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Accessibility to Infant and Toddler Programming at a Nature-Based Zoo Preschool

by

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

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CHAPTER ONE

Introduction

Introduction

Within the past decade, there has been an increased interest in nature-based education (NAAEE, 2020). Organizations like the Natural Start Alliance and the Children & Nature Network have promoted the importance of nature-based education through conferences, research, resources, and connections. The Natural Start Alliance is a community where organizations and individuals can come together to create a future where young children can access high-quality, nature-based education (Natural Start Alliance, n.d.). Co-founded by Richard Louv, author of *Last Child in the Woods: Saving our Children from Nature-Deficit Disorder (2005)*, the Children & Nature Network was established to improve access to nature by influencing aspects of children's lives like schools and early childhood programs (Children & Nature Network, n.d.).

Educators recognize nature's importance in young children's lives as interest grows. Rachel Larimore (2019) has spent many years in education promoting the benefits of nature-based education and encouraging programs to bring nature into their lessons. Her most recent book, *Preschool Beyond Walls: Blending Early Childhood Education and Nature-Based Learning*, provides educators with inspiration on how to create unique nature experiences for children (Larimore, 2019). In addition to educators viewing nature as beneficial, other professionals have taken steps to promote nature-based learning. For example, Angela Hanscom is a pediatric occupational therapist who founded the nature-based developmental program, TimberNook. The program allows children to

address sensory issues at their own pace while freely engaging with the outdoors with limited adult interaction (Hanscom, 2016).

Settings that differ from the typical four-walled classroom have increased due to the recognition of nature-based learning from educators and researchers. Schools such as forest schools, green schools, farm schools, and zoo schools are appearing more with the recognition of nature-based education. As O'Brien and Murray (2007) mentioned, forest schools allow children frequent hands-on opportunities to learn and develop confidence in a woodland/forest environment. Green schools, such as the facilities John and Cynthia Hardy established, have become a global movement to promote learning through sustainability and environmental literacy (Green School International, n.d.). Some zoos have embraced the importance of nature-based early learning and explored creating preschool programs out of their education departments. The San Antonio Zoo has become a leader in nature-based preschool programming by establishing one of the largest nature-based preschool programs since 2004 (Davis, 2018).

These schools can range in grade level, even though more focus has been on preschool. With the rise in nature-based preschools, we see a lack of accessibility to quality experiences in nature-based programming. The San Antonio Zoo is located centrally in the city but right in the heart of an affluent neighborhood. The preschool program primarily attracts families from nearby communities and some from the surrounding San Antonio area. However, varying communities, such as low-income families or families with limited transportation, are missing the opportunity to experience nature-based learning.

Families are not only missing the opportunity to explore nature-based education due to their location, but their children's age may not coincide with the preschool ages. Infants and toddlers are younger than the preschool age in which most research is focused. I believe nature-based education is necessary for society, at all stages of life, to understand the physical world they live in. It is a nontraditional way to expand knowledge and inspire everyone to care for their world.

In this chapter, I explore the background that has led to my interest and inquiries in nature-based learning, accessibility, preschools, and infant/toddler development. With these inquiries, I question *how can an infant/toddler program designed to explore the benefits of nature-based learning reach San Antonio, TX families when created by a nature-based zoo preschool?*

Rationale/Context

Nature-based education was a key component in my youth. Whenever my family went to a zoo or aquarium, I would want to learn more about what I saw. I wanted to listen and follow the informal educators. At camps, I enjoyed the hands-on experiences outside that involved learning various aspects of nature. At school, my science teachers were my role models. I enjoyed the projects where I could teach the class about a specific environmental topic. For example, I made an entire show called "Earth Girls" for a project on the tropical rainforest. At the time, I did not even know I was participating in nature-based education. Communicating with the teacher, who has now become a mentor, is how I realized my passion for nature was inspired by moments like those described earlier. Formally and informally, I was learning about the world, nature, and our

environment. I was becoming interested in marine biology. I shared what I had learned with family, friends, and anyone who would listen.

