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# Growing Bonds with Nature: Transformation of an Outdoor Childcare Environment

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Growing Bonds with Nature: Transformation of an Outdoor Childcare Environment

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### Abstract

Children's disconnection with nature has become increasingly clear over the last few decades throughout the world due to a number of factors, including technological and societal shifts. Reconnection with nature is proposed as a solution, demonstrating countless benefits in physical, mental, emotional, and social domains. Using an approach influenced by STEAM (Science, Technology, Engineering, Arts, and Mathematics) frameworks, I proposed to redesign and renovate my early childhood program's outdoor environment. The goal was to not only achieve a positive, natural environment for preschoolers to encourage core concepts like science, mathematics, and engineering, but also to develop and strengthen the relationship between children and the natural world. Extensive information is shared for all steps of the project to completion. Outcomes, limitations and future considerations in regards to this project are discussed at length.

## Historical Context

### **Introduction: The Evolution of Play and Children's Relationship with Nature**

Over time, the landscape of young children's interaction with the environment has drastically changed, with a clear disparity between generational experiences of the outdoors. Many adults born in the 1950s or 1960s would likely agree that much of children's time was spent outdoors in the neighborhood. There was a sense of community that is much different than the climate of today. I recall playing outside after breakfast until lunchtime and then returning outdoors until dusk when the mosquitoes chased us indoors. Neighborhood friends would ride bicycles, play games like Hopscotch or Jacks, and dig in the dirt in a friend's backyard. Neighbors would take turns being the "adult in charge" on the street or gather and chat about current issues of the day. In contrast, clear behavioral and societal changes have occurred over time and are visible today. Over the last several decades, children have spent increasingly less time outdoors. For instance, Clements (2004) surveyed a group of parents to assess how much time present-day children, their own children, and the parents themselves spent outdoors. 85 percent of the parents surveyed agreed that present-day children played outdoors less frequently than children did even a few years prior. Additionally, 70 percent of these mothers recalled engaging in daily outdoor play when they were little, and nearly three-quarters of these parents recalled outdoor play frequently lasting for over three hours at a time (p.72).

Screen time is at an all time high as children have begun to spend more and more time in front of televisions, computers, and cell phone screens. Clements also found that 85 percent of parents surveyed agreed their child's television viewing and computer game playing were "the number one [reasons]" for lessened play outdoors (2004, p. 74). In addition to the increase of

screen time, there are also concerns about crime and neighborhood safety, lack of time on parents' part to spend outdoors with their own children, and overall concerns regarding free play without adult supervision and possible safety issues that could arise (Clements, p. 74). Research completed by Karsten (2005) examined the oral recollections of people growing up in the 1950s and 1960s and their perceptions of play as children. As she stated, "playing meant playing outside," and weather didn't seem to be a factor in outdoor play (2005, p. 280). Children gathered and played games in the street, and it became a space for children to learn independence skills and practice how to get along with other children. Multigenerational influence could also be seen in the neighborhood environment as children related to the shopkeepers and elders of the community. As the automobile became more predominant, playing in the streets and parking lots became more of a safety concern. Despite children's independence and resourcefulness in dealing with safety issues, a clear positive correlation between prevalence of automobiles and the number of deaths of children (Wridt, 2004).

Similarly, the advent of television was a pivotal moment shaping children's interaction and playtime. The television was "magic," bringing large groups together indoors for entertainment (Karsten, 2005, p. 282). "We all got lemonade and cookies and so on. It was quite a happening," recalled one older man interviewed by Karsten (2005, p. 283). As the television and the automobile became more common, each influenced the transition from outdoor play to the replacement of more time spent indoors. Playgrounds, often sponsored and maintained by the city, were emphasized and erected in response to the everyday potential for physical harm that outdoor play presented (Wridt, 2004; White & Stoecklin, 1998). As Wridt stated, the evolution of play spaces, accompanying safety concerns, and other societal changes "led to the removal of

childhood from street life, and thus, community life in general” (Wridt, 2004, p 96). As a result, the community became a very different place with the loss of many positive social aspects and the protections that came with it.

In the 1980s, public spaces began to lose their appeal as parks and playgrounds became potential stages for danger. Often cities could no longer afford the upkeep and there was public disinvestment and the direct result was children needing to find new places to play. Organized sports became more prevalent and the concept of the “backseat generation” was born with children toted from activity to activity (Karsten, 2005, p. 286). Class divides in recreational activity could thus become more clear: while additional recreational activities were a financial options for middle and upper-class households, for the lower class, they were unaffordable (Wridt, 2004; Karsten, 2005).

These trends observed over prior decades have continued into the present day, in many cases exacerbated by further advances in technology and developments within society. In the last twenty years, technology has offered entertainment to our children which has become very popular and far-reaching. Children now have cell phones at very early ages, giving them access to the internet, games and instant communication. Between organized sports activities and other activities to which children are chauffeured, there is less time, and perhaps interest in open-ended outdoor experiences. Since the 1980s there has been a significant upward trend in children’s participation in indoor activities (Sandberg & Hofferth, 2006). Sandberg & Hofferth (2006) found that children in the modern era have less free time and spend what little they do have participating in more structured activities like youth programs rather than unorganized outside play. The availability of new forms of media from home has nearly doubled since 1999 (Rideout,



Foehr, & Roberts, 2010). As a result, outdoor activity has lessened as more and more children spend more time outside of the natural sphere. Balmford, Clegg, Coulson, & Taylor (2002) conducted a study with children from the U.K. to discover that more children can identify Pokemon species than common wildlife, further illustrating the disconnect between children and their natural environment. This focus on outdoor activity — or lack thereof — is further reinforced by adults and society by modeling, curricula, and social policy. For instance, many middle school children have no recess time built into their daily schedules. In today's society, one message is clear: the outdoor experience is not seen as important as the indoor experience.

### **Bridging the Divide: Advocating for Reconnection With the Outdoors**

Evidence of this disconnect between children and nature has sparked notable action, including several movements that have arisen throughout the last decade. Notably, Richard Louv's publication of *Last Child in the Woods: Saving Our Children From Nature-Deficit Disorder* elicited scientific, educational, and public concern regarding disconnection from nature. Louv, co-founder of the Children and Nature Network, an international organization with the goal to bring together educators, advocates and communities for this return to nature, proposed a disconnection crisis. Louv argued that due to this crisis, children use their senses less, and in turn, have increased disease and attention issues (2005). Forest schools, which began in Scandinavia and Denmark in the 1980s, have inspired educational approaches which incorporate the environment into education in novel ways. Such approaches advocate for hands-on time in the natural woodland environment as a path to increase self-esteem and competency through these strengthened connections with the natural world (Turtle, Convery, & Convery, 2015).

Internationally, numerous key resources and stakeholders collaborate on building connections with the natural world. For instance, the Dimensions Foundation and Arbor Day Foundation collaboratively developed Nature Explore, which helps to educate through seminars, advocacy, products and environmental design options (Miller, Tichota & White, 2013). The North American Association for Environmental Education (NAAEE) is also a key player in this issue, while countless regional and local organizations enact change on a smaller scale. The amount of collaboration on local, regional, national, and international levels speaks to the prevalence and the intensity of this movement.

Despite the current state of the relationship between children, society, and the outdoors, evidence suggests that reconnecting children with nature and the environment presents clear benefits to the development of children and society itself. Dr. Ruth A. Wilson, an advocate for children and the necessity of their engagement with nature, identified a number of such benefits. In addition to children being encouraged to appreciate diversity and beauty, engagement in nature “fosters growth in all ... developmental domains (i.e., physical, mental, social, emotional, and spiritual)” (Wilson, 1994, p. 24).

### **Benefits of Environmental Education and Participation in Nature**

The current body of research has established numerous benefits for children’s active engagement in nature in these developmental spheres. Though not all-inclusive, Table 1 lists a number of these advantages.

