USING THE MOSAIC APPROACH TO INFORM ACTION RESEARCH:
IMPLEMENTATION OF PLAYSCAPE FEATURES IN AN URBAN FAMILY
CHILD CARE PROGRAM

by

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A thesis submitted to the Faculty of the University of Delaware in partial fulfillment of the requirements for the degree of Master of Science in Human Development and Family Studies

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ABSTRACT

A playscape is a nature-based outdoor environment designed for children’s open-ended play and learning. It is an important context to understand as play in natural outdoor settings contributes to children’s social, emotional, cognitive, and physical well-being. This action research study focused on gathering the perspectives on outdoor play experiences with school-age children living below Federal Poverty Limits who were enrolled in an urban family child care home before and after playscape features (loose parts, natural items, and other open-ended materials) were added to the family child care outdoor space. Challenges in providing outdoor play from the perspective of the family child care provider are explored throughout the action research process. Opportunities for outdoor play increased after adding playscape features to the child care space. Perspectives of outdoor play were gathered using drawings, child-led photography, and discussions. These children considered various outdoor environments and experiences, and their perspectives on outdoor play expanded from play with manufactured, gross motor equipment found on traditional playgrounds to play that included dramatic play, experimental play, and engagement with natural loose parts.
Chapter 1

INTRODUCTION

When many of us recall our childhood we imagine time spent outdoors. We may think of swinging over a murky creek on an old rope, carving out waterways in wet sand, constructing forts and hideaways, munching on fruit from Grandma’s garden, bundling up for an afternoon spent in the deep snow, or even playing imaginary games in empty city lots. Frost (1989) describes these enchanting moments as the magic of our childhood. We were shaped by the freedom to explore the outdoors and through engagement with our surroundings. Through nature, our bodies and minds developed and we felt deep connections to something greater.

These cherished memories certainly do seem magical, but does this magic still exist for children today? Many would argue that these experiences are fading away. Even in 1989, Frost spoke of the loss of this magic in childhood:

Yet for a growing number of children these precious moments and places are all but lost to the trivialities and technologies of modern living. The natural, soft, sheltered places are giving way to concrete, steel and machines … the magical playscapes, once created by the child, are now the domain of clever adult researchers, designers and salespeople. In our own clumsy, shortsighted ways we are seriously attempting, yet often failing, to satisfy both a very basic need and an exalted purpose—the experience of the magical in childhood. (p. 2)
The purpose of this action research study was to examine the development and implementation of an outdoor playscape environment designed for a family child care setting. The family child care provider’s and the child’s perspective are presented in the findings. Discussion of the development process and constraints of the setting are also included. A playscape is a natural outdoor play environment that utilizes loose parts and natural materials to engage children in open-ended, hands-on experiences (Carr & Luken, 2014; Keeler, 2008). This study focuses on children that may be considered at-risk (i.e. enrolled using a Purchase of Care (POC) child care subsidy) in an urban family child care home. The perspective of the children was gathered using the Mosaic approach: observation, child interviews, drawings, and photographs taken by the children. This information was collected before and after certain features of playscape were implemented into the family child care’s outdoor space. Specifically, data was gathered to answer the following research questions regarding the changes to the environment:

- What are the challenges to providing outdoor play experienced by an urban, family child care provider before and after implementation of playscape features?

- What are the children’s perspectives and experiences of outdoor play before and after playscape features are implemented in their family child care outdoor environment?

The Decline of Outdoor Play

Time children spend in outdoor free play is decreasing. The cause of this decline is complex and multifaceted. A few reasons children spend less time outdoors include an increase in the prevalence of technology, fear of lawsuits, parental anxiety, a reduction of unstructured time, and lack of adequate and accessible outdoor play areas.
Technology continues to dominate our lives leading to stationary, indoor play that never strays far from electrical outlets. In 2011, The Nature Conservancy polled 602 American children between the ages of 13 to 18 from diverse communities in order to gauge the children’s connection with nature and engagement with their environment. Children are spending less time outside and more time on the computer. The survey found 88% of children reported using a computer almost every day, while only 11% of children reported visiting a local park or natural area almost every day.

Furthermore, our society is a litigious one. As the number of lawsuits related to playground accidents increased, schools and park departments all over the country began creating very specific and limited playgrounds for children that eliminated not only the hazards but nature and creativity as well (MacKay 2003; Staempfli, 2009). Therefore, playgrounds have largely become uniform throughout the country. Many have lost inventive and creative qualities to engage children in meaningful play, encourage problem solving, and increase their ability to navigate reasonable risks (Staempfli, 2009).

Parents are fearful and, as a result, carefully monitor and limit children’s outdoor play. Louv (2005) argues that paranoid parents favor "safe" regimented sports over imaginative play in woods or fields. He furthers his argument by stating that the media fuels fear of “stranger danger” which encourages frightened parents to keep children indoors rather than exploring outdoors. This is consistent with findings from parent questionnaires and interviews which state that it is not lack of outdoor environments that limit children’s outdoor play, but rather parental anxieties about children’s safety (Valentine & McKendrick, 1997; Veitch, Bagley, Ball, & Salmon, 2006). In fact, 58% of the parents Veitch et al. (2006) interviewed reported strangers
being the basis for their safety concerns. Despite increased fear, there is very little evidence that the world today is a more dangerous place than it was in generations before (Gray, 2011; Louv, 2005).

Time for play may be shrinking for children. Children’s lives are carefully scheduled with full academic school days with inadequate recess time (Gray, 2011; Louv, 2005; Rivkin, 2014). A longitudinal study by Hofferth & Sandberg from 1981 to 1997 detailed how children spent their time. They found that children in 1997 had an 18% increase in time spent in school and 145% increase in time spent doing homework (as cited in Gray, 2011). There was a 25% decrease in both indoor and outdoor play, and Gray theorized that the decrease specifically for outdoor play must be even more dramatic (Gray, 2001). Much of the time children do have to play outdoors is spent on playgrounds that are dominated by metal and plastic and without any trees or bushes that may provide a place where a child may play without adult supervision. When children leave school, they are often involved in organized sports and structured activities.

The rise in obesity rates has coincided with the greatest increase of children in organized sports ever (Louv, 2005). Unstructured play time is missing for many children, which may be a contributor to the obesity epidemic. Louv argues that “the physical and emotional exercise that children enjoy when they play outside in nature is more varied and less time-bound than organized sports” (2005, p. 47). In a recent plea by Louv and the Children & Nature Network to policy-makers, as well as leaders in the legal profession, insurance industry, education, and health care fields to engage in the children and nature movement, he simply states: “Kids all over the country are hearing a double message from the adult world: Get off the couch, go outside, but oh,
by the way, we don’t really want you doing anything out there. Other than organized sports” (2015, para.11). This message seems to be confirmed when considering recent findings that found 70% of mothers today played outside daily when they were children but only 31% percent of them allow their children to do so (Clements, 2004). Children that hear this double message will lose out on imaginative, active, and limitless outdoor play in nature.

Through these shifts, access to natural environments grows scarce for many young children as cities grow in size. In 2008, for the first time in human history, people who live in cities outnumber those who live in the country (Louv, 2013). Many cities are designed with limited urban parkland and poor transportation systems that do not connect their residents to nature (Louv, 2013). For these reasons, playing outdoors is not a regular experience for many children.

**Calls for Change**

Professionals and advocates in a variety of fields from education to environmentalism have observed trends that limit outdoor play and are calling for change. Movements to connect children to nature are expanding, for example the *Leave No Child Inside* grass roots effort which stems from the influential *Last Child in the Woods: Saving our Children from Nature-Deficit Disorder* continues to garner attention (Louv, 2007; Louv 2005). There have even been several states that have issued proclamations on the children’s right to play outdoors (Rivkin, 2014). As a result, alternative playgrounds are being created in response to concerns of too much adult directed play and limited time spent outdoors (Staempfli, 2009).

One such alternative playground has been called a “playscape.” Playscapes are natural outdoor play environments that utilize loose parts and natural materials to
engage children in open-ended, hands-on experiences (Carr & Luken, 2014; Keeler, 2008). Exposure to nature, including indigenous plants and trees, is important to playscape design. The loose parts which engage children in play are materials that allow them to manipulate, move, dig, build, climb, and provide for open-ended interactions. In a playscape, loose parts can include natural items like rocks, branches, sticks, leaves, water, sand or other items like shovels, blocks, pipes, hoops, bowls, or nets. Imagination and creativity is inherent in play with these materials and features of playscapes.

The advantages of these types of environments on children’s play and development are growing apparent in the current research. Playscapes are becoming more popular throughout the world and the research is affirming benefits that range from increases in children’s health and well-being to increases in family interaction (Fjørtoft & Sageie, 2000; Izenstark and Ebata, 2014). However, there is a need for further research on playscapes and the young children that use them in order to better understand the effects of such environments.

**Playscapes and Children’s Health and Wellbeing**

Several health concerns can stem from not getting the recommended amount of physical activity, and for children, active physical play often occurs in outdoor settings. Obesity rates are rising, and the health and social problems that accompany this epidemic are frightening: gallbladder disease and gallstones, osteoarthritis, gout, asthma, bone disease, cancers, type 2 diabetes, orthopedic problems, poor sleeping habits, low self-esteem, and peer relationship difficulties (Godbey, 2009). Furthermore, results from The Nature Conservancy poll (2011) found obese children prefer indoor activities more than children who are not obese and are less likely to
have had a meaningful experience in nature. However, research suggests that use of playscapes increases physical activity and promotes good health. Fjørtoft and Sageie (2000) found that children who played in the diverse landscape of a playscape had significant improvement in motor fitness, balance, and coordination as compared to a control group who did not use a playscape. This research suggests that an environment that elicits active and engaging play, which improves fitness levels, can contribute to healthier children.