After receiving my Bachelor of Science in Aquatic Biology, I worked as a camp counselor for SeaWorld San Antonio. That position taught me how children can be educated on marine life. When my time ended at Seaworld, I became an assistant teacher at Will Smith Zoo School. This nature-based preschool within the San Antonio Zoo extended my knowledge in ways to educate children about more than just marine life. I was teaching them about nature, in nature. As someone who grew up in a middle-class family that had the opportunity to explore the outdoors freely, I feel my experiences can inspire young children to grow a love for nature. Today, I stand as an educated woman who encourages children from varying backgrounds to explore nature.

I view education as not just traditional learning but also as a means to learn life lessons. Education grows our knowledge and experiences during educational endeavors shaping us to be the person we are meant to be. My experiences have taught me the benefits and world of nature-based education. This type of education is necessary for society of all ages to understand the world they live in and care for.

In early childhood education, there is a significant focus on being developmentally appropriate. According to the National Association for the Education of Young Children (2009), developmentally appropriate practices include getting to know students and understanding where children are in their developmental status to ensure that classroom learning is best suited for each individual. Developmentally appropriate also means being responsive to the social and cultural backgrounds from which children originate (Copple & Bredekamp, 2009). Children's most important, formative years are

the first five years of life. Therefore, educators should build close, nurturing, supportive, accepting, responsive, and positive relationships with infants, toddlers, and preschoolers.

Within the past few years, I have become interested in learning more about the accessibility gap in receiving a quality education. High-quality preschool programs are very beneficial to child development; however, there is a genuine issue that low-income families cannot access them. The common issues for accessibility are finances and the location of the school. So many questions must be researched to work towards bringing in more families to experience the benefits of high-quality early education. While my school has a mostly middle and higher socio-economic community population, we only reach families with preschool-aged children. Children start to make discoveries in their infant/toddler ages.

There have been many instances in which families are hesitant to enroll their preschoolers because they have not explored or heard of nature-based education. When discussing the parent's connection to nature, Monroe and Krasny (2016) highlighted:

Despite the cultural consensus that nature is good for children, Fraser and co-authors found variations in the support of children's nature experiences among parents of different demographic groups. Females were more likely to encourage outdoor experiences for children. Individuals with higher income and higher education levels were also more likely to encourage their children to play outside, potentially due to resource and time availability. Communities of color, with the exception of American Indians, gave children's nature experiences less value than Caucasians, although income was not considered in these results. American Indians rated the importance of these experiences the highest (p. 168).

The stories of lack of representation in nature-based programming are endless and often paired with what environmental factors are causing the barrier. The parents are going to be the ones to establish a child's educational journey. As it can be interpreted from the quote above, we learn by doing and following our parents. The environmental injustices and lack of representation lead some communities of color to give less value to nature experiences. American Indians, as further shared by Monroe and Krasny (2016), have nature intertwined with their history and stories as generations grow and continue to tie spirits and family to the environment.

In this project, families with infants and toddlers are the intended audience. As educators, our programs should be all-inclusive. "Environmental groups and educators should focus programming and outreach that promotes the importance of nature play specifically toward groups that statistically have less inclination and less access to outdoor play" (Monroe & Krasny, 2016, p. 171). We should collaborate with our local families to provide their infants and toddlers with high-quality, nature-based learning experiences.

Summary

Progress in infant and toddler nature-based education can be addressed in various ways. Ultimately, it can assist in finding ways to bring Zoo School or elements of Zoo School's philosophy to the diverse San Antonio, Texas community and spread nature-based learning to all sides and corners of the city for families with infants and toddlers. In this capstone, I dive into the benefits and barriers of nature-based learning for infants and toddlers. I look at how families can be involved in the learning process for their infants and toddlers. I work towards answering the research question: *How can an*

*infant/toddler program designed to explore the benefits of nature-based learning reach
San Antonio, TX families when created by a nature-based zoo preschool?*

CHAPTER TWO

Literature Review

Introduction

In the previous chapter, I explained the relation of this project to my personal life and the reasoning behind exploring the opportunity for infants and toddlers in nature-based learning environments. This chapter looks at the varying literature that supports an understanding of infants and toddlers in nature-based settings. Before continuing with this chapter, it is important to note how research focuses on preschool-aged children and above. Little research has been conducted on infants and toddlers, specifically engaging in elements of nature-based learning (Brownlee et al., 2009; Sikder & Flear, 2018).