<b>Table 1</b>	<b>Environmental Education And Engagement: Benefits</b>
<b>Physical</b>	<ul style="list-style-type: none"> <li>- Active outdoor play promotes muscle and organ growth (Clements, 2004)</li> <li>- Children with daily nature exposure are prone to fewer illnesses (Turtle, Convery, &amp; Convery, 2015; Wells &amp; Evans, 2003) and recover from illness more quickly than children with less exposure to nature (Turtle, Convery, &amp; Convery, 2015).</li> <li>- Outdoor activity leads to a more balanced appetite (Clements, 2004) and mitigates obesity and other health concerns (Turtle, Convery, &amp; Convery, 2015; Wells &amp; Evans, 2003).</li> <li>- Outdoor play promotes motor coordination and flexibility (Wells &amp; Evans, 2003; Clements, 2004).</li> </ul>
<b>Emotional/ Mental</b>	<ul style="list-style-type: none"> <li>- Nature is essential to children’s overall emotional health (White &amp; Stoecklin, 1998; Wells &amp; Evans, 2003; Collado &amp; Staats, 2016).</li> <li>- Children with access to green spaces demonstrate greater emotional resilience (Collado &amp; Stats, 2016).</li> <li>- Access to nature promotes better moods and emotional regulation in children (White &amp; Stoecklin, 1998; Collado &amp; Staats, 2016).</li> <li>- Engagement in nature promotes empathy in children (White &amp; Stoecklin, 1998).</li> <li>- Engagement with nature may be linked to self-esteem: Turtle, Convery, &amp; Convery found that students in forest schools demonstrated higher self-esteem and confidence (2015).</li> <li>- Outdoor play encourages mental focus and may alleviate ADHD symptoms (Clements, 2004; Collado &amp; Staats, 2016).</li> <li>- Exposure to nature can help to alleviate stress and promote creativity in children (Wells &amp; Evans, 2003; Collado &amp; Staats, 2016).</li> <li>- Interaction with the outdoors through activities such as gardening can improve children’s academic achievements (Klemmer, Waliczek, &amp; Zajicek, 2005).</li> </ul>
<b>Social</b>	<ul style="list-style-type: none"> <li>- Playing outdoors grants children more opportunities to learn mature, appropriate behaviors modeled by adults and peers (Clements, 2004; Collado &amp; Staats, 2016).</li> <li>- Interaction with nature benefits children’s understanding of the broader world (Turtle, Convery, &amp; Convery, 2015; Anggard, 2010; Sharapan, 2012).</li> <li>- Children involved in environmentally-focused education may be more environmentally friendly (Anggard, 2010).</li> <li>- Attachment to nature is correlated with children’s work ethic and striving for self-improvement (Klemmer, Waliczek, &amp; Zajicek, 2005; Turtle, Convery, &amp; Convery, 2015).</li> <li>- Outdoor play promotes independence and safe and healthy risk-taking behaviors which prepare children for adult life (Wells &amp; Evans, 2003; White &amp; Stoecklin, 1998; Clements, 2004).</li> <li>- Children’s interaction with nature can promote cooperation, teamwork, and friendship between children, their peers, and others (Wells &amp; Evans, 2003).</li> <li>- Conversely, lack of interaction with nature can be correlated with poor social skills (Clements, 2004; Collado &amp; Staats, 2016; Turtle, Convery, &amp; Convery, 2015).</li> </ul>

In light of these benefits, the need for incorporation of nature in education is clear. As Wilson states, environmental education should be seen as essential in that “all education is, in some way, environmental education” and children’s exploration within nature allows them to understand their place within the world (1994, p. 23). Children are granted the opportunity to wonder and ask questions as they explore relationships in nature: What? Why? How? When? Where? Wilson concludes that today, we tend to view ourselves as “separate from [rather than] ... a part of the natural world” (Wilson, 1993, p. 40). Given the vital role of the environment, prioritizing environmental education with young children is crucial. The consequences of not doing so are concerning: when children are not encouraged to build their relationship with nature, messages given can in turn lead to prejudices about the natural environment (Wilson, 1993).

As a result, as children progress through adolescence and adulthood, they may never develop “positive, caring attitudes toward ... [nature]” (Wilson, 1994, p. 23). Similarly, Phenice & Griffore (2003) studied children’s relationships with nature, finding that environmental education correlated with children’s perceptions of themselves in relation to the outside world. Phenice & Griffore agreed with Wilson’s assertions of environmental education as foundational to children’s conceptualization of the self and orientation to the environment (2003).

There is no question that children will learn from adults’ example; it is imperative that access to environmental education be structured into our early education programs and experiences. Wilson highly encourages that environmental education formally begins when the child is in his or her early years, namely at the preschool level (Wilson, 1994). The utility of a

preschool-level intervention such as the proposed outdoor environment renovation is therefore clear.

### **Applying Theory into Practice: Outdoor Environment Renovation**

After researching the disconnection of children with nature and learning about the benefits of reconnecting, I decided I needed to make significant changes to my childcare environment. Conducting this research not only spurred my desire to apply theory into my practice as a childcare provider, but also informed my approach to this project. For instance, developing a better understanding of the obstacles and competing issues hindering outdoor activity for young children today impacted the changes I chose to make to my space.

### **Background**

While the scope of my project was supported by my research in the area, this subject was also a highly personal one for me. My relationship with nature has always been a deep one, with my being a bit of a “tree-hugger” for as long as I can remember. When my husband and I decided to move to Kentucky we focused on being able to purchase several acres of land so we could have some space around us. The location where we settled down suited us perfectly, offering us a new opportunity to raise our young family in an area filled with mature trees and beautiful nature. Lakeside Family Preschool and Daycare started a year after our arrival to Kentucky, shortly after the birth of our youngest child. Through previous jobs related to sales, education, and early childhood, I had discovered a few important keys to my future. For one, I loved working with and teaching children and parents, and secondly, I loved learning about educational items and why they were so important. Personally, I saw many benefits to my children playing with open-ended creative materials and tools that offered them opportunities to learn more about

math and science simply through play. Beginning my career in child care felt like the next right step.

The design of our newly purchased home offered me a unique opportunity to have our main living area on the main floor while the lower level could be used almost entirely for child care. On the lower level there is a walkout exit leading to our second driveway and a full bathroom and kitchen exclusively used for the preschool. Other than modifying the location of the bathroom door to have better supervision of the children and easier access to the room, structurally, little needed to be done to become licensed. Outdoors I needed to have fencing put up, paying careful attention to having an enclosed area for the children to enter and a separately large enclosed play area.

Given the passion that I felt for nature and my desire to offer my preschoolers wonderful possibilities, I decided to focus my senior project on creating an environment where children could flourish. I wanted them to have the ability to express themselves and to know that their sounds, actions and experiences were valid and were important to be heard. My hope is to be a positive vehicle for change and to make a lasting difference in the lives of my students. I know that I have a unique opportunity to affect the perceptions, beliefs and the experiences of the children in my care. If I exposed my young students to experiences that could spark their love of nature and the great outdoors then couldn't I potentially ignite in them the love of nature that I'd felt growing up?

## **Project Approach and Design**

### **Initial Considerations**

In designing this project, first I needed to consider the space and resources I had to work with. I have always enjoyed keeping my school outdoor area as an open-ended area with lots of room for running and exploring. Other than a pretty significant downward slope over a decent portion of the ground, the area is graced with several shade offering mature trees. There is a lovely old oak tree which was one of my reasons for wanting to purchase the house. There is also an elm tree at the area's entrance, and a texturally interesting water maple tree with its constant peeling bark. Given the open nature of the area and what I saw as its potential, I felt that my outdoor environment was a perfect area for transformation.