Unfortunately, many children experience stress in their daily lives. High stress levels are linked to the common cold, heart attack, cancer, obesity, high systolic blood pressure, elevated heart rates, migraine headaches, rheumatoid arthritis, chronic fatigue, receptiveness to allergies, and other maladies (Godbey, 2009). Researchers are investigating stress levels, the impact of stress, and the effects of exposure to natural environments. One such study discovered that the impact of life stress was lower among children with high levels of nearby nature than among those with little nearby nature (Wells and Evans, 2003). This moderating effect that nearby nature had on stressful life events for children (i.e. bullying, peer pressure) occurred with both of the dependent measures the study utilized: parent-reported psychological distress and children’s own reports of global self-worth (Wells and Evans, 2003). In other words, the researchers claim that nature buffers the effect of stressful life events in children.

Contact with nature also has implications for children’s levels of attention. Researchers found that children in preschools with spacious, green outdoor environments with large areas of trees, shrubbery and a hilly terrain (characteristics shared with playscapes) have higher attention levels, as measured by The Early Childhood Attention Deficit Disorders Evaluation Scale (ECADDES, School version,
1995), than children whose preschool outdoor spaces had little to no natural elements (Martensson et al., 2009). Likewise, performance on a measure of concentration, a summary measure of impulse inhibition, and Mischel’s delay of gratification measure was significantly and positively related to views of nature from the homes of inner city young girls seven to twelve years of age. These findings suggest that even just a view of nature may impact attention in children, along with improved concentration and the ability to inhibit initial impulses and delay gratification (Faber Taylor, Kuo & Sullivan, 2002).

Attention difficulties are severe in the over two million children in the United States that with struggle Attention Deficit Disorder (ADD) (Faber Taylor, Kuo, & Sullivan, 2001). ADD can impact children’s success in school and their relationships with peers. One study found a relationship between ADD symptoms and exposure to nature. Parents were surveyed about their child’s attention levels in and after various activities in diverse settings. ADD symptoms were reported to be milder for those children exposed to greener play settings as compared to children with less exposure to nature, and children’s attention deficit symptoms were described to be less severe after participating in activities in green settings (Faber Taylor, Kuo, & Sullivan, 2001).

Furthermore, a child’s psychological state may be improved through experiencing nature in an environment like a playscape. Youth who participated in the The Nature Conservancy (2011) survey associated being in nature with being peaceful, free, calm, and happy more than with any other characteristic. Children who spent much time outdoors identified the following activities as the most interesting:

- 78% of youth stated: “seeing something beautiful or amazing in nature” (p. 5)
• 74% of youth stated “having free time in a natural area with your friends to make your own fun” (p. 5)

• 63% of youth stated “doing something outdoors in a natural area you have never done before, to challenge yourself” (p. 5).

It seems time spent in a natural environment like a playscape may provide a pleasurable and peaceful experience for children and support their mental health.
Chapter 2
LITERATURE REVIEW

The following literature details the theoretical frameworks used in this study. The family child care context is described, as well as challenges providers face in providing outdoor play. Next, research is explored on how playscapes and natural environments contribute to depth and content of play and provide opportunities for social development. Lastly, the literature examines children’s perspectives of these types of environments.

Theoretical Frameworks

Critical theory is an appropriate theoretical framework to use when implementing action research and with gathering perspectives other than those of the researcher. Critical theory is a worldview that seeks to explicate the understanding and potential transformation of social problems (Guba & Lincoln, 1994). While traditional theories seek to understand and explain, critical theory seeks to change. Critical theory has the goal of improving society. Those who operate from this framework view the human experience as the vehicle to create change (DePoy, Hartmann & Haslett, 1999, p. 561).

Mills (2011) describes how critical theory and action research intersect because they share the same fundamental purposes: “1. A shared interest in process for enlightenment, 2. A shared interest in liberating individuals from the dictates of tradition, habit and bureaucracy, and 3. A commitment to participatory democratic processes for reform” (p. 6). Since critical theory is focused on both change and the idea that “knowledge is power,” one can see how action research falls into this worldview (DePoy, Hartmann & Haslett, 1999, p. 561). Action research is defined as
a cyclical process by which stakeholders systematically study and implement changes in their classrooms and programs (Mills, 2011). It is research done by teachers and other important stakeholders with the aim to create positive changes in the environment (Mills, 2011). This process puts both the knowledge and power in those educators’ hands. This alignment of purposes makes critical theory an appropriate and effective lens in which to view and conduct action research.

Historically, much research in the field of early childhood comes from the perspective of the researcher (Katz, 1994). Research is typically done “on” educators and children rather than “for” them or “with” them (Mills, 2011). In her 1994 essay, Katz emphasizes that viewing early childhood quality from this top-down perspective of the researcher is narrow and that considering other perspectives may be more predictive of child care quality. She called for research in early childhood education to be conducted from more diverse perspectives. These include the inside-out perspective (the view of the staff/providers), the outside-in perspective (the viewpoint of the parent), and the bottom-up perspective (the children’s perception). However, in the 20 years since Katz voiced the tremendous need for more varied perspectives, the top-down perspective of the researcher continues to dominate research.

The bottom-up view of the child is rarely sought in research. Katz contends that "important ultimate effects of a program depend primarily on how it is viewed from below" and poses the following question to uncover the child’s view: "What does it feel like to be a child in this environment?"(1994). Similar to the benefits that teachers experience by participating in action research, gathering the perspective of the child can be considered democratic, participatory, and empowering. These
characteristics are consistent with and comparable to the purposes and intentions of critical theory (Mills, 2011).

While critical theory helps explain the “how” of this research, the theory of affordances is an appropriate lens to view the “what” of this study—children’s experiences of outdoor play. Psychologist James Gibson (1979) theorizes that affordances (properties of the environment that imply possibilities for action) are perceived to develop our understanding of its functions. These affordances are perceived in direct, immediate ways with no sensory processing. In other words, the perception of an object in the environment leads to some action: a button gets pushed, blocks get stacked, a puddle gets stomped on. Individuals’ perception of their environment determines their actions.

There are many affordances in a playscape environment that provide children various experiences that help them learn about the natural world. Logs afford opportunities for building; therefore, creativity, problem-solving, and cooperation are practiced or supported. Water affords pouring and splashing; therefore, senses are engaged and experimentation is fostered. Boulders afford climbing; therefore, gross motor skills are strengthened and resilience and bravery are developed. Natural materials and loose parts found in playscapes are inherently engaging, interesting, and rich. This approach emphasizes the impact that the environment can have on children’s play and learning and suggests that having various, high-quality “affordances” in the outdoor play space may lead to different types of engaging play.

**Family Child Care**

As of 2014 there were approximately 946,000 children in the United States being cared for in family child care settings (Doherty, 2014). Despite this high
number, there has been little attention devoted to understanding this setting. It is necessary to increase awareness and understanding of this population because low-income families are more likely to choose family child care than other child care arrangements (Doherty, 2014; Fuller, Kagan, Loeb, & Chang, 2004; Lanigan 2011). Furthermore, studies suggest that many children from family child care settings are ill-prepared to enter school and score lower on language and cognitive measures as compared to peers from center-based care (Doherty, 2014; Lanigan 2011; National Institute of Child Health and Human Development Early Child Care Research Network (NICHD ECCRN, 2000). Doherty (2014) argues that children not ready for school are at a higher risk of dropping out and living in poverty. This is not only detrimental to these individuals and their families but to society as a whole. Better understanding children’s experiences in family child care settings is an important step in ensuring these children are more prepared to enter school and to experience academic and social success.

In 2012, the American Academy of Pediatrics released a policy statement that declared the importance of play and physical activity (including outdoor play); particularly with children who live at or below poverty level (Milteer & Ginsburg, 2012). The authors stated that even though play contributes to the social, emotional, cognitive, and physical well-being of children, many children in poverty have limited opportunities for outdoor play. Sufficient outdoor play may be lacking for these children both at home and in child care. Low-income families are more likely to choose family child care than other child care arrangements (Lanigan, 2011); however, a study that utilized the nationally representative Early Childhood Longitudinal Study,
Birth Cohort, found that only 60% of family child care providers reported taking the children outside at least once a day (Tandon, Zhou, & Christakis, 2012).

The challenges that prevent outdoor play in family child care homes are varied. In two different studies utilizing focus groups (one study consisting of family child care providers and one study consisting of providers and other stakeholders like parents), participants agreed that physical activity is important to young children (Fees, Trost, Bopp, & Dzewaltowski, 2009; O’Connor & Temple, 2005). However, participants also detailed barriers to physical activity. These included environmental barriers, such as lack of space and unsuitable or vandalized playgrounds; lack of capability or negative attitude regarding participation in physical activity; health limitations of the provider; difficulty in providing appropriate experiences, specifically with having a mixed age group; and parental attitudes and behaviors that discourage outdoor play, such as children wearing inappropriate clothing for the weather and sending ill children to child care (Fees, Trost, Bopp, & Dzewaltowski, 2009; O’Connor & Temple, 2005). One research study surveying 313 family child care providers in Delaware, found that adequate outdoor space increased the likelihood that the recommended amount of physical activity occurred, highlighting the difficulty many providers in urban settings may have with providing outdoor play (Leng & Lessard, 2013). With nearly one million children enrolled in family child care, these unfortunate challenges may prevent or limit essential outdoor play for many young children.

