successful.

Through online research as well as interviews with preschool directors, I estimate there are at least 14 formal outdoor preschool programs in the US. These schools range from nature preschool programs housed at established nature centers to a handful (likely less than five) which operate in the true German forest kindergarten tradition. As a further illustration of the momentum behind nature preschools in the US, I have discovered that in 2013, there are at least two US-based conferences focusing on forest kindergartens and nature/outdoor preschools (March 2013 at Antioch University New England and June 2013 at a nature school in Maryland) as well as a Bay Area conference in late May focusing on connecting children and nature.

Best practices

One major goal of this research was to develop a list of my own set of best practices for a possible future outdoor preschool of my own to be based here in the Bay Area. Below is my initial list of recommendations for my own future school, which was

synthesized from a literature review (particularly the descriptive, observational work of Kane & Kane, Mills, and Waller), observations from viewing online videos of outdoor preschool programs in Washington State and Japan (ABC News Nightline, 2012; NHK World: Broadcaster's Eye, 2012), and personal interviews as described in Chapter 4. There are recommendations for operations, safety, curriculum and evaluations, and community-building.

- My school should have an outdoor “base camp” of operations separate from the school building, which can include a firepit, flags and other natural decorations, a basic camp kitchen, a storage shed, composting toilet, and an informal shelter, stick-built lean-to, or teepee.
- Cell phones and walkie talkies can be used for emergency communications. In addition, to help parents know where their kids can be found during the school day, teachers can mark the day's outdoor destination on a map posted at the school dropoff area.
- Students should each carry a small backpack with their own water bottle and change of clothes. The teacher can pull a small wagon with supplies- tissues, magnifying glasses, art supplies, first aid kit, cell phone/walkie talkie, water, and snack.
- At each day's morning meeting before heading outdoors, each student should get assigned a job for the day: picking up tissues and trash, helping pull wagon, walking first in line with the teacher to lead the way, walking last in line with the other teacher to look for stragglers, and helping with lunch.

- Teachers should review the rules about safe play outdoors at the beginning of every school day.
- At CedarSong Nature School, the rule when climbing trees is that you can go twice as high as you are tall. To me, this seems like a healthy balance between letting kids explore and safety considerations.
- Bathroom best practices: Children should be encouraged to use the bathroom before leaving in the morning and would also be able to use a composting toilet at our base camp in the forest. Depending on the location, I would probably allow children to urinate outside when appropriate (as at CedarSong Nature School). I would also bring along a portable “potty” in the wagon for emergencies.
- I recommend that teachers begin each day with an idea of what activity they want to introduce (making forts, mud play, finding leaves) but allow for plenty of flexibility and on-the-spot decision making. I would avoid having a strong, pre-set curriculum for each day. I support Waller’s concept of children and teachers “co-constructing” knowledge together.
- Embedded routines will be an important part of our school. Morning meeting, dressing routines, checking-in routines, safety routines, and meals are all an important part of the program.
- My school will incorporate art, music, books, and reading aloud in our outdoor setting. If we have a longer program and children need to nap, we may even try naps outdoors when the weather is right.
- The evaluation method I endorse for preschoolers is the creation of “learning stories” which the children themselves can share with family and friends. The

- children illustrate what they've learned and can narrate their illustration for a teacher, who acts as scribe for the learning being described. Also, occasionally, the entire group of students may together create a scrapbook or illustrated map about a particular day or learning unit. Mapmaking is a valuable skill.
- I would like to write a school song together with parents and kids that incorporates the values of our school.
 - Each morning before students arrive, teachers should perform a safety check/walkthrough of indoor space and outdoor grounds. The goal is to eliminate hazards, but it is not possible to eliminate all risk, as this is an outdoor environment.
 - In the early stages of the school development, I will meet with local fire, EMT, and police to establish relationships and familiarize them with the concept of the school.
 - I will talk with parents about the importance of good clothing and include information about proper clothes in school communications and parent meetings. I may consider applying for grants for outdoor clothing for students who can't afford what they need, as some schools in the UK have done.
 - Children should be allowed to explore but will know the rule that they need to play where an adult can see them. We will have routine check-ins and will use the rhyme: "1,2,3 where are you? 1,2,3 I'm over here!" Another strategy to consider is putting up a daily rope boundary surrounding the play destination and asking children to stay within the rope.