Involvement of key stakeholders and other resources was also a crucial aspect of the planning and renovation processes. Buy-in on the part of preschool children, parents, and even members of the community was key: above all, I knew that I had to get the children's parents on board with the new transformations. This required open communication with the families and other resources within the community. Reinforcing guidelines and policies was also necessary at times: for instance, I continued to stress to the parents of the children in my care to dress their children in play clothes rather than nicer outfits. This need for practicality was reiterated to parents; I also encouraged them keeping a pair of rubber boots on premises for outdoor play, if possible. I understood that this transition and curriculum enhancement would be most successful if the parents were part of the team understanding the process. Furthermore, I needed to request permission from the children's parents for photographic releases specifically for this project. I also needed to seek out other resources and specialists to assist me in the physical renovation. In

particular, one of the most important steps in this project was finding a head designer that could understand my vision and help me translate it into reality.

### **Research and Framework**

To gain further insight into the changes needed within my outdoor environment, I chose to conduct a SWOT analysis of the strengths, weaknesses, opportunities, and threats or limitations of the current outdoor space and experience, outlined in Table 2. This analysis allowed me to gain a better understanding of my current environment to build upon its strengths, improve its weaknesses, and pursue opportunities and my goals for the outdoor space despite inherent limitations. Strengths identified included the space itself and its open nature, natural and social resources, safety, and locational advantages. Targeted weaknesses included the lack of defined areas or centers within the space, lack of connection to or cohesion with the indoor preschool environment, limited application of STEAM (Science, Technology, Engineering, Arts, and Mathematics), and the need for further beautification and maintenance of the outdoor area.

However, I saw many possibilities for improvement in terms of my outdoor space and how it is used. I believed that in its current form, STEAM areas could be incorporated much more effectively. Potential changes to my space would be made in pursuit of the overall goal to encourage children's learning and engagement with the outdoors. I believed that the outdoor area renovation could present further opportunities to engage preschool children and their families in the childcare operations and in the world of nature. I also felt that through this project, my preschool (and I) could strengthen ties to the local and broader community. However, I also needed to consider relevant threats and limitations, including financial limitations, space



constraints, seasonal and environmental issues, safety concerns, and legal and policy considerations.

<b>Table 2</b>	
<b>Outdoor Space Pre-Renovation: A Basic SWOT Analysis</b>	
<b>Strengths</b>	<b>Weaknesses</b>
<ul style="list-style-type: none"> <li>• Available open space</li> <li>• Open concept, flexible area promoting freedom</li> <li>• Resources: mature trees, bushes, other greenery</li> <li>• Human resources: preschoolers, parents, family members, designers, consultants</li> <li>• Safety: fenced in, no pressing safety issues</li> <li>• Location: isolated location allows freedom and limits noise concerns</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of defined areas</li> <li>• Limited cohesion with indoor environment</li> <li>• Limited creative outlets for children</li> <li>• No integration with music and minimal use of mathematics and engineering</li> <li>• Lack of specific emphasis placed on science</li> <li>• Beautification necessary - some overgrowth and maintenance required</li> </ul>
<b>Opportunities</b>	<b>Threats/Limitations</b>
<ul style="list-style-type: none"> <li>• Possibilities for more STEAM-based inclusions</li> <li>• Potential changes can encourage children's learning and engagement in the outdoors</li> <li>• Opportunity to actively engage children and families in the transformation (and continuing use) of the outdoors</li> <li>• Opportunity to engage within broader community using family and local resources</li> </ul>	<ul style="list-style-type: none"> <li>• Personal funding limitations</li> <li>• Potential limited physical resources based on space, practicality, etc.</li> <li>• Seasonal issues regarding vegetation and greenery</li> <li>• Physical environmental design limitations: slope, other land features</li> <li>• Other weather-related and environmental considerations: extreme heat, cold, wildlife, etc.</li> <li>• Policies regarding safety and licensing, and provide limits on behavior and childcare practices</li> </ul>

With the information I had researched, I understood the importance of intentional design to foster children's learning and interaction with nature. I knew that I needed to create deliberate zones to provide specific opportunities for open-ended nature-based learning. Over the last

several years I have learned much about STEAM (Science, Technology, Engineering, Arts and Mathematics) approaches. Though STEAM-based education initiatives have, appropriately enough, picked up steam in the United States and worldwide, application of STEAM within early education is still frequent. Academic research on use of STEAM-based frameworks specifically within a preschool environment is still somewhat limited, and further study in this area is critical. Implementing STEAM concepts into the outdoor environment was therefore challenging, but key, as outlined in Table 3. By designing opportunities for interaction within these areas, my preschoolers would have chances to explore, inquire, research, and deduce about the natural world around them. They could take on the role of explorer, designer, or creator with their new freedoms. I wanted the students to have the tools to get “lost” in the outdoor world. I wanted them to experience skills like problem-solving in a space filled with glimmers of wonder to fill their curious minds. I prepared myself for their questions and their need for more information.

### **Key Themes and Concepts**

Before designing the structure of my outdoor renovation, I identified a number of key concepts and themes which I saw as instrumental to creating the final result I was seeking -- namely, an environment fostering creative exploration of the natural world and the development of children’s unique abilities and knowledge bases, their personal relationships with nature, and their understanding of the world around them. These key driving concepts, detailed in Table 4, Key Themes and Concepts, included freedom and exploration, creativity and problem-solving, curiosity and wonder, and collaboration and community.

**Table 3**  
**Breaking Down and Implementing Steam**

Area	Relevant Concepts	Relevant Features/Implementation
Science	<ul style="list-style-type: none"> <li>- The scientific method, critical thinking, and reasoning</li> <li>- Experimentation and problem-solving</li> <li>- “Open-ended inquiry” or questioning: asking why? how? (Dejarnette, 2012, p. 79)</li> <li>- “A sense of wonder and [intellectual] curiosity” (Sharapan, 2012)</li> </ul>	<ul style="list-style-type: none"> <li>• Gardening center: botany</li> <li>• Mud kitchen</li> <li>• Mirrors: prisms, light</li> <li>• Water, sand, and pebble pit play: experimentation with elements</li> <li>• Natural observation: magnifying glasses, binoculars, bug viewers</li> </ul>
Technology	<ul style="list-style-type: none"> <li>- Technology, Sharapan (2012) suggests, is “just a fancy word for tools” (p. 37) — binoculars, cameras, thermometers, etc.</li> <li>- Implementation of digital technology — computers, phones, and tablet use</li> <li>- Novelty and innovation</li> <li>- Support for learning styles (Wolf, 2017)</li> <li>- Problem-solving and step-by-step thought</li> <li>- Use of scientific tools in everyday life</li> <li>- Collection of data including “temperature ... quantity, height, girth ... weather data” and other information (Wolf, 2017, p. 1)</li> <li>- Application of old tools in new ways for unconventional purposes</li> </ul>	<ul style="list-style-type: none"> <li>• Natural observation: magnifying glasses, binoculars, bug viewers</li> <li>• Musical wall and sound tube</li> <li>• Tools: funnels, cups, containers, etc.</li> <li>• Modern technology: desktop, camera, phone, tablet</li> <li>• Scale: weights, volume, size</li> <li>• Loose parts play and incorporation of natural elements in play</li> </ul>
Engineering	<ul style="list-style-type: none"> <li>- Step-by-step problem solving</li> <li>- Experimentation and the scientific method</li> <li>- Measurement in multiple dimensions (height, weight, etc.)</li> <li>- Relationships between objects and concepts</li> <li>- Analysis of challenges: identifying strengths, weaknesses, room for improvement, and potential solutions</li> </ul>	<ul style="list-style-type: none"> <li>• Balance beams</li> <li>• Scale: weights, volume, size</li> <li>• Musical elements: musical wall and sound tubes</li> <li>• Loose parts play: pebble pit, etc.</li> <li>• Hammocks</li> </ul>
Art	<ul style="list-style-type: none"> <li>- Creativity</li> <li>- Personal expression and emotion</li> <li>- Communication and dialogue</li> <li>- Synthesis of</li> <li>- Elements of art including shapes, color, texture</li> <li>- Application of various media (paint, chalk, sand, etc.)</li> <li>- Sensory experiences across domains: sight, sound, texture, etc.</li> </ul>	<ul style="list-style-type: none"> <li>• Chalkboard to promote artistic expression</li> <li>• Sensory tactile experiences: pebble pit, mud kitchen</li> <li>• Stump theater: storytelling, dramatic and imaginative play</li> <li>• Aesthetic touches of “wonder:” mirrors, chimes, bells, ribbons, etc.</li> <li>• Music: musical wall and sound tubes</li> </ul>
Mathematics	<ul style="list-style-type: none"> <li>- Measurement: size, volume, weight, height, etc.</li> <li>- Comparison, relationships between objects and concepts, and proportions</li> <li>- Identification of shapes (Sharapan, 2012)</li> <li>- Understanding patterns</li> <li>- Categorization and sorting of objects and concepts</li> </ul>	<ul style="list-style-type: none"> <li>• Abacus on fence</li> <li>• Scales: weights, volume, size</li> <li>• Loose parts play</li> </ul>