A search of the literature indicates that there has not been any action research that focuses on enhancing the outdoor experiences of children enrolled in urban, family child care homes. This study seeks to remedy this situation. This action
research study explores one approach to supporting family child care providers who struggle with providing consistent, quality outdoor play experiences for the children in their care.

**Playscapes and Children’s Play**

Playing in natural, open-ended, and engaging play environments promotes children’s imaginary play. The National Association for the Education of Young Children (NAEYC, 2009) states that this type of play increases self-regulation and supports cognitive, social, linguistic, and emotional development. NAEYC also reports that child play characterized by imagination and rich social interactions is also declining and calls for professionals to promote children’s extended engagement in make-believe play (2009). Providing children access to playscapes can be one method that can support this type of play.

Izenstart and Ebata (2014) gathered perspectives of families using a natural playscape through 152 questionnaires, 15 one-on-one interviews with parents and grandparents, and participant observations. More than 69 percent of survey participants rated playscapes as better than most other outdoor environments in promoting fun and imaginary play. Interviewees reported that the playscape promoted pretend play, exploration, creativity, and physical activity. The authors reasoned that playscapes promote children’s development in ways that are not typical in more traditional environments (Izenstart & Ebata, 2014). These findings have been supported by other studies that have found creative play, fantasy play, and make-believe play more likely to occur in natural playgrounds as compared to manufactured ones (Louv, 2005).
Play in natural environments has the potential to look very different than other types of play. A Swedish study found that children who played in more natural playgrounds had meaningful play that continued and was expanded on from day to day, whereas play on asphalt playgrounds was limited to short segments (Louv, 2005). Findings that analyzed play in ten diverse outdoor play environments found that fantasy play was more common in environments that were rated as being more natural (Woolley & Lowe, 2012). The authors reasoned that this occurred due to the larger variety of elements in natural environments that support fantasy play (Woolley & Lowe, 2012). The sites rated as more natural also were more likely to support more physical play and sensory play than traditional playgrounds because of the complex topography (Woolley & Lowe, 2012).

Environments with loose parts, which are common in playscapes, also have the ability to influence play. In one study, play was observed and documented before and after loose parts were introduced in the environment (Maxwell, Mitchell, & Evans, 2008). Researchers concluded that constructive play and dramatic play were more common when loose parts were present (Maxwell et al., 2008).

**Playscapes and Social Interactions**

In a survey of families that used a local playscape, participants reported that they used that particular environment because it can be enjoyed by everyone, no matter their age or ability, and this increased social interaction among family members (Izenstark & Ebata, 2014). Survey respondents also noted that peer social interactions were fostered as children interacted in the playscape. Whereas a typical playground may appeal to a specific age range or to individuals at a certain developmental level, a playscape’s open-ended and manipulative environment provides the opportunity for
participants of various ages and developmental levels to be engaged and appropriately challenged in play (Izenstark & Ebata, 2014; Keeler, 2008).

Researchers found that children were likely to form a social hierarchy through physical capability alone during play on a manufactured playground with many play structures (Louv, 2005). However, imagination, language, and creativity also helped determine social standing after more natural elements were introduced to the space (Louv, 2005). This suggests that natural environments like playscapes are more inclusive and provide opportunities for children of diverse skills to form relationships. This aligns with research that used observations, interviews, and photographs to analyze themes of children’s play that occurred in the natural outdoor environment of their preschool’s nearby forest (Änggård, 2011). The author reported that because nature is relatively neutral in relation to gender, it made it easier for girls and boys to play together rather than having segregated or stereotypical gendered play (Änggård, 2011). Furthermore, social play among small groups of children was more likely in play areas that are considered more natural as compared to more traditional playgrounds (Woolley & Lowe, 2012).

**Outdoor Environments from the Child’s Perspective**

With the exception of The Nature Conservancy poll (2011), which explored the habits and opinions of youth in connection with nature, the research reviewed thus far details the benefits of playscapes from the perspective of adults. Children’s perspectives specific to playscapes have yet to be uncovered, but there have been some attempts to garner children’s opinions of outdoor environments. What is known from the child’s perspective includes Waters and Maynard’s (2010) research. Audio and visual data of teacher-child interactions that occurred outdoors was collected and
analyzed, focusing on incidents in which children (aged four through seven) drew the teacher’s attention to specific elements in the environment. The features that drew children’s direct interest were primarily simple, natural loose parts. The researchers discovered that a natural outdoor space populated with various loose parts and simple natural elements engaged children with their teachers and led to engrossing play (Waters & Maynard, 2010).

Roe (2007) also utilized the “bottom-up” perspective of children to study outdoor play spaces. Roe (2007) sought to uncover young children’s opinions on their landscape from the children’s own point of view. While previously mentioned research relies heavily on a singular form of data collection, Roe (2007) gathered children’s opinions by using Mosaic methodology. This methodology aims to provide children multiple avenues for communicating their unique perspectives and Roe (2007) used map making, drawings, guided tours, play and games, photos, hanging out with informal discussion, circle discussions, interviews, parent interview and discussions, videos of play and favorite spaces, and informal observations to accomplish this. She found that children had valuable and insightful contributions to make when determining their outdoor play environment. They described ideal play spaces that aligned with characteristics of playscapes such as having the opportunity to take risks, natural elements like trees, and hidden areas for children to uncover. This research is important not only because it provides the “bottom-up” perspective of the child, but because the researcher found that children desire outdoor spaces that align with the characteristics of a natural playscape. She stressed that the lack of regard for children in designing their outdoor spaces is alarming, but by using the Mosaic
method she was able to successfully uncover children’s useful opinions and valuable perspectives on their outdoor play environments.

Purposefully seeking out the perspective of the child, the “bottom-up” approach assumes that children’s views are different from those of adults—that children are authorities about their own lives. This is a fundamental declaration in The United Nations Convention on the Rights of the Child (1989) which demands individuals respect the views of children and support their right to have a say in decisions. Mosaic methodology may be one way to uncover and utilize children’s perspectives because the foundations of this method include the belief that children are competent and can successfully contribute to research (Clark, 2005; Clark, 2007; Baird, 2013).
Chapter 3
RESEARCH METHODOLOGY

Action Research

Action research is a collaborative and cyclical process where stakeholders observe and reflect on a classroom practice, and plan and implement a change based on those observations and reflections (Mills, 2011). This observe-reflect-plan- implement cycle is often repeated several times with the purpose of improving and refining teacher practice and children’s experiences, along with developing the educator’s reflective practice (Mills 2011; Papas & Tucker-Raymond, 2011). Action research is unique in that researchers work by or with others rather than doing research on or about them (DePoy, Hartmann & Haslett, 1999; Mills, 2011).

The advantages to action research are numerous (Mills, 2011; Mitchell, Reilly, & Logue, 2009). Using this method can address a specific, real-life problem and create positive, direct change in a classroom or program. These changes may, in turn, improve student outcomes. In the often solitary field of teaching, it allows the opportunity for collaboration with colleagues. The process of action research encourages those involved to be informed, life-long learners. It encourages education professionals to develop a professional disposition in which they are the expert, not the outside researcher. Finally, action research is unique in that it provides the opportunity for the researcher to reflect on his or her own practice (Mills, 2011; Mitchell et al., 2009).

Due to these advantages, early childhood researchers have used action research in their work to improve children’s outdoor play environments. In one such example, Nedovic and Morrissey (2011) used this approach to determine the remodel of a child
care outdoor play environment. Stakeholders (directors, teachers, and children) gathered data on preferences like the inclusion of natural elements. Changes such as greenery and loose organic parts were added and teachers and assistants observed children’s responses. The action research cycle was completed. Richer imaginative play, increased physical activity, more social play, and calmer, more focused play was reported. This study not only provides another example of the potential positive impact of natural environments like playscapes, but it also demonstrates the success of using action research as a method of study.

Clark (2010) argues that children have a role in action research as well. Children can play an active part in the research project by sharing their own views and gain many of the same benefits that teachers experience, including gaining the power that comes with knowledge and participation. The specific type of action research that is undertaken with children is the Mosaic approach (Clark, 2010).

**Mosaic Methodology**

The Mosaic approach is a method of gathering data from the perspective of the child and shares various principles with action research (Clark, 2010). This method gets its name from its use of multiple visual and verbal methods to uncover children’s experiences and opinions (Baird, 2013; Clark, 2007). The goal is to provide a varied and complete child perspective. Therefore, combinations of observations, interviews, child-led photography and tours provide multiple avenues for children to communicate. The developers of the Mosaic method believe that these multiple methods provide a complete view of the child as a whole, regardless of how articulate a child is or the individual learning style of the child (Clark, 2007). Research using the Mosaic method refers to the ‘hundred languages’ (Malaguzzi, 1996) that children
may use to explore and represent their experiences (Clark, 2005; Clark, 2006; Greenfield, 2011).

Clark (2007) describes three steps to the Mosaic method: children gather information and begin to assess it with the adult; children and adults discuss and analyze the meaning of the information the children gathered; adults and children discuss the question, “What is going to change or remain the same as a result of this process?” (p. 77). Clark (2007) provides an example of these three steps of Mosaic methodology to explore children’s views of their outdoor play environment in order to make recommendations for improvements to the space.