This chapter looks into four themes. First, the literature review breaks down the stages of development in infants and toddlers. Then, the review discusses the many benefits of nature-based learning. Exploring the benefits of nature-based learning leads to accessibility to nature-based learning. After discussing the aspects of accessibility to nature-based learning, the review looks into the varying programs that promote nature-based learning. These topics are reviewed to answer the question: *How can an infant/toddler program designed to explore the benefits of nature-based learning reach San Antonio, TX families when created by a nature-based zoo preschool?*

Infant and Toddler Development

Infants and toddlers engage with adults and their surroundings to grow and develop skills. Children learn and build relationships during the infant/toddler years through security, exploration, and identity formation (Copple & Bredekamp, 2009). Some

members of society believe children are born natural scientists filled with curiosity and an eagerness to learn. As infants age, they compare and contrast objects as they explore the world around them (McHenry & Buerk, 2008).

This section begins with a highlight of the critical stages of development in infants and toddlers. After highlighting the key stages, the section shows how family members impact the developmental stages of infants and toddlers. Understanding the developmentally appropriate ways to encourage the growth and learning of infants and toddlers is essential.

Key Stages of Infant and Toddler Development

Infants and toddlers are classified by the ages of birth to three years old. As reprinted in Copple and Bredekamp, the organization, Zero to Three divides this age range into groups to explain the developmental stages. This section utilizes the Zero to Three division of ages to show the developmental stages of infant and toddler growth. Young infants are in the birth to nine months category, mobile infants are in the eight to 18 months category, and toddlers are in the 16 to 36 months category (2009).

Young Infants - Birth to Nine Months Old. During the birth to nine months stage, young infants discover aspects of their surroundings and build a sense of security. Young infants begin to use their senses to develop a variety of skills. Young infants discover sounds and respond with “coo” and “babble” to express their needs. Young infants engage in movement with their body parts and begin experiencing touch opportunities. These touch opportunities allow young infants to develop their physical strength and gross and fine motor skills (Copple & Bredekamp, 2009). Many actions become repetitive as young infants develop fine and gross motor skills. Repetitive

behaviors are direct routes for infants to create an understanding of movement and language (Duncan et al., 2022, p. 33).

Mobile Infants - Eight to 18 Months Old. Mobile infants start to explore the world with an investigative outlook. At this stage, mobile infants move by “scooting, using their hands and bouncing forward, commando-crawling with stomach on the ground, one-legged stand crawling, crawling on all fours, walking with assistance, and toddling” (Copple & Bredekamp, 2009, p. 60). With the new movement, mobile infants develop their gross motor skills. Social and emotional skills are developed during this stage as mobile infants communicate and engage with other infants.

Toddlers - 16 to 36 Months Old. Identification of self occurs during the toddler stage. As quoted in Copple and Bredekamp (2009), toddlers follow a theme and desire to “stand up for themselves.” Fine and large motor skills continue to develop in this stage, with the added element of walking and reaching new heights. Language development is evident through the repetition of words and phrases heard from adults, telling stories, and evoking strong feelings. With language development comes a step forward in social and emotional skills. At this age, toddlers actively engage with peers and collaborate in play and discoveries.

Summary

Infants and toddlers engage with their spaces and explore the world by utilizing their senses. In these explorations, infants and toddlers develop their life senses, or as referenced in Duncan et al. (2022), their “will senses.” These will senses comprise the “sense of well-being, sense of balance, and sense of movement” (Duncan et al., 2022, p. 38). How infants and toddlers engage with their environment and utilize their senses can

negatively or positively impact development. It is essential to understand these developmental stages so families can positively assist in encouraging the growth and learning of infants and toddlers.

Impact of Family Members on Infants and Toddlers

Now that the varying developmental stages of infants and toddlers have been explored, this section explores the family's impact on infant and toddler development. Sikder and Fler (2018) shared how there have been studies documenting adult and child interactions in formal settings; however, little is understood about what occurs before children reach school age. Sikder and Fler contributed to the research by studying infant and toddler learning of science concepts at home. The study focused on three families in Australia and Singapore with children in the 10-36 month age range for one year. By observing family interactions, they identified how conscious collaboration