<b>Key Themes</b>	<b>Relevant Concepts</b>
Freedom and Exploration	<ul style="list-style-type: none"> <li>- Self-efficacy</li> <li>- Skill practice and competency building (Trancik &amp; Evans, 1995)</li> <li>- “Free play” and “discovery play gardens” - self-directed play/exploration (White &amp; Stoecklin, 1998, p. 5)</li> <li>- Sensory-focused teaching (Anggard, 2010)</li> </ul>
Creativity and Problem-Solving	<ul style="list-style-type: none"> <li>- Step-by-step problem-solving</li> <li>- Scaffolding and zones of proximal development (Trancik &amp; Evans, 1995)</li> <li>- Open-ended rather than closed-ended design (Trancik &amp; Evans, 1995)</li> <li>- “Nature as a classroom” (Anggard, 2010, p. 12)</li> </ul>
Curiosity and Wonder	<ul style="list-style-type: none"> <li>- Encouragement of questions, open dialogues</li> <li>- Pedagogy of dramatization of nature and storytelling (Anggard, 2010)</li> <li>- Inclusion of unique aesthetic, artistic, and sensory elements (Anggard, 2010)</li> </ul>
Collaboration and Community	<ul style="list-style-type: none"> <li>- Student-centered learning</li> <li>- Engagement with preschool children and families</li> <li>- Engagement with stakeholders and resources in the community (gardening, construction, educational resources, etc.)</li> <li>- Participatory design (White &amp; Stoecklin, 1998)</li> <li>- Belonging with and grounding to nature - “base places” (Anggard, 2010)</li> <li>- Place attachment (Trancik &amp; Evans, 1995)</li> </ul>

## Outdoor Renovation: Overall

Renovation: Before



### Renovation Implementation: Outline

- Mud kitchen
- Pebble pit
- Music wall
- Sound tube
- Stump theater
- Chalkboard
- Garden area
- Visual additions
- Mathematical additions
- Spatial additions
- Miscellaneous changes

Renovation: After



**Changes: Focused Areas****Mud Kitchen**

The mud kitchen consists of three units: a refrigerator, a sink, and a stove that were originally intended for indoor use. Beside the kitchen is a metal rack for storage, while a shelving unit is also mounted to the fence for additional storage purposes.

Within this provided storage, tools for the children's use, including measuring cups and spoons, a hand mixer, and pans and tins are stored.

When constructing this mud kitchen, I elected to take my old kitchen center from indoors and brought it outdoors. Fortunately, I had recently had an opportunity to upgrade my indoor dramatic play center, allowing me to

have an instant mud kitchen by repurposing these pieces. All three pieces were treated with many coats of polyurethane to try to combat the moisture and the elements. Various sized bowls, platters, cups, pots and pans were donated or picked up at yard sales and thrift stores. Measuring cups and measuring spoons are available for learning measuring skills. Specialized cooking and baking pans were added, including muffin tins, a bundt cake pan, pie tins, a hand mixer, a whisk, and utensils for eating.

Beside the unit, I added a wire rack for storage and a shelf that is mounted to the chain-linked fence. A five gallon bucket is available for filling up with water daily. The newly purchased rainwater barrel will supply a large amount of the water used by the children once the



spring comes. Utilizing rainwater storage containment will be a wonderful way to teach the children about conservation as I cut the water bill a bit in the process. A key aspect of the mud kitchen is collection: in this area, the children have bottles for small additions to their play. Items like crushed flowers, sawdust, bits of pinecone and pine needles are available for them to sprinkle on their creations. The children are encouraged to refill the bottles with items found in nature.

Children are skilled at collecting and picking the nature-based things found outside; however, it is important to give them guidelines on appropriate behavior in relation to these items. There are some ethical concerns regarding conservation of nature so it is advisable that adults help children to understand about which things are acceptable to add to their collection and which things need to remain intact in their location (NAAEE, 2010, p. 12). I opted to design areas that have been created for picking and deem other areas as “observation-only” areas. With this role-modeling, children can learn the parameters of appropriate behavior and begin to develop a keen sense of appreciation for things found in nature (NAAEE, 2010, p. 13).

Jensen & Bullard (2002) noted that childcare providers should take into account special aspects of the outdoors to create an outdoor dramatic play area that is unique and different from the indoor dramatic play area. The children having a space to play freely and messily with dirt and water is something that would be difficult to tolerate indoors, but in the outdoors there is so much more that the children can explore. Furthermore, mud play is one of the most open-ended activities that can engage a child’s interest — and importantly, such sensory experiences promote self-expression (Anggard, 2010). By using the mud kitchen, students can find joy in being able to manipulate the earth between their fingertips. This area also encourages further play and



interaction between children, their peers, and the environment. The children may, for instance, engage in imaginative play involving play acting staffing a restaurant or a bakery — and with a picnic table nearby they can extend the play onto another surface, making pies, soups or stew for everyone. Engaging in mud play can hone children's mathematical and spatial skills, improve hand-eye coordination, and hone creativity and imagination (Knight, 2016). Students can use the tools provided to learn about being precise versus being approximate. With the measuring implements they can explore wet and dry measurement, dabble in volume, and learn properties of various materials, using their imaginations to be as as they bake and cook a special treat for friends. While they play I am reminded of the enjoyment that mud play brought me many years ago and it feels good to see them be able to explore this rich art medium.

### **Pebble Pit**

The pebble pit provides a place for children to play with pebbles, allowing for a tactile, open-ended experience. The area is 8 feet by 10 feet with the perimeter made from 4x4 boards of treated wood. In designing this portion of the project, I needed to



consider the physical structure of my environment, particularly the layout of the land itself.

Firstly, the sloped nature of the land limited the potential location of the pebble pit. I found a fairly level space to install the pit and chose to keep it close to the chain-link fence for easy upkeep and containment. I lined it with a heavy duty material which is designed as an

underlayment for roads to prevent the growth of weeds, contain the pebbles, allow drainage of rainwater. Given the nature of this product, which was also used in our trough garden area, its use should add to the longevity and structural integrity of the pebble pit. To account for the sloped environment, I needed to continue to work with the land, digging out some areas so that

the wood boards could be buried into the ground in one area, while on the opposite end the wall was built higher up. Reinforcement bars were driven into the ground for additional structural integrity, keeping the stacked boards in place with all of the weight. Each corner contains a built in seat not only for seating



purposes, but also for structural soundness. Over seventy .5 cubic foot bags of rock were necessary to complete the installment. After examining the options for rock available to me, I chose river rock due to its rounded shapes and limited dust. I decided to use a mixture of larger rocks and smaller pebbles to provide variation in the sizes of the rocks with which the children can play. The rock chosen also provides an array of natural tones and shapes and the children enjoy finding pebbles and rocks that resemble other objects. Upon close investigation, the children have found rocks that seem to have faces on them, are shaped like fish or a heart, or that simply remind them of other things that are in their world.