Clark (2007) began with step one, children gathering information. This included two days of researcher observations. Then, children photographed what was important to them and made books in which they included the photographs deemed most important. Finally, step one concluded with the children taking the researcher on a tour of their garden. Children chose the method of documenting the tours: audio-recording, photographs, or map making.

Step two involved interviewing the children. These interviews were creative and child-friendly. A toy dog was introduced and children discussed how and where the dog could play outside. Children sat on a “magic” carpet in front of a projector that showed children pictures of familiar and unfamiliar spaces to promote discussion about favorite outdoor spaces. These activities, along with reviewing photos and other documentation collected in step one and interviewing adults close to the children and the program, completed step two of reviewing and analyzing the collected data.

These data were then used to determine ways to improve upon the outdoor space. The school was able to redesign the outdoor space to meet the needs of the
children who used it. Clark (2007) emphasized the importance of this study: “Above all, the study revealed how children value the use of the outdoor space” (p. 79) and adults were able to adopt their practice and make responsive changes. Outdoor spaces are important to children. Listening to children’s perspectives can strengthen communication and understanding between adults and children, promote respectful interactions, and allow for reflection and meaningful improvements to be made.

Greenfield (2011) detailed her use of the Mosaic method in determining children’s perspectives on their outdoor environment at child care and their teachers’ role while playing outside. Not only was Greenfield able to implement the Mosaic method effectively, she provided a reflection on the process that is informative to anyone doing research in this way. She emphasized the following:

- Respecting the children is vital. If a child is busy in a certain play and does not want to participate, the researcher must comply.
- The researcher must observe but may also actively participate in gathering information.
- The researcher must be mindful and accepting of children not participating in the study.
- These multiple roles of the researcher are complex and require time and flexibility.
- The multiple methods of collecting data provide for valid, holistic, and authentic documentation.
- Closure of the project is of utmost importance and requires consideration.

These conclusions stress the value of the approach, as well as the characteristics and practices of an effective researcher.
While Roe (2007), Clark (2007), and Greenfield (2011) found success in using the Mosaic method specifically in relation to children’s outdoor environments, other researchers have investigated the use of the method in other contexts. Baird (2013) sought to determine the effectiveness of the Mosaic method in gathering children’s perspectives of their early childhood center. She drew several conclusions. Children photographing what they thought was important was an effective mode of communication because the photographs aligned with interview responses and researcher’s observations and proved to be a useful discussion prompt with children who were unresponsive during other data collection techniques. Interviews done in the classroom during play and routines provided rich data as the children chatted with the researcher and peers. However, in order to use techniques like the tours and reviewing photos with the children, the researchers must devote time and flexibility for the approach to be successful (Baird, 2013).

Even though research is beginning to provide valuable feedback on children’s perspectives, there has not yet been any research done from this perspective that pertains specifically to playscapes. The opinions of children who use these natural and manipulative environments are still unheard. The early childhood field does not know how children perceive their environment when features of playscapes are included outdoors. How can using this method inform changes to outdoor play? Many questions remain. Research using Mosaic methodology to uncover children’s perspectives of these environments would not only contribute to what is known about outdoor play settings but would also provide evidence to determine if this is an effective methodology to uncover children’s perspectives on their outdoor play.
Methods

Sample

For this study, a family child care provider was chosen who enrolled children who qualify for Purchase of Care (POC), a subsidy that supports the use of child care among families who live within 200% of the Federal Poverty Limits. The provider is located in a row home in an urban area of a city on the east coast and has limited access to large areas of outdoor space. The US Census Bureau (2015) reported poverty rate is 23.9% for this city. This sample selection aligns with critical theory with the goal to give power to an underrepresented group and provided an opportunity to advise a family child care provider experiencing challenges associated with caring for low-income children in a setting with limited access to space and natural surroundings. The provider was identified through a Technical Assistant (TA) with the state’s Quality Rating and Improvement System (QRIS) who primarily worked with urban family child care providers identified as serving children considered high risk.

The provider, Tatiana, had six children enrolled in her family child care program: two infants and four school-aged children. The four school-aged children participated in the study. There were three girls (Zahara age eight, Brynn age nine, and Dara age ten) and one boy (Brooks age twelve). Pseudonyms were given for all participants. All of the children enrolled qualified to receive POC subsidies.

Measures

Preschool Outdoor Environment Measurement Scale (POEMS).

The Preschool Outdoor Environment Measurement Scale (POEMS) is a tool used to assess the quality of early childhood outdoor environments (DeBord, Hestenes,
Moore, Cosco, & McGinnis, 2005). There are 56 items within the five domains to the POEMS: Environment, Interactions, Play and Learning Settings, Program, Teacher/Caregiver Role. The items are scored yes (item present) or no (not present) determined by observation and interview. A post-test of the outdoor environment was completed using two domains of the POEMS: Interactions and Teacher/Caregiver Role. The Interaction domain provides information on how children interact with the outdoor environment, peers, and adults. The Teacher/Caregiver Role domain measures how teachers use the outdoor environment to stimulate thinking. These domains were used to respond to the research questions. Other domains were not included because of the focus on other parts and aspects of the environment that would not be altered throughout the process of the study, like the entrance to the program.

The POEMS was deemed reliable in a test of 41 child care programs in North Carolina (DeBord et al., 2005). Inter-rater reliability was accomplished at 85% or higher and rechecked throughout the process. Consistency for the entire scale was determined to be strong (Cronbach’s alpha = .87), with the Interactions domain being.78 and Teacher/Caregiver Role domain being.52 (DeBord et al., 2005). The POEMS validity was determined in various ways (DeBord et al., 2005). First, correlation between program quality and total POEMS score was calculated. Program quality was identified as the program’s star level (one through five) which is determined through the North Carolina Star Rated License and is based on staff education, program standards, and compliance history. The correlation between North Carolina star level and POEMS score was reported to be moderately strong and positive, suggesting overall program quality is related to outdoor quality (DeBord et al., 2005). Second, during the POEMS observations a separate observer used a scan
sampling technique to determine the behavior of three to four children and their teacher. Researchers found that on lower quality playgrounds, children engaged in more functional and repetitive types of play and negative behaviors were more frequent. However, on higher quality playgrounds, children were involved in more constructive play and teachers more frequently reinforced and facilitated children’s experiences (DeBord et al., 2005). Finally, an expert review, pilot testing, and teacher feedback determined the refinement and content validity of the POEMS (DeBord et al., 2005).

In preparation for using this tool, I discussed the scale and scoring with Linda Hestenes, an author of the POEMS, and was given the scoring guidelines the authors used in previous research to assist me in making scoring decisions. I followed all observation guidelines and directions detailed in the scale and recommended by the author.

Child data.

Children provided evidence on their outdoor play and environment through group and one-on-one discussions, drawings, and photographs both before and after a change was implemented in the environment. These measures were the vehicle through which children were able to communicate their perspectives of outdoor play during the two time periods.

Procedure

This study drew from the procedures implemented by Clark (2007) and Nedovic and Morrissey (2011) and was completed following the iterative and reflective cycles of action research (Mills, 2011).
Initial reflections and data collection.

During this phase of the research, reflections from the children and the family child care provider were used to inform the design of the playscape implementation. The Mosaic method was adopted to gather data from the children enrolled. Children had the opportunity to create a drawing answering the prompt “Draw a picture of how you play outside.” Then, children used a camera to take pictures of what was important to them in the outdoor space. On another day, these drawing and photos were used to spur discussion about the children’s outdoor play. The children and I looked at photos of different playscape characteristics to promote further discussion about favorite spaces. Discussion prompts included:

- Tell me about when you play outside.
- Do you think anything is missing?
- How do you play with your friends?
- What do you enjoy most about your outdoor environment? Dislike the most?
- Tell me about your drawing. Tell me about the photograph you took.

Field notes were taken during and immediately after visits with the children to document these discussions.

While the focus of data collection was the “bottom-up” view of the children, the provider was pivotal to this process and so the “inside out” perspective of the provider was also frequently sought. Guided reflection on multiple visits with the provider occurred to identify strengths and weaknesses of the program related to outdoor play. Pictures and descriptions of playscapes were reviewed with the provider to prompt further reflection on possible changes to the space that might be effective...
and promote positive child outcomes. Data gathered from the children during the first phase was reviewed and reflected upon. Field notes were taken both during the visits and immediately following to document this reflection time.

**Design.**

The provider and I collaborated, using the input provided by the children, to plan playscape features to add to the outdoor play space. I created the features, using this input, and worked with the provider to install them in the outdoor space. Once the features were installed, the provider kept a calendar for a six-week time period and indicated whether or not the children went outside each day.

**Reflection and re-design.**

The provider and I discussed the new outdoor environment and the children’s play over the phone two weeks after implementation. At a mid-point check-in three weeks after features were added, I met with the provider to incorporate some changes based on the phone conversation and to continue to reflect on the playscape additions. The same prompts from the initial reflection were used and the provider was prompted to share any thoughts or observations that pertain to the newly added features. Based on this conversation during the check-in, more adjustments to the space were made on a following visit two weeks later. These reflections and adjustments were recorded in field notes immediately following the conversations.