- For the first week of school until routines are established, the children will not venture out into forest. We will stay closer to the school building and learn about safety and routines. During the first week, morning meetings will incorporate lessons on the contents of the children's backpacks, the teacher's wagon and what the teacher carries in her backpack. Teachers will also teach the school song and the "1,2,3 where are you?" game.
- It is important to include the entire family in the happenings at school. We will invite parents to share a day in our outdoor classroom. We will invite parents to be teaching assistants and have a big family barbecue at the end of the year. Our school newsletter will offer suggestions for excursions and articles about the importance of unstructured nature play.

Conclusions about nature play and flow

From a review of the literature and interviews with education professionals, there seems to be initial support for a connection between nature preschools, unstructured play outdoors and the development of creative and 21st thinking skills. This is an area where more research is needed.

Conclusions and strategies for licensing a nature preschool

After discussions with education professionals and a review of research, there seem to be three main strategies that will help a nature preschool pass through the California state licensing program for preschool programs.

The first strategy is to piggyback upon license for existing preschool that is near a good outdoor site and establish forest kindergarten within that existing program (such as the licensed preschool at the Bay Area Discovery Museum- the future outdoor preschool program could be located in the Marin Headlands). The biggest advantage? The school is already licensed. One disadvantage is that you may need transportation (such as a minibus) to get from the location of the current school to the outdoor location.

The second option is to find a desirable location and build or renovate a building. The fenced outdoor play yard immediately adjacent to the school building would be licensed under state guidelines, with the implicit understanding that school will venture beyond the fence for the “wilder,” more exploratory portion of the preschool day. This would be the most expensive and complicated option by far in terms of licensing. CA Article 101175 (see appendix), which allows for variances in current recommendations at the discretion of the inspector, may be helpful during the review process.

The third option is to locate the preschool within an established venue such as a county park, public nature center, botanical garden, or university site etc. This has been shown to be a popular option for the dozen or so nature preschools that currently exist in the US. There have been at least two research articles and one book about the growing trend in establishing preschools at existing nature centers. The advantages are many. Firstly, you can incorporate your school under existing liability and insurance plans for the venue and then adjust those existing arrangements to meet the needs of the new program. The university setting has the advantage of allowing school to be a site for education majors to interact and observe young children. Both undergraduates and graduate students can work at the school, and the school can become a laboratory school

for research into this type of outdoor preschool education. Sonoma State University has a 300-acre nature preserve that could be a wonderful site for a school, as well as undergraduate and graduate programs in education. Jack London State Historic Park in Glen Ellen, which is operated by a locals who took over park administration when park was slated to be closed by the state for budget reasons, could be another strong option.

Comparison of Findings to the Literature

My results are supported by findings in the current literature that demonstrate the importance of access to nature for the development of creativity, resilience, and physical and emotional health for young children. My findings further the notion that nature preschools are a growing trend in the US, and that the demand is likely out there for more schools of this type in the years to come, particularly in places like the Bay Area.

Limitations/Gaps in the Research

Because of the small number of true outdoor preschools in the US, there was not the opportunity to do my own observational study. My recommendation is that future research focus on a long-term, before-and-after, observational study with nature preschool students, in the tradition of the FEI/NEF studies completed with forest school students in Great Britain (O'Brien & Murray, 2007a). If I open my own nature preschool in the Bay Area, I would like to complete further observational studies that would focus on the connection between unstructured nature play and the development of creativity and other 21st century thinking skills.

Implications for Future Research

My research supports the idea that unstructured play benefits children and that time spent in a nature preschool or forest kindergarten can play an important role in creating lifelong

learners. Further long-term observational studies of young students who have completed a forest preschool program, can focus on studying the differences in their thinking skills and creativity. If further research can lend support to the idea that forest kindergartens and nature preschools encourage 21st century thinking skills, this will help create demand for schools of this type around the US.

Overall Significance of the Study

By design, this study includes a broad-reaching review of literature (though there's still a great deal more to investigate)-- and a limited interview sample. The opportunity is there for future study, and it is my hope that this work can continue. The list of best practices for my own future school, while initially brief, can be added to over time as I continue research into opening my own school in the Bay Area. I would like to learn more about evaluating preschool students and fostering community support. Finally, my work offers some support for the link between unstructured nature play and the development of creativity, but is limited by the lack of opportunity to observe this connection in action with real students. I hope additional work in the future can help remedy this limitation. For 21st century parents, offering concrete support for the idea that unstructured time in nature will make their children more creative and intuitive learners should create a great deal of additional momentum behind these type of immersive nature preschools.