In addition to the pebble pit itself, I also added items to enhance the area, including trucks, scoops, shovels, bowls and strainers. These items are kept beside the pit on a plastic shelf for easy access. Children can use these tools and the pebbles to hone their fine motor skills while exploring scientific concepts in a hands-on manner. The scale which is currently located in the

pebble pit extends these concepts, allowing children to directly explore mass, weight, and volume. The design of the structure has impacted how the children play and interact within the space. The corner seating areas have often become ledges where “buildings” and “towers” have been erected. Several of the children like to lay in the pit and feel the rocks on their backs while looking at the sky.

My addition of a pebble pit was intended to give the children an area to place, dump and explore material. Through pebble pit play, they learn about geology, physics and mathematics. Though the outdoor space already contained sand table and water tables, I wanted the children to have a heavier, texturally different material to investigate. The addition of these varying, moveable materials also provided another opportunity for loose parts use to encourage further exploration. meaning and quality to outdoor play.

### **Music Wall**

The newly-added music wall allows children to create sound on a large scale and explore the freedom to make noise. The music wall is grand, standing 12 feet high and 10 feet wide to allow a group of children to freely explore all sides of the double-sided structure.



The wooden open-concept wall was made from branches specially selected for their shape from the forest of the designer that I worked with throughout the construction process. The entire structure was covered in shellac to protect it from the elements. In the center of the structure rests a spire constructed of a branch that had grown with a vine wrapped tightly around it, making the

tree have a twisted knot. Above that a whimsical treble clef symbol is mounted. Rope winds around all the branch unions, covering up the hardware used to connect the tree branches.



Hanging on the music wall are many pots, pans, and miscellaneous items that are either mounted directly to the structure or are hanging from rope. Near the top of the music wall under the arches are wind chimes to catch the breeze as it passes. A basket with wooden spoons and metal utensils connects to the side post so children have easy access to these noise-making tools. Many of the pots, pans and utensils were either donated from parents or found at local thrift stores or summer yard sales.



In addition to the large music wall is a discarded metal washbin, which is secured to the ground with posts through the handles, transforming it into a resonant drum. I also added four six-inch wide varying length pieces of PVC piping that are dug into the ground. When hit with designated materials, including flip-flop shoes, the pipes create resonant tones adding to the myriad of sounds. To eliminate water filling up the tubes and the area becoming a breeding ground for mosquitos or other pests, the pipes are capped with loose-fitting caps with slits on

the sides which make them easy to remove. Near the musical center, a small stage was also

erected for impromptu performances. This stage, approximately 3' by 4', was created from a recycled picnic tabletop.

When designing the structure, I needed to carefully consider the needs of the preschoolers in order to create an effective play structure. For instance, the varying heights and ages of the children impacted the design of the structure. I also anticipated that the music wall would become a highly social activity and therefore wanted to create a structure that could accommodate all the children at once. These needs and the importance of musical expression within this project led to the music wall's large-scale nature.

Finding new ways to bring a traditional indoor activity, like making music, to the outdoors was important to me. There is an obvious freedom to be loud that can easily occur outside more than it could inside of a classroom. I have found that the children are thrilled with this new ability of self-expression when there is no concern about volume. (It is helpful that I live in the country with a bit of acreage as there are no nearby neighbors to be concerned about, and therefore no complaints about the volume of our play.) As the children play in the musical area, they learn about tempo, rhythm, beat and can even have the opportunity to form a band. As they create music, they also learn about math concepts and discover scientific principles through trial and error. Music is a very important component of early childhood, fostering growth in multiple areas of a child's development. For instance, research indicates that musical training benefits linguistic development, reading ability, and auditory processing in young children (Hallam, 2010).



### **Sound Tube**

The sound tube consists of PVC piping with openings for children to speak into and listen from, allowing a new form of playground communication. The tube is constructed from 30 feet of 3-inch PVC piping with four elbows at the end of each 10 foot section. The tube is connected to the chain-link fence with long heavy zip ties. I elected to not glue the parts together in the event that I either added to it or changed the configuration later on.

The idea to add a sound tube to my outdoor environment was prompted by similar exhibits at many children's museums that I have visited. The children can whisper into one junction area and others can hear the sounds through the other openings. Even a slight whisper will transmit very well. Learning how sound travels through experimentation can teach a child about tone, pitch, and volume, offering a rich auditory experience. Aside from this activity being an interesting study in sound, I felt that this would be a good tool for mindful listening and speaking. Children quickly learn that if they speak into the tube, the sound carries to their friends, but if they turn their heads while speaking, their friend may not hear them. When the tube was first introduced, I encouraged the children to tell stories to each other through the tube. They loved the practice and quickly learned how to project their voices and to stay on task. I noticed more turn-taking and patience demonstrated while using this tool.

### **Stump Theater**

Created from ten small stumps and one large stump, the stump theater is our multi-use outdoor "classroom" space. I chose to use cedar stumps, as cedar is heartier and resists rotting

and insects better than most other woods. Soon after the initial placement I quickly discovered that the stumps were “sapping,” or releasing sap. After researching the topic, I found that the stumps needed to be sanded gently and a coat of shellac needed to be applied.

The stump theater is a place where stories can be told, plans can be made and imaginations can be released. An unexpected

outcome of having this space is that I find the children like to head there for a meeting place. I may see several children gathering or only a few sitting and sharing conversation, and it is now known as our “gathering place”. The stump theater serves



the purpose of a “base place” characterized by Anggard as a key aspect of outdoor space for young children (2010). Items to be used in this area, including books and puppets, were also added to the nearby storage shed so that the children can read, tell, or illustrate a story to a friend. The natural aspect of the stump theater was particularly key to its design. As noted by White & Stoecklin (1998) design using natural materials including stumps promotes “investigation and discovery” without limiting children’s play opportunities, and such design should be prioritized whenever possible (p. 6).

### **Chalkboard**

To foster creativity, I added a double sided chalkboard to the play space. I re-used an old frame that had previously housed a swing and opted to have a plywood board cut, primed and painted with three coats of chalk paint. However, weathering over time and durability is a

concern in this case. My research on outdoor painted chalkboards was limited and fairly recent, and I imagine that in a few years I will need to either replace or repaint the board. Because it is mounted on the inside of the old wood frame, however, I think it may receive some protection from the elements. The addition of this chalkboard allows children the opportunity to practice writing skills, express artistic creativity, and create maps of the world around them.



### **Garden Area**

Though the timing of this project was not ideal for the gardening season, I wanted the children to explore the opportunity to experience cycles of growth. In pursuit of this goal, I first added three troughs made locally by a company owned by the family of a child in my care. When I decided on adding gardening as a component in the children's environmental education, I sought out the help and knowledge of this company.

This resource was instrumental in shaping my approach to this area of the environment. I toured their work area, learning in-depth information about soil and the gardening process required. The family member I spoke with provided a novel opportunity



to allow the preschool to be a part of his trial for a new product. As he explained to me, typically consumers buy soil and then amend it with nutrients. He suggested an alternative to this plan: namely, starting with soil made from nutrients. To accomplish this goal, the entrepreneur



designed a device called a Bio-Burner, which burns fish parts, chicken parts and other discarded nutrient rich materials to produce a soil that is both nutrient-filled and produced in an environmentally responsible way. When I was offered the chance to help test these products, I was eager to participate and received the troughs as a result of our participation. Although it was late in the planting season when I received them, I decided to plant beans because they are quick to grow and other vegetable options were scarce. Not only did the beans sprout quickly, but due to the sterilization process produced by the Bio-Burner, there were no weeds present. I was able to actively implement the children in the beginning stages of vegetable growing by having them plant beans with me in the troughs.