**Post-test.**

Post-test data collection occurred seven to ten weeks after the features were introduced into the space. The Mosaic method was used to once again gather the children’s perspectives about how it feels to be a child in that outdoor play space. The children completed drawings, took photographs, and participated in discussions using
the same prompts and procedure as the initial data collection. I talked with the provider about the children’s outdoor play using the same prompts as the initial data collection. I completed a final observation of outdoor play by writing field notes and using the POEMS. Table 1 presents a timeline of the study.

Table 1  Timeline of Procedure

<table>
<thead>
<tr>
<th>Phase</th>
<th>Date</th>
<th>Children present</th>
<th>What occurred</th>
<th>Data sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial reflections</td>
<td>October 27, 2015</td>
<td>Zahara</td>
<td>Initial reflection with the provider, Tatiana</td>
<td>Field notes</td>
</tr>
<tr>
<td>Initial reflections and design</td>
<td>November 5, 2015</td>
<td>Zahara</td>
<td>Reflection with the Tatiana</td>
<td>Field notes</td>
</tr>
<tr>
<td>Data collection</td>
<td>November 12, 2015</td>
<td>Brynn, Dara, Brooks, Zahara</td>
<td>Data collection with the children</td>
<td>Drawings, photographs, field notes on discussion</td>
</tr>
<tr>
<td>Data collection</td>
<td>November 18, 2015</td>
<td>Zahara</td>
<td>Data collection with the children</td>
<td>Field notes on discussion</td>
</tr>
<tr>
<td>Data collection, implementation</td>
<td>November 23, 2015</td>
<td>Brynn, Dara</td>
<td>Data collection with the children; Implementation of playscape features</td>
<td>Field notes on discussion</td>
</tr>
<tr>
<td>Reflection</td>
<td>December 9, 2015</td>
<td></td>
<td>Mid-point reflection with Tatiana over the phone</td>
<td>Field notes</td>
</tr>
<tr>
<td>Reflection and re-design</td>
<td>December 17, 2015</td>
<td></td>
<td>Adjustments made to the space; reflection with Tatiana</td>
<td>Field notes</td>
</tr>
<tr>
<td>Phase</td>
<td>Date</td>
<td>Children present</td>
<td>What occurred</td>
<td>Data sources</td>
</tr>
<tr>
<td>--------------------------</td>
<td>----------------------------------</td>
<td>------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>Post-test data collection</td>
<td>December 28, 2015</td>
<td>Zahara</td>
<td>Observation planned but rescheduled because Zahara was sleeping and other children not present</td>
<td></td>
</tr>
<tr>
<td></td>
<td>December 29, 30, 31, 2015; January 4, 2016</td>
<td></td>
<td>Observations planned but rescheduled due to child absences</td>
<td></td>
</tr>
<tr>
<td>Re-design and post-test data collection</td>
<td>January 11, 2016</td>
<td>Brooks, Brynn, Zahara</td>
<td>Adjustments made to the space; observation planned but rescheduled due to weather; child data collection</td>
<td>Photographs, drawings</td>
</tr>
<tr>
<td>Post-test data collection</td>
<td>January 14, 2016</td>
<td>Zahara</td>
<td>Observation; reflection with Tatiana; child data collection</td>
<td>POEMS, field notes on observation, reflection, and discussion</td>
</tr>
<tr>
<td>Post-test data collection</td>
<td>January 18, 26, 2016</td>
<td></td>
<td>Observation and child data collection planned but rescheduled due to child absences</td>
<td></td>
</tr>
<tr>
<td>Post-test data collection</td>
<td>February 2, 2016</td>
<td>Dara, Brynn</td>
<td>Observation planned but not completed due to weather; child data collection</td>
<td>Drawings, field notes on discussion</td>
</tr>
</tbody>
</table>
Analysis

This study utilizes both qualitative and quantitative data and mixed methods approaches. Field notes from reflections with the provider offered insight to the challenges that this particular family child care faces that hinder outdoor play and describe why the particular playscape features were chosen. The calendar was evaluated to determine how often the children used the outdoor environment.

Evidence provided by the children in the form of discussions, drawings, and photographs were analyzed using content analysis (Twycross & Shields, 2008). Detailed field notes of subjects the children spoke about were categorized by type of play or experience. For example, the mention of “swinging” as a favorite outdoor pastime was categorized as gross motor, the mention of playing “house” was categorized as dramatic play, and the mention of “playing in the sand” was categorized as play with natural items. Once categorized, the types of play were counted and compared. Items in the drawings the children drew were counted and the most dominant item of each drawing was identified. All of the items that were considered to be dominant were largest and drawn first. Items in photographs were listed and counted. Comparisons were made between the child data collected at both collection points to determine if children’s perspectives and experiences changed after playscape features were installed.

Finally, POEMS observation scores and field notes were analyzed to describe interactions and teacher involvement in outdoor play after playscape features were implemented.
Research ethics

This study was approved by the Institutional Review Board (IRB) at the University of Delaware. This research was conducted in compliance with the expectations set forth by the IRB. A detailed description of the study was given to the provider and the parents of the children participating and written consent was obtained. Verbal assent was obtained from the children and they were reminded that their participation was a choice before beginning each activity. Identifying information was kept confidential and secure as per requirement of the IRB.
Chapter 4

RESEARCH FINDINGS

Provider Perspectives and Challenges Related to Outdoor Play

Initial Findings and Challenges

The family child care provider, Tatiana, has a small, fenced-in backyard approximately 475 square feet in size, covered in grass and leaves. Before the implementation of the playscape, there was an empty sand table, a chalkboard on the fence, wagon and push toys, and plastic balancing boards. A tree is outside the fence, hanging over the yard. However, the family child care provider reported that she did not use this space and typically did not take the children outside to play. In fact, Tatiana, a participant in the state’s Quality Rating and Improvement System (QRIS), stated that she received low scores on the Family Child Care Environment Rating Scale – Revised Edition (FCCERS-R; Harms, Cryer, & Clifford, 2007) relating to outdoor play because she did not offer outdoor play for at least one hour daily. This also affected data collection as a pre-test of the POEMS was not able to be completed as initially planned because children in the program did not use an outdoor environment before the playscape features were implemented.

Several challenges were noted by the family child care provider to providing outdoor play. During the previous summer, Tatiana had taken the children to a park down the street nearly every day but it had been closed for quite some time due to renovations. Tatiana said her biggest problem with her outdoor space was that it was muddy. She reported that she spent a great deal of money putting sod in the space, but the grass died due to the mud and the shade from an overhanging tree. In the past, she has had parents complain about mud on shoes and clothes and had one parent that
refused to allow Tatiana to take her child outside because she did not want the child to get dirty. She mentioned that she sometimes took her infants on stroller rides because of the mud and wet grass. Another challenge for Tatiana was that the toys were getting wet outside and she needed to take time to dry them off every day. She stated that these environmental barriers were the biggest challenges that prevented outdoor play.

Another concern for Tatiana was having outdoor space that would be appropriate for the wide range of children in her care (eight months through twelve years). Tatiana was unsure what activities and outdoor educational experiences to provide that would be appropriate for the children in her care but she was open to making changes and improvements.

**Playscape Features that Address Challenges**

The provider and I designed playscape features that met her needs, along with the needs of the children and families in her care. These decisions were made based on initial reflective conversations with the provider that detailed the obstacles preventing outdoor play, preferences of the children, and through examining photographs of features common in playscape design. It was decided to install a maze wall to use with water, rocks, marbles, or other loose parts; a pretend boat to encourage dramatic play; logs for children to build with or manipulate; and a garden feature where plants can be added during the spring months. These features included loose parts, open-ended experiences, maintaining all existing natural items already present in the space, and the addition of more natural elements.

The pretend boat and the maze wall were identified by both the children and provider as something they would enjoy in the space, and the children’s favorite colors
were included on the equipment. The garden was incorporated into the play space because the children included flowers in their drawings and discussions.

These changes also helped address some of the challenges that have prevented Tatiana from using her outdoor space. For example, the pretend boat was created from a pallet where children can engage in dramatic play raised off the ground without being in the mud. The materials and positioning of the items were chosen to optimize the limited space available. For example, the maze wall and the garden were hung vertically on the fence to take up little room. Caring for the plants in the garden and having logs in a variety of sizes are open-ended activities designed to engage a wide range of children in the program. Storage in the form of baskets hanging from the fence was included in order to keep items considered choking hazards for children under the age of three out of reach.

**Mid-Point Reflections and Adjustments to Space**

Continued reflective conversations with the provider occurred after the children had time to experience the new space. These reflections took place over the phone two and a half weeks after implementation of playscape features and during a program visit three and a half weeks after implementation. Adjustments to the space were made based on provider reflections during these check-ins between data collection points. Tatiana reported that the children were using the space but mud still prevented play on some days. As result, pavers were provided for Tatiana to place in the space to help minimize the problem of the mud. Tatiana reported that the maze wall was the children’s favorite new item and that they spent most of their time playing there. To encourage continued engagement with the maze wall, additional
loose pipes and zip ties were added to the playscape so the children could create new paths on the wall.

**Final Reflections, Challenges, and Observation**

An observation of children’s play and final reflection with Tatiana occurred approximately eight weeks after implementation of the playscape features. Observation and interview questions found in the POEMS and reflective conversations provided the inside-out view of the provider, her perspective of the children’s play, and challenges related to providing appropriate outdoor play experiences.

During the observation, the POEMS was completed and field notes were taken. Zahara was the only school age child present during the observation. I scheduled nine visits to capture observations of outdoor play with more children present but these attempts were unsuccessful because of bad weather or child absences.