Appendix A: Licensing

Information on preschool licensing in the state of California, as it relates to the opening of a new preschool operation.

From the San Francisco-based Child Care Law Center (2012):

Licensing is intended to provide for basic, core health and safety protections for children in out-of-home care and is monitored by the Dept of Social Services (DSS) under their Community Care Licensing (CCL) division. Title 5 and Title 22, Division 12 are the areas which set out guidelines, including indoor and outdoor space requirements, educational and training requirements, child to staff ratios, emergency preparations, nutrition requirements for meals and snacks, recordkeeping and parental rights requirements, and CPR/first aid training requirements.

From the City of Redwood City guidelines for new preschool businesses (2012):

To license any new child center, the operator must have a Fire Clearance from the city fire inspector, a Planning/Use permit from the city (a months-long zoning process which includes application processing, notifying surrounding property owners, and holding a public hearing for feedback), a Fire/Building Permit, and a business license.

California Child Care Center (2007) Licensing Regulation Highlights

<http://ccl.d.ca.gov/res/pdf/CCCRRegulationHighlights.pdf>

Article 101175 states:

“The Department has the authority to approve the use of alternate concepts, programs, services, equipment, space, qualifications, ratios and demonstration projects when there is an alternative for safe and adequate services submitted in writing with substantiating evidence to support the request.”

Appendix B: Memorable quotes about children in nature

“For the child, it is not half so important to know as to feel. If facts are the seeds that later produce knowledge and wisdom, then the emotions and the impressions of the senses are the fertile soil in which the seeds must grow... The early years of childhood are the time to prepare the soil.” -Rachel Carson

“The child with a positive ecological identity has a sense of belonging in knowing that he or she is a part of nature versus separate from it, a sense of wonder in being in touch with what is beautiful and awe-inspiring in the natural world, and a sense of security (or healing) found ‘in the repeated refrains of nature- the assurance that dawn comes after night, and spring after the winter’ (Carson, 1965).” -Ruth Wilson

“Play and the experience of delight and beauty in the natural world foster a capacity for creativity, joy, and inspiration that stays with us throughout our lives.” -Edith Cobb

“A child’s world is fresh and new and beautiful, full of wonder and excitement. [I would ask] that each child in the world have a sense of wonder so indestructible that it would last throughout life.” -Rachel Carson

“Children are multisensory, physical beings. The younger the child, the more the child learns through sensory and physical activity. The variety and richness of natural settings-- the wind, the sky, the changing clouds, the moving animals, the cycling plants, the hardness of rocks, the flow of water, the varieties of colors and sounds, the wide range of permitted behaviors-- shouting and running and climbing-- all contribute to physical, cognitive, and emotional development more than manufactured indoor environments typically can or do.” -Mary Rivkin

“Imagine a place where the carpet changes every day [and] the ceiling is a myriad of colors, light, shadow, and movement. The feelings and movement completely surround you, sometimes breezy and warm, sometimes cold. Unexpected wonders fly by, sometimes full of color and sometimes full of noise and movement. If we really want children to thrive, we need to let their connection to nature nurture them.” -Claire Warden

Appendix C: Partial list of US-based nature preschools

CedarSong Nature School, Vashon Island WA
www.cedarsong.org

The Nature Preschool at Irvine, Maryland,
www.explorenature.org/about-irvine/directors-corner
<http://naturepreschool.wordpress.com>

Schlitz Audubon Nature Center Preschool, Milwaukee WI
<http://www.sanc.org/education/nature-preschool>

Wildflowers Nature School, Sonoma County CA
www.wildflowerkids.org

Roots and Wings Nature School, Seattle WA
<http://wildernessawareness.org/program/roots-and-wings/>

Mother Earth School, Portland OR
www.motherearthschool.com

Woodhaven School, Beaverton OR
www.woodhavenschool.com

Carbondale Waldkinder Preschool, Colorado
<http://carbondalewaldkinderpreschool.blogspot.com>

Natureplay Preschool, Asheville NC
www.naturepreschool.com

Forest Kindergarten at the Waldorf School of Saratoga Springs NY
www.waldorfsaratoga.org

The Butterfly Garden, Texas
www.thebutterflygarden.net

Dodge Nature Preschool, West St Paul, MN
www.dodgenaturecenter.org

Elachee Nature Science Center, Florida (opening fall 2013)

University of Washington Botanic Gardens

Fiddleheads Forest School

http://depts.washington.edu/uwbg/education/Youth/nature_preschool.shtml

About the Author

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