Teaching sustainability to the children is crucial to me. We frequently talk about the importance of water conservation, whether the children are washing up or engaging in water play. Conservation is also emphasized when water is set up for communal play as in a water table. The children at times struggle with understanding the concept of limited resources. I explain that we share water with the rest of the world, role model proper conservation behavior, and demonstrate these concepts through the structure and daily practices of preschool activities. For instance, a limited amount of water is provided when children are playing at the mud kitchen. I have also added a rainwater barrel to encourage the preschoolers to utilize it in our play or for watering the plants when needed. I believe that it is important that they understand that with some time, attention and proper conditions they can grow things from our Earth. Furthermore, engaging in gardening activities can build students' skills, achievements, and interest in scientific pursuits in the future. Klemmer, Waliczek, & Zajicek (2005), for instance, studied the impact of a gardening program upon elementary students, finding that such programs

promoted student engagement and academic achievement in science.

In further pursuit of this goal, I have applied for a grant which would allow our preschool to potentially receive funding for a wind tunnel for gardening. However, I will not know until a later date whether we may be chosen to receive the grant. Regardless, in anticipation of a busy time gardening in the spring, I also purchased gardening gloves, small hand tools, and watering cans for the children. I also bought a metal wheelbarrow for use in gardening. I also purchased kid-sized shovels, hoes, and rakes to rake up leaf piles for jumping fun.

### **Additional Changes**

#### **Visual Additions**



One aspect I wanted to instill in the outdoor environment was a sense of wonder and whimsy. I added crystals hung on fishing line to trees and some smaller bushes — not plastic, but real crystals that catch one’s eye and play beautifully with light. Small stainless steel bells were tied to the small Crepe Myrtle tree to jingle when the bush was touched while children played around it. Such small touches can inspire creativity and problem-solving in the children as they make new discoveries within the natural world. When one child jingled the bell for the first time, the surprise on her face was clear as she began an attempt to replicate the motion she had made to elicit the sound, and then alter her movements to create different sounds.

Another key touch of whimsy was the addition of a display consisting of brightly-colored fabric strips. Near the entrance to the preschool grounds I added fabric strips on a rod hung from

a high tree branch. This addition required considerable experimentation — after looking for fabric pre-cut into strips and having no luck I debated cutting my own strips.

However, I found a product called jelly roll fabric which is used in making quilts. I purchased a few rolls of these strips and needed to tie three together to get the desired length. I hand-tied the three strips together and added sporadic knots throughout the strands to complete the look and camouflage that these were three different pieces connected together. I also owned a thick heavy mirror that I connected to the chain-link fence with an ‘S’ hook. This setup ensured that the mirror was removable, as I was unsure if I would need to remove it for weather issues in the future.

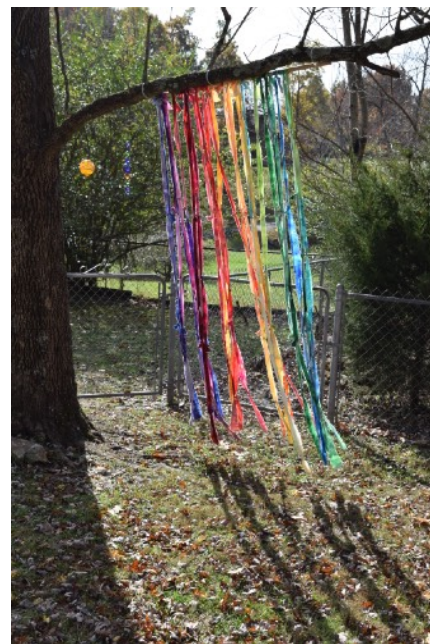
These touches of whimsy have changed the way that the preschool children interact with their environment. When the



children enter the play space, they

often run through the colorful,

welcoming strips. This provides a way for them to enter into their space, as running through them clearly marks that a new space and outside fun have begun. I view these additions to the space as a way to personalize the outdoor area and give the children a sense of ownership. They know that these items were added for them, for



their pleasure and to encourage them to be amazed and aware of the nuances around them.

### **Mathematics Additions**

To incorporate a STEAM approach into the outdoor atmosphere, I sought to include elements encouraging mathematical exploration. For instance, I used zip ties to attach an abacus to the chain-link fence. Nearby, presently in the pebble pit, is a large, 36-inch handmade scale.

The scale was custom-designed to my specifications based on its desired appearance and function — above all, it was designed to be “made for play.” To form this piece, a large, curved, sturdy branch of a tree was mounted to a thick piece of wood. The



designer bore a long 12-inch hole through the bottom of the tree portion on the bottom to be able to accommodate a rod placed into the branch and through the hefty base. Hanging from the curve of the branch is a working level and on each side of the level is a basket hanging down. When materials are put inside of the baskets, not only can one tell they are level by the two baskets appearing even, but the children can see the bubbles within the level to determine the degree of alignment. Allowing children access to real tools will extend them the chance to learn real life skills and gain competency. The children are able to use materials from the world around them — for instance, pebbles and rocks — to fill the baskets and explore weights and measures.

Another math and science related addition is the use of loose parts play throughout the outdoor space.

Many kinds of materials fall under this heading —for



instance, as mentioned earlier, sand and rock are loose parts. In addition, leaves, sticks, wood coins (slices or disks cut from smaller branches), wooden blocks, acorns, pinecones and other materials can be found in the environment. Loose parts play allows children an opportunity to turn a playhouse into a spaceship or a tractor. It offers them new creative options to build and construct endless possibilities and encourages free, child-directed play (McClintic, 2014). I have added many loose parts for all different types of purposeful yet free-form play. I have also engaged the children in this process by taking them on hunts outside the confines of the play space looking for new items to add to our many areas. The preschoolers express particular enjoyment in dictating where they will add the items and how they think they should be used.

### **Spatial Additions**



I added a few low-hanging hammocks made from very sturdy nylon parachute material. The hammocks can hold 500 pounds, yet are small, fitting into a small bag for easy storage. They are intended for quick setup at a campground, a backyard or anywhere that there are appropriate trees from which they can hang. The tree I hung them from is a beautiful old oak tree. Due to the branches being so high up it was important to create hanging tie-ons to lower the connection points of the hammocks. I had two sets of paracord tossed over the branches where they hang down about eight feet. At the end of the paracord are carabiner clips. The setup allows me to hang the hammocks onto the carabiner clips easily and take them down quickly as well. The hammocks are hung differently than a traditional hammock. I chose to hang them in the shape of an elongated “U” so they could

be used as a chair for a relaxing spot. They are orange and green, giving a rich flash of color against the backdrop of greenery. Given the way they are hung

they can be removed during the winter and used frequently

during the drier months. They are perfect for looking at a

book or relaxing from a busy active day. I felt these were a

particularly important addition in defining a clear area

fostering rest and relaxation. I felt that creating a sense of

peace and tranquility was essential in order to bring balance

into the outdoor space. As noted by Trancik & Evans (1995), establishing restorative elements

and spaces within child-centered environments is crucial. With so many things to do that are

active and engaging, it becomes even more important to have a space of reassuring calm.