A score of 62% was obtained on the Interactions domain of the POEMS which relies on observation and provider interview. Credit was received for the following interactions:

- Zahara touching, noticing, and sensing the natural environment (in this instance ice and mud)
- A child-initiated activity with natural loose parts (engagement with logs)
- The caregiver allowing for unplanned child-initiated activities
- The presence of defined areas to encourage child-to-child interactions (child-sized picnic table, pretend sailboat)
- The caregiver not letting personal fears of wildlife or nature influence the children
- The caregiver supporting learning without intruding
• Parents being welcomed in the outdoor area
• Adult-sized seating available

However, credit was not received for the following required interactions in the POEMS Interaction domain:

• Child approaching teacher with questions or for support
• The caregiver facilitating small group activity
• The caregiver noticing learning needs to guide planning of activities
• The caregiver using open-ended questions to explore children’s interest
• The caregiver modelling inquisitiveness and exploration (DeBord et al., 2005)

During Zahara’s play, Tatiana was actively supervising the two mobile infants in her care. They were engaged in play with music instruments, and Tatiana modeled their use and ensured that the infants had materials to engage with. The two children had just begun to walk within the past month and required much assistance to steady themselves on uneven terrain. Tatiana also was recording information about the infants’ afternoon routines and activities on the daily sheet that goes home to parents. While Tatiana encouraged Zahara to play, observed her actions, and asked her if she enjoyed her play when Zahara was ready to go inside, she did not do the high level facilitation required in the indicators above. Tatiana was attentive to the safety and supervision of the infants in her care rather than engaging in meaningful interactions with Zahara, despite the materials and opportunities for engagement. This suggests that Tatiana continues to struggle coordinating care and facilitating learning with children that span a wide age range.
A POEMS score of 75% was received on the Teacher/Caregiver Role domain. This domain focuses mainly on an interview, which was completed after the observation, and describes how teachers maximize the benefits the children receive through outdoor play (DeBord et al., 2005). Credit was received for the following items:

- Communicating the value of outdoor play with parents
- Facilitating outdoor activities with families
- Taking walking field trips to the park
- Modeling environmental care with the children
- Attending to outdoor health and safety needs

However, credit was not received for the following items:

- Outside resource people that enhance outdoor experiences are not involved in the program
- Professional development opportunities related to outdoor play and learning are not sought (DeBord et al., 2005)

Tatiana expressed the value of outdoor experiences with families and ensured children’s health and safety during outdoor play, but other opportunities to engage children in quality outdoor experiences still exist. For example, professional development opportunities may help Tatiana learn how to enhance children’s outdoor play, stimulate children’s thinking while outdoors, and improve facilitation of experiences of children in a multi-age setting.

Final reflections with Tatiana allowed her to share her perspective of children’s play in the space. She stated that while outside, the children mainly played with the maze wall. Tatiana mostly enjoyed the pretend boat and that the children spend time talking on it. This validates the notion that the new playscape materials are being used
by the children and that the boat affords social play. Although facilitating play across age groups proved to be a challenge during the observation, Tatiana did not mention her initial concern about providing appropriate activities outdoors with the wide ranges of ages of children in her care. She emphasized one of the advantages of having a multi-age group by talking about how helpful the older children are with the infants and that they sometimes use the logs to build with the infants.

Tatiana indicated possible future directions of improvements to the outdoor space. While the pavers helped with the issue of mud, they did not fix the issue entirely. Tatiana still struggles with this environmental barrier and is considering adding grass that grows well in the shade. If the new grass does not grow well, she may use mulch as surfacing instead. Perhaps if Tatiana continues to improve her outdoor space, more frequent and extensive outdoor play will occur.

Table 2  Challenges from the Provider’s Perspective

<table>
<thead>
<tr>
<th>Reflection period</th>
<th>Challenges</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial reflection</td>
<td>Environmental barrier: mud</td>
<td>Pretend boat where play can be out of the mud</td>
</tr>
<tr>
<td>Initial reflection</td>
<td>Appropriate experiences for multi-age children</td>
<td>Logs, flower bed open-ended for various ages; appropriate storage of items considered choking hazards for young children</td>
</tr>
<tr>
<td>Mid-point check-in</td>
<td>Environmental barrier: mud</td>
<td>Pavers provided to create pathways out of the mud</td>
</tr>
<tr>
<td>Reflection period</td>
<td>Challenges</td>
<td>Responses</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Mid-point check-in</td>
<td>How can continued engagement with the children’s favorite item, the maze wall, be supported?</td>
<td>Additional pipes and zip ties provided so children can create their own paths on the maze wall</td>
</tr>
<tr>
<td>Final reflection and observation</td>
<td>Facilitating appropriate experiences for multi-age</td>
<td>In the future, the provider may benefit from professional development and improve facilitation of experiences of children in a multi-age setting</td>
</tr>
<tr>
<td>Final reflection and observation</td>
<td>Environmental barrier: mud</td>
<td>In the future, provider may plant new grass that grows well in the shade or cover area with mulch</td>
</tr>
</tbody>
</table>

Table 2 portrays that mud and facilitation of experiences across a wide range of ages proved to be a concern or challenge for this family child care provider throughout the process. Suggested future improvements and modifications may address these concerns and struggles.

**Child’s Perspective through Drawings**

The children completed drawings approximately eight weeks apart, a week and a half before implementation of the playscape features and approximately seven weeks after implementation. One child, Dara, completed her drawing approximately ten

41
weeks after implementation due to absences during scheduled visits. At both points, children were asked to illustrate the answer to the prompt: “How do you play outside?” The most common items the children drew before the playscape was implemented, were flowers and swings. All of the children stated that these items were things that they had seen on school playgrounds and did not experience at the family child care home, or things they liked about being outside.

For analytic purposes, the most dominant item of each drawing was identified. All of the items that were considered to be dominant were the largest and drawn first. Many of the dominant items were also drawn in the center of the page and named first when the child was asked about their drawings. On the first drawings, these included: basketball nets, swings, and climbers.

The drawings after playscape features were implemented and used by the children had several different features from the original drawings, including a pool, slide for the pool, and a bicycle. The most common feature in the second drawings was the sun. The dominant features in the second drawings included slides, horizontal ladder, and a bicycle.

Table 3 and Table 4 detail what was included in their pictures before and after the implementation of playscape features. Examples of Zahara’s drawings at both time periods are found in Figure 1 and Figure 2.
### Table 3  Items in Drawings Before Playscape Features Were Implemented

<table>
<thead>
<tr>
<th>Items in drawings before playscape features were implemented</th>
<th>Number of children that drew the item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sun</td>
<td>2</td>
</tr>
<tr>
<td>Flowers</td>
<td>3</td>
</tr>
<tr>
<td>Slide</td>
<td>2</td>
</tr>
<tr>
<td>Grass</td>
<td>1</td>
</tr>
<tr>
<td>The child</td>
<td>1</td>
</tr>
<tr>
<td>Swings</td>
<td>3</td>
</tr>
<tr>
<td>Tree</td>
<td>2</td>
</tr>
<tr>
<td>Climbers</td>
<td>2</td>
</tr>
<tr>
<td>Basketball</td>
<td>2</td>
</tr>
<tr>
<td>Basketball net</td>
<td>2</td>
</tr>
</tbody>
</table>

n = 4

### Table 4  Items in Drawings After Playscape Features Were Implemented

<table>
<thead>
<tr>
<th>Items in drawings before playscape features were implemented</th>
<th>Number of children that drew the item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sun</td>
<td>3</td>
</tr>
<tr>
<td>Flowers</td>
<td>1</td>
</tr>
<tr>
<td>Slide</td>
<td>1</td>
</tr>
<tr>
<td>Grass</td>
<td>1</td>
</tr>
<tr>
<td>The child</td>
<td>2</td>
</tr>
<tr>
<td>Bicycle</td>
<td>1</td>
</tr>
<tr>
<td>Swimming pool slide</td>
<td>1</td>
</tr>
<tr>
<td>Swimming pool</td>
<td>1</td>
</tr>
<tr>
<td>Clouds</td>
<td>2</td>
</tr>
<tr>
<td>Friend</td>
<td>1</td>
</tr>
<tr>
<td>Sister</td>
<td>1</td>
</tr>
<tr>
<td>Toy dolls</td>
<td>1</td>
</tr>
<tr>
<td>“Monkey bars” (horizontal ladder)</td>
<td>1</td>
</tr>
</tbody>
</table>

n = 4
Figure 1  Zahara’s drawing before playscape addition (11/12/2015) included a basketball net and swings.

Figure 2  Zahara’s drawing after playscape addition (1/11/2016) included a slide and a pool.
Child’s Perspective Through Photographs

Two children were present and demonstrated a desire to take photographs of the outdoor space before any new features were added. They were asked to photograph what was important to them concerning the outdoor space. Approximately eight weeks later, three children (including the two original children) were asked the same prompt and to once again photograph the outdoor space. These photographs were taken approximately seven weeks after the new playscape features were added. The following details the photographs the children took.

During initial data collection, Zahara took five photographs of the following items:

- Empty sand table
- Riding toys
- Wagon
- Bike (belonging to provider’s son, not used for child care)
- Whole space (“I like all of outdoors”)

Seven weeks after the playscape features were included, Zahara took six pictures of the space. She photographed the following items (newly added playscape features are italicized):

- Two photos of the corner of the yard where the riding toys are stored
- Boat
- Empty sand table and hula hoop
- Building logs
- Maze wall
Figure 3  Zahara’s photo before playscape features (11/18/2015).

Figure 4  Zahara’s photo after playscape features (1/11/2016).
During the initial data collection, Brooks took eight photographs of the following items:

- Two photos of the corner of yard where riding toys are stored
- Three photos of grass and leaves on ground
- One photo of chalkboard and empty sand table
- Two photos of the corner of yard with balance boards and bike

After the new features were added, Brooks took only two photographs (newly added playscape features are italicized):

- *Maze wall*
- *Boat*

Figure 5  Brook’s photo before playscape features (11/12/2015).
Brynn took photographs after the implementation of the playscape features as well. She also photographed the maze wall and the boat, both new features of the space.

**Child’s Perspective on Play Represented in Discussions**

The first discussions of outdoor play with the children centered on contexts like school, local parks, and home. The children did not speak of outdoor play related to the family child care program. Furthermore, much of the discussion about outdoor play revolved around gross motor activities and man-made gross motor equipment, with some limited talk about flowers or natural items. For example, Zahara liked to play with hula hoops, jump ropes, and basketballs outside. She said she liked to ride bikes with friends, “go on a motor scooter,” and take walks with her mom and dad. Her favorite things to do with her friends outside were games of tag, Simon Says, play
with dolls, and cartwheels. Brynn and Dara echoed Zahara’s love for active gross motor play. During this initial discussion, Brynn reported swings, playing house, tunnels, and jungle gyms as favorite outdoor items and activities and Dara reported playing with balls as her preference. The type of outdoor play these children typically experienced at school and in local parks had been on traditional playgrounds furnished with items like swings and climbers. The activities that the children reported liking are consistent with these types of environments. In fact, the children listed the traditional gross motor materials of bikes, monkey bars, and swings as what they considered the most important or favorite thing about being outside. The following table details the discussion with children before playscape implementation:

Table 5 Types of Outdoor Play Children Discussed Before Playscape Implementation

<table>
<thead>
<tr>
<th>Types of play</th>
<th>Frequency this type of play was mentioned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross motor (i.e. swings, jungle gyms, basketball)</td>
<td>23</td>
</tr>
<tr>
<td>Dramatic play (i.e. kitchen, dolls)</td>
<td>3</td>
</tr>
<tr>
<td>Play with natural items (i.e. flowers, sand)</td>
<td>2</td>
</tr>
</tbody>
</table>

n = 3

Similar to the initial discussions about outdoor play, gross motor activities were also most frequently mentioned after playscape features were implemented. For example, Zahara’s favorite thing to do outside was jump rope and swing, and Dara’s favorite activity was the “monkey bars.” Children mentioned dramatic play and natural items more frequently after the playscape features were implemented, and art
activities and technology were now mentioned for the first time. Dara talked about playing “mom” and “school” outside with her sister and Brynn said that playing “house” was her favorite thing outside and by doing so she cooperates with her friends. Brynn spent a great deal of time talking about the flowers in her drawing with their green leaves, and both Brynn and Zahara said they loved playing in the water.

The photographs the children took of the outdoor space were used to prompt discussion, and children spoke of outdoor play specifically related to the family child care home for the first time. Children talked about enjoying play with the maze wall and dramatic play on the pretend boat. Zahara said: “My favorite thing is the [maze] wall because I like science and experimenting.” When viewing the photograph Brynn took of the pretend boat, Brynn said “I like that because I sit on it and play with my tablet or I pretend and feel like I’m a real pirate.” The following table describes the types of play the children discussed when asked prompting questions and reflecting on their drawings and photographs:

Table 6 Types of Outdoor Play Discussed After Playscape Implementation

<table>
<thead>
<tr>
<th>Types of play</th>
<th>Frequency this type of play was mentioned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross motor (i.e. swimming, riding bikes)</td>
<td>18</td>
</tr>
<tr>
<td>Dramatic play (i.e. playing “house,” pretending to be a pirate)</td>
<td>12</td>
</tr>
<tr>
<td>“Experimenting” with the maze wall</td>
<td>2</td>
</tr>
<tr>
<td>Play with natural items (i.e. flowers, sand)</td>
<td>12</td>
</tr>
<tr>
<td>Art (making bracelets)</td>
<td>1</td>
</tr>
<tr>
<td>Play with technology (tablet)</td>
<td>1</td>
</tr>
</tbody>
</table>
n = 3
The types of play shared through these discussions are more varied after implementation of playscape features. These discussions, combined with the drawings, photographs and observation, show how children’s outdoor play and perspectives of outdoor experiences expanded after implementation of playscape features.

Children’s Expanding Play

The program was not using an outdoor space for play before these features were installed and children’s outdoor experiences were limited to school, home, and local parks. After installation, the provider noted the number of days the children played outside during a six-week time period in November and December. Outdoor play occurred twelve out of the twenty-four days the program was open during this period. This signifies an increase in the opportunities the children had to participate in outdoor play while in care, despite poor weather and children only being present after school during a time of year where it gets dark very early.

As evidenced by the multiple methods of perspective sharing the children engaged in, the type of play that occurred in the family child care program proved to be a different type of play than the children engaged in while in other contexts. Children drew outdoor play in various contexts, including home, school, and parks, both before and after the playscape features were implemented. All of the dominant items the children drew, and one of the most common items on the children’s drawings (swings), align with what traditional playgrounds offer: fixed, gross motor equipment made of man-made materials. The children drew items and experiences not found at the child care setting, suggesting that these children think of contexts like
school or home instead of their after school care when they consider how they play outside. Similar to the drawings, the children discussed gross motor play in settings other than the family child care program most frequently during conversations about outdoor play. The children talked about school playgrounds, playgrounds they played on in the past, general ideas of what should be outside, and play with peers not enrolled in the program.

While the drawings and discussions emphasized gross motor play, there proved to be an expansion of the outdoor experiences the children engaged in after the playscape features were implemented as recorded through reflections, photographs, discussion, and observation. The new playscape features afforded dramatic play, experimentation, and construction play, offering a different type of outdoor play than traditional gross motor pursuits the children engaged in while in other contexts. Tatiana indicated that the new playscape features were used and enjoyed by the children. The photographs that Zahara, Brooks, and Brynn took of the newly added playscape features suggest these are important to the children and their outdoor play. Furthermore, there was an increase in the number of times children spoke of dramatic play and play with natural items when discussing outdoor play after the playscape features were implemented.

During the observation, Zahara engaged in various types of play with objects that were previously present in the space (balls, hula hoops) but spent most of the time engaged with the new playscape features (maze wall, pretend boat, logs). There was ice in the containers with the maze wall that Zahara dumped out, threw, and touched. She engaged briefly in play with the logs, focusing on “unsticking” the ones that were frozen together by the ice. Zahara experimented with the maze wall, moving pieces to
change the path, dropping marbles and rocks one at a time and then all together.
Zahara narrated much of her experimentation with the maze wall: “I’ll start with this one. Okay, now I gotta…That was cool. Oh come on! We’re only gonna have half of it then. Test it. Yes! Did it right!” Later, Zahara returned to the wall: “Lot [marbles and rocks] at the same time. I hear some water. There we go, got it!” In this instance, the playscape features afforded experimentation and investigation where Zahara observed cause and effect. Zahara also used language throughout the experience, despite the fact that she was playing independently.

Zahara engaged in pretend play on the sailboat on two occasions, acting out stormy weather on the seas. The sail on the boat is held on by clips so that the children can take down the sail or put a different sail up. The sail had fallen down and Zahara was trying to figure out how to put it up correctly so that the long side of the sail would reach the clip on the far end of the pallet. Zahara demonstrated her confidence and thought process while she was problem-solving: “I can make this work, yes I can! Take that off, do a little switch-a-roo. Now this is too short. I’ll wrap it around here for now.” For Zahara, the boat afforded pretend play, creativity, problem-solving and determination.
Figure 7  Zahara problem-solving during pretend play (1/14/16).

Figure 8  Zahara experimenting with the maze wall (1/14/16).
The implementation of new playscape features provided an increase in the outdoor play opportunities for the children. Furthermore, as evidenced through the mosaic approach, there was an expansion of outdoor play from being strictly related to gross motor activities, to play that includes open-ended experiences and encourages creativity and problem solving. This expansion of outdoor play experiences affords more well-rounded play for these children that support not only their health and fitness, but also learning and development. The combination of these experiences should be afforded to all children and providing comprehensive and complex play experiences delivers cognitive, social, and emotional benefits (NAEYC, 2009). NAEYC (2009) calls for teachers to facilitate learning, development, emotional, and physical domains because of the domains strong influence on each other. The diverse outdoor play experiences of children may contribute to their later success.
Chapter 5
CONCLUSION

The American Academy of Pediatrics (2012) affirmed the importance of play and physical activity (including outdoor play) because of its significant contributions to children’s social, emotional, cognitive, and physical well-being. This type of play is particularly critical for the many children who live at or below poverty level and have limited opportunities for outdoor experiences (Milteer & Ginsburg, 2012). This action research project examined the addition of playscape features to the outdoor space of an urban family child care program that serves children who live below Federal Poverty Limits. The children in this program did not use an outdoor area for play before the playscape features were implemented. After the addition of these features, children had the opportunity to play outside half of the days while in care. Considering the importance of outdoor play, this may be considered a substantial improvement and may contribute to more varied, meaningful, and in depth outdoor play with the children enrolled at this program.