I also implemented a balance beam for the children to practice their balance skills as they move from one area to the next. For this, I used an old treated piece of 4 x 4 lumber and added two 2 x 6 12-inch boards stacked on top of each other and screwed to each side. I opted for two stacked pieces of wood to add elevation and increase the challenge for the children. I wanted to offer chances for gross motor skills to be exercised. The children frequently like to create obstacle courses and one of their favorite things to do is to cross the balance beam to continue on the course. Though such changes were relatively recent, I have already seen children demonstrate considerable growth in their skills as a result. At first, some of the children expressed being unsure of the balance beams and their skills. After some practice and a little bit of time, they eagerly volunteer to take a turn. Such features also foster opportunities for teamwork; I have



witnessed my older preschoolers offering a hand out to a younger, more hesitant child to help them balance themselves in their newfound world.

### **Technological Changes and Other Changes**

When assessing the limitations of my current outdoor setup, one aspect of my space that became immediately apparent was my need for a sturdy enclosed storage that was easily accessible. I purchased a storage shed that is 5 feet wide by 2 feet deep by 6 feet high. There were some areas that needed to be weeded out and cleaned up. One of those areas was in front of the outbuilding. After the storage shed was assembled, it was leveled and put into the newly weeded area so it was accessible but out of



the children's way. I added a freestanding shelving unit inside for storage of plastic containers, bins and various materials that may be used on a daily basis. Within this storage are books for reading; fiction as well as science and nature books are available for reference about the insects and wildlife we might see in the our area. Puppets and other tools for dramatic and imaginary play are also provided in storage. This new storage has also enhanced the use of science and technology within the outdoor sphere. I stored several pairs of older binoculars intended for adult use so they look (and work) better than those intended for children. Bug viewers, rain gauges, thermometers, butterfly nets, magnifying glasses, and clipboards and pencils are also provided for impromptu scientific exploration sessions. Gardening tools and many loose parts items are also stored inside the shed. Although I have always used my cell phone to obtain further information when necessary, I now bring a digital tablet outdoors as well to photograph

specimens or look up additional information with the children. Recently, I added an old digital camera for the children's use. We download the photos onto my desktop computer, adding a wonderful documentation aspect to the work that they do.

I also eliminated most of the plastic toys that were previously in the environment in favor of sturdier, more natural materials. However, as an exception, I did keep a few playhouses. I did add some new balls to the area, as several of the older balls had become discolored. Picnic tables in the environment were also renovated and reinforced to enhance their durability, strength, and appeal.

## **Analysis and Discussion**

### **Outcomes and Effects**

After the completion of the changes made to the outdoor environment, I took the opportunity to introduce the parents to the many changes. The response was overwhelmingly positive to the new areas for exploration. At the end of our school day the children were outside awaiting their parent picking them up. Each child took their parents on a journey to introduce them to the things that



interested them the most. Many parents got involved in the process and joined in with the children making music. They seemed fascinated as they watched their children experiment in the mud kitchen and explore textures, combining wet and dry together. Some watched as their children continued their play, adorning their mud creations with blades of grass and leaves. I appreciated that they allowed their children to play without concern over getting messy and without dictating or narrating terms of play to them. It occurred to me then that they understood



the value of this open-ended unstructured enjoyment as their children (and many of the adults) connected with nature. One of the grandmothers began to build a tower of rocks and her granddaughter gave the structure a name. A mother, being led by her child, chose a book from the cabinet to read in the gathering place. The students were so happy to share their new adventure with their parents and grandparents.

Furthermore, I have not had any concerns from parents about the changes or the amount of time we are spending outdoors. I suppose it is in my favor that parents are used to my being a bit less traditional and unorthodox in my teaching methods. Recently, a parent thanked me for introducing their child to nature, stating that she had underestimated the importance of building a connection with nature. I have heard remarks from parents that they are noticing that their children are asking more questions, are requesting to head outdoors more frequently, and are exhibiting more creative experimentation during play.

The impact of our transformation of the outdoor environment was immediate, with effects seen even while changes were still in progress. Students expressed the desire to go outside earlier and for longer periods of time. They frequently talked about what they wanted to accomplish, with discussion ranging from comments about finding the biggest worm to making a rock house and everything in between. They appeared to love the new options made available to them. In addition to noticing their increased communication and desire to be outdoors, I also noticed that the children are better at self-regulating their emotions indoors as well as outdoors. They are making better connections with each other and expressing their needs, feelings and desires in a more positive way.

As a group, we talk about the outdoor area being “their space,” and I ask them what they would like to add or how they might want the space to change. Their level of involvement has increased in not only how they want their outdoor space to be structured and used, but this engagement has also extended into their indoor space. Their ability to verbalize their thoughts has increased and talk of the play area has become a regular dialogue. For example, I was initially told by a few children that they wanted to use puppets outside. Now they have a selection of puppets for outdoor dramatic play use that are available in the storage space.

After making some changes and monitoring the children’s reactions, I decided to remove all of the plastic ride-on cars and helmets. The children never missed them. This change was actually beneficial to me as the only area for the children to ride them was down the hill, so this removal freed up additional space for other activities. Continuing to take cues from the children to influence the outdoor environment has shaped — and will continue to impact — the space. Recently the students designed an obstacle course, and I obtained some new cones for their play so they could add them into their course. The preschoolers are proud of their accomplishments and request photos to be taken often.

I have also found that the new outdoor space connects with and strengthens the preschool curriculum and the learning experience. I have a preschool curriculum that will continue to meet the growing needs of the students in my school. Often we will modify what we are learning and find a way to introduce it to the outdoors. I have found that almost anything can be studied in an outdoor environment if we are willing to think outside the box and create new opportunities for open-ended learning. The preschool children take advantage of these opportunities on a daily basis. They can be found forming letters from sticks or sketching pictures of natural items with

their clipboards in hand, and it is not uncommon that the children will bring studied items into the preschool classroom to further analyze.

Though the preschoolers express enjoyment of all the new outdoor features, the mud kitchen, pebble pit, and music wall seem to be particular favorites. There the children find the freedom to explore open-ended materials and engage in self-directed, experimental, and experiential learning. Few adult permissions are needed in the outdoor environment; any rules regarding an area or a new item are explained to the preschoolers in a group. When possible, offering options and clear explanations that encourage the children to think critically is ideal and has fostered discussion. For instance, I have asked the children how and why we keep the pebbles in our pit, and throughout the course of the discussion, explained that the pebbles can impact the environment and damage the lawn mower. Such explanations help the children understand the world around them— furthermore, they are more likely to follow through if these explanations make sense to them. This knowledge is consequently passed on to others; I have noticed children explaining these kinds of safety rules to others who might need help remembering. Another key quality that I have noticed that makes my childcare whole is the teamwork and kindness demonstrated by the children. The older and more advanced children demonstrate patience and tolerance for their peers, restraining their judgement and harsh remarks. Largely, the children act as a loving family of many brothers and sisters. These changes have given my older students a chance to exert their independence while they reassure others and reach a hand out to them.

### **Limitations and Considerations**

In researching the concept of exploration in nature and free-range play for children, it became very obvious to me that certain limitations curtail the amount of freedom and exploration that I can allow a child in my care. In some instances, those that practice the outdoor classroom or forest school concepts reside in other countries and areas where children are allowed to climb trees and walk along downed logs into the stream. Although I do see the benefit of these risk-taking behaviors, and would have no trouble with my own children personally engaging in these behaviors, I could not take those kinds of risks in a preschool environment due to licensing and liability issues. Unfortunately, children in my care would not be able to climb trees freely or catch minnows in a creek due to liability issues and wildlife concerns. In certain areas, I have needed to draw lines and boundaries for play. My only option is to offer some risk-taking opportunities with careful monitoring and clear restrictions — for instance, engaging in supervised activities involving obstacle courses or balance beams.