The types of play that the children engaged in while outdoors at the family child care home, as evidenced through conversations, observation, and photographs, portrayed a different type of outdoor play than the children were exposed to at home or at school. This is consistent with the theory of affordances in which the new playscape “affordances” in the outdoor space lead to different types of engaging play (Gibson, 1979). For example, children photographed the new maze wall, played with it during the observation, and both the children and provider described it as a favorite feature of the new play space. However, when asked to draw how they play outside, children’s drawings often portrayed fixed, manufactured gross motor equipment found
at schools or parks, and they often spoke of gross motor activities such as swinging or basketball during discussions about their outdoor play, rather than the experimental type of play afforded by the maze wall that was used at the family child care home. Zahara also engaged in play with loose logs and the pretend boat which are not features of other outdoor environments that Zahara uses. This suggests these children consider various experiences and locations when thinking about outdoor play, and that adding playscape features to the family child care home contributed to the diversity of outdoor experiences, affording for more well-rounded play for these children.

These complex perspectives, experiences, and preferences of the children were determined through the multiple methods of the Mosaic approach. Drawings highlight that the children’s typical outdoor play often occurred in contexts other than the family child care home. However, photographs were the most effective method to portray the children’s preferences specific to the family child care. Through discussions, multiple outdoor environments were considered, and experiences with outdoor play in various contexts were described by the children. These various modes of communication delivered multiple insights into the children’s varied and diverse experiences and offered a comprehensive picture of the children’s outdoor play. Analyzing the drawings, photographs, and discussions provided rich information that may not have been uncovered if only a single data source had been employed.

Furthermore, in keeping with critical theory, implementing action research and the Mosaic approach allowed for participants to contribute to research in a meaningful way. The family child care provider and the school-age children enrolled in her program engaged in sharing their opinions and perspectives and participated in making real-life changes to their environment. The process supported empowerment and the
participants’ reflections and contributions may be valuable to similar family child care programs that face challenges with providing outdoor play.

Finally, while the use of the outdoor space increased with the addition of playscape features, the family child care provider still faced challenges in providing outdoor play. This emphasizes that more intensive and comprehensive supports may be needed. The outdoor environment is still quite muddy and continues to be a concern of the provider which may prevent play on wet days. Also, supervising and facilitating play in a multi-age setting proved to be a challenge during the observation. These hurdles that Tatiana faces are consistent with research findings that state access to adequate and appropriate outdoor space and providing fitting experiences, specifically to a mixed age group, can limit outdoor physical play in family child care settings (Fees et al., 2009; O’Connor & Temple, 2005; Leng & Lessard, 2013). The evidence from this study suggests that while the playscape features enhanced the children’s outdoor learning experiences and overall activity, it also suggests that simply providing playscape features may not fully resolve the issues inhibiting outdoor play in this family child care setting. Perhaps a multi-faceted approach that includes more extensive physical improvements in the space along with professional development may be more effective to meet the varied needs of the provider.

**Limitations**

Although this research study provides the perspectives of the family child care provider and the children in her care, this small sample size implies conclusions may not be generalizable to other contexts. Also, three out of the four children studied belonged to the same family and were frequently not present during visits to the
program. Several visits were rescheduled and, due to these absences and weather constraints, an observation of these children using the space could not be completed.

Time was a challenge throughout the process. A garden was identified by the provider and children as something of interest. However, implementation of the playscape features occurred in late November. While materials for growing plants were given to the provider, the actual planting of plants and flowers will occur after the post-test data collection because winter in the mid-Atlantic is not ideal for growing plants. Poor weather during the winter months, the sun setting early, and the school-age children being at the program for a brief amount of time (often arriving between 3:40 and 4:10 and leaving around 5:00) may have limited the time for the children to be engaged in outdoor play while in care.

These limitations and challenges emphasize how flexibility and respect are of utmost importance while using action research methodology and reflect what Greenfield (2011) suggested as important characteristics and practices for an effective researcher using this approach. When using this approach, visits may need to be rescheduled or activities may need to be changed. For example, on one occasion, Zahara (the only child present) had fallen asleep prior to my arrival causing the visit to be rescheduled. On another visit I had planned for the children to draw their outdoor experiences, but Brooks was not interested in drawing. I offered the chance to photograph the outdoor space instead and he was eager to do so. Later, he drew a picture when he wanted to. Open communication with the provider and allowing her to choose what activities we did and when they occurred was important. Visiting her program and making changes to the outdoor space affected not only her business but her home. This action research project would not have been successful without the
provider’s cooperation and engagement with the process, proving that flexibility and respect of the provider’s opinions and environment was required.

**Significance**

Despite limitations, much value can be gained from this research. This action research project in the context of family child care outdoor environments addresses an important and relevant issue and has not been studied before. Those who wish to improve on outdoor play experiences of their own child care programs or programs they work with (i.e. those who provide technical assistance for QRIS systems) can learn from and apply this action research approach in their own practice. This research study provides an example of a way to create change and support a family child care program, along with suggestions that may work to make this approach more effective. Perhaps it can be taken into consideration when creating changes to outdoor spaces of other family child care homes.

This sample draws attention to underrepresented populations (family child care providers, children from low-income families). The findings add to the data collected from the bottom-up perspective of the child and contribute to the growing body of information on the Mosaic method as an effective way to gather the child’s perspective. The provider had the opportunity to engage in reflective practice, and the children had their opinions and perspectives heard and considered. Lastly, with action research it is anticipated that there will be a positive, real-life change to the experiences of the children and provider. In keeping with critical theory, this change will support outdoor play and the children may experience positive outcomes as a result. Through this process and changes to outdoor environments, perhaps these children will create their own cherished memories of outdoor play.
Additional Areas to Explore

Several questions remain. It would be interesting to analyze the future use of this particular outdoor space to determine if outdoor play is sustained or if it changes during different times of the year. Is there an impact on the provider’s QRIS rating or score on the FCCERS-R after these changes have been made? The “bottom-up” and “inside-out” perspectives have been considered in this research but the “outside-in” perspective is missing, leaving the voices of the families still unheard. A deeper understanding of these areas is necessary for this research to inform the practices of other family child care providers.

Due to limited research on playscapes, further exploration is needed to verify if the salient features of playscapes increase the quality outdoor environments and determine children’s perspectives of these environments. A deeper look into how these environments may affect children’s physical health may be significant as the state of children’s health continues to be a critical issue. Furthermore, as environmental concerns increase, more empirical data focusing on environmental stewardship and advocacy and connections to playscape environments is warranted. If playscapes do, in fact, have positive impacts on children, more needs to be known about how to effectively implement the salient features of playscapes within various child care settings that strive to provide outdoor experiences. For example, family child care providers often struggle with facilitating experiences for the wide range of ages of children in their care. Questions remain regarding how outdoor environments can support provider involvement with children in a multi-age setting.

Finally, this research project focused on a specific sample of four school-age children qualifying for POC in an urban environment and emphasized the potential for
children to contribute to research findings. Gathering the perspectives of younger children or children from different contexts could be beneficial and could provide for a more comprehensive understanding of children’s perspectives related to outdoor play.
REFERENCES


Appendix A

Human Subjects Training

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)
COURSEWORK TRANSCRIPT REPORT**

** NOTE: Scores on this Transcript Report reflect the most current quiz completions, including quizzes on optional (supplemental) elements of the course. See list below for details. See separate Requirements Report for the reported scores at the time all requirements for the course were met.

- Name: Christine Skrobot (ID: 3802069)
- Email: skrobot@udel.edu
- Institution Affiliation: University of Delaware (ID: 1198)
- Phone: 8317823

- Curriculum Group: Responsible Conduct of Research
- Course Learner Group: Social and Behavioral Responsible Conduct of Research Course
- Stage: Stage 1 - RCR

- Report ID: 11569155
- Report Date: 04/07/2015
- Current Score**: 86

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<th>MOST RECENT</th>
<th>SCORE</th>
</tr>
</thead>
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</tr>
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For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing institutions identified above or have been a paid independent learner.

CITI Program
Email: citi@miami.edu
Phone: 305-243-7970
Web: http://www.citiprogram.org
Appendix B

IRB APPROVAL LETTER

DATE: October 20, 2015

TO: Christine Skrobot
FROM: University of Delaware IRB

STUDY TITLE: [818351-1] Using Mosaic Method to Inform Action Research: Implementation of a Playscape Feature

SUBMISSION TYPE: New Project
ACTION: APPROVED
APPROVAL DATE: October 20, 2015
EXPIRATION DATE: October 19, 2018
REVIEW TYPE: Expedited Review
REVIEW CATEGORY: Expedited review category # (7)

Thank you for your submission of New Project materials for this research study. The University of Delaware IRB has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a study design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

This submission has received Expedited Review based on the applicable federal regulation.

Please remember that informed consent is a process beginning with a description of the study and insurance of participant understanding followed by a signed consent form. Informed consent must continue throughout the study via a dialogue between the researcher and research participant. Federal regulations require each participant receive a copy of the signed consent document.

Please note that any revision to previously approved materials must be approved by this office prior to initiation. Please use the appropriate revision forms for this procedure.

All SERIOUS and UNEXPECTED adverse events must be reported to this office. Please use the appropriate adverse event forms for this procedure. All sponsor reporting requirements should also be followed.

Please report all NON-COMPLIANCE issues or COMPLAINTS regarding this study to this office.

Please note that all research records must be retained for a minimum of three years.