The physical setup of the outdoor area and the natural environment provided its own limitations — for instance, as discussed, even the slope of the land needed to be carefully considered in designing play structures. Nature itself provided some barriers to our exploration of some arenas — unfortunately, with the weather transitioning into fall, I was not able to landscape areas of the play area in the ways I would have liked. It quickly became apparent that the gardening aspect would need to be resumed when the weather was more appropriate. Originally I wanted to plant perennials, including herbs for a sensory garden as well as a full vegetable garden; however, these projects will need to be taken on in the future.

### **Future Considerations and Areas for Improvement**

Given these outlined limitations and considerations, areas for improvement in the outdoor space are clear. Firstly, I plan to target advancements in gardening and greenery. I have reached out in our community to the Master Gardeners of Hopkins County to see how they could help to choose plants that could benefit the children in different ways. The Master Gardeners program is offered through a department in our local county extension office. With their skills, I hope to learn the optimal plants to grow and the prime locations to do so. I would like to add a sensory garden in areas where children often play, so that they could brush up against the plants and smell the lovely scents of lavender and thyme. I would also love to gain more information from experts so I can landscape in the outdoor environment to make use of variations in color and texture throughout the seasons. I also plan to utilize the local Pennyroyal Herb Club as a resource. They specialize in information about herbs and even have a sale in the springtime. Other resources are countless — there are so many people in my community that want to help stimulate young minds in the pursuit of seemingly forgotten information like the ways of gardening. I have observed not only a desire of many community stakeholders to benefit children, but also to support and encourage teachers, offering them resources so that they may do their job to the best of their abilities.

As with any seeded idea or concept set in motion, there is a facet that I would like to explore in the immediate future to further enrich the children's early childhood environmental education. As the children in my care learn more about nurturing the environment, I would like them to have the opportunity to engage with nature to learn more about the concept of sustainability. I have applied for a grant through the United States Department of Agriculture

(USDA) National Resource Conservation Service to obtain funding for a wind tunnel to be erected on the premises. My plan is to have a 15 foot by 48 foot wind tunnel to support the learning of my young students through daily hands-on activity. If the grant is approved, my immediate plan is to connect a water source to that area of our land so we can easily access water and eliminate the hazards of tripping on hoses. With appropriate funding I would also like to add a timed automatic watering system to increase the success of the crops staying hydrated. I plan to foster student involvement in this process — the children will help make decisions about what crops to plant and help with tending to the crops as well. My goal is to increase parent engagement encouraging parents to join in our process of learning and also share their gifts and skill sets with our preschool community.

This upcoming spring I would like to purchase one-piece coveralls for all of the children to encourage them to play in the rain. I intend to purchase Oakiwear coveralls as they are sturdy and simple for the children to independently put on and zip up. I would like to obtain a pair of boots for each child to wear in messy or inclement weather that could be kept at the preschool. Housing the suits and the boots would be necessary; they would require a small storage unit just outside the preschool entrance. Through this project I have learned the importance of proper storage and “having homes” for all of the outdoor items that I have added. I will need to research cabinet designs to be able to accommodate the coveralls and boots so I can get it constructed in the spring.

During this renovation, I also became aware of a drainage issue that I had not previously noticed. In one area of the yard, water was draining from a neighboring property. After talking with a lawn care company about the issue, I determined that I need to get a French drain

installed. This would require that a trench be dug from my gutter downspout coming off of my house near my garage and alongside the outbuilding that butts up to the preschool play space. I will need to have the trench filled with rock and holed corrugated pipe to contain and move the water away from the play area. The water will empty out further on my property closer to the woods. I may be able to still get this done before the weather gets too cold; if not, it will be at the top of my spring to do list.

Soon, I will be getting a new garage door put onto the outbuilding to replace the old one which is in disrepair to allow for easy storage and accessibility to seasonal items. While I would also like to paint the building to give it a fresh look, given the weather, this will have to happen in the spring as well. On the side of that building, I would like to add a thermometer and a new clock to help keep track of the time.

Other additional modifications are necessary within the outdoor environment. I would like to find a few more sturdy mirrors to add more visual interest and place them in the garden areas. In the spring, I would also like to add the previously mentioned sensory garden and the butterfly garden. At that point, the time of year will be ideal to plant a wide array of plants to encourage other wildlife like butterflies, caterpillars and even lizards and frogs. Bulbs that emerge in the early spring like crocuses could be followed by flowering plants and then fall bulbs so that they would always have a beautiful stimulating backdrop for play and exploration. Careful planning with the addition of butterfly bushes and pungent flowers is sure to bring wonderful butterflies and other insects for the children to watch. The children and I can learn together about ways to encourage the presence of frogs and toads by making intentional small shelters for them to hide in and stay cool in the heat of the summer. This could be a fun,

entertaining and educational experience and a great opportunity to have the children's families help with obtaining needed items.

Although I enjoy the balance beam as it is, I have been thinking about making a balance beam bridge. This would be a structure with a beam hanging close to the ground from two posts on each side and a rope connecting the two sides lengthwise at the top. This would offer my older children the possibility to make their way across the beam as it wiggled, offering a new challenge. The children would also have an option to hold the rope guide rails for additional support if needed. Such variance in difficulty and complexity of terrain would also encourage the creation of zones of proximal difficulty and scaffolding.

I am also interested in upgrading the mud kitchen at a later point. I have a potter's table that, with some skilled attention, could be transformed into a fabulous mud kitchen. Modification would be necessary, with the legs cut shorter and reinforced. With alterations, the table would offer more counter space and some nice shelves for the children's mud play. Adding a discarded drop-in style stove with an oven would also work very well as it would be the right size for the children's use. An additional counter space at a slightly lower level could encourage more mud play with my two year olds and certainly easier access. Throughout the area, I would like to add more seating, namely benches made from cinder blocks and 4" x 4" boards. These seating areas will be established in various areas of the outdoor space and customized to the needs of the children to allow them to relax, sit, and wonder.

### **Conclusions**

The results of the outdoor transformation largely exceeded my expectations in a number of ways. Although my typical daily expectations of the children in my care were high, I found



that in a sense, perhaps they were not high enough; I found the children to be capable of so much more. When discussing things to add to enhance their outdoor play, the preschoolers were very practical, offering suggestions that not only made sense, but could be backed up in terms of why choices were made and what they would do with the new additions. The experience has also impacted my teaching methods. For one, I have discovered I can give the preschoolers more leeway. Though I strive not to be overly authoritative, I tend to run a fairly “tight ship,” and I have found that perhaps it is time to relax a little. More observation of the children and less initiation by me is taking all of us to new heights. While the outdoor space has always felt free, now there is a huge difference. Where there once was a possibility of naturally getting messy or dirty there is a new level of not caring about the degree of the mess or the depth of the dirt. When we accept going outside as getting messy and know that it is a part of the outside experience therein lies the freedom. I view this freedom to accept the whole package as one which seems to relay the message to the students that they belong.

Recently, a new 4 year-old boy in my care noticed two other children putting their hands in a muddy puddle after a rain. He said, “Ms. Bonna, they are getting all muddy!” I told him that I knew. “But they’re getting all dirty!” he exclaimed. My response was “I know. Want to try it?” The boy ran over to the other two children and splashed his hands in the puddle. He withdrew his hands, mud dripping, and on his face was the biggest grin. I think it was that moment where he felt he belonged and was part of our Earth. Ever since then, he freely scrounges for worms, roly-poly bugs, and his favorite of all, ladybugs.

On a daily basis, I make it my mission to consciously foster this sense of engagement with nature. When we talk about respecting bugs or other animals and how to treat them, we say

they are “creatures of the earth.” When one of my little girls, magnifying glass in hand, said to me one day “we are all creatures of the earth,” I felt she was understanding what are doing and that she was a part of something very special. This journey has one main goal and that is to offer children an opportunity to feel their connection to the Earth and allow them the chance to just ‘be’ as they become who they are meant to be in this world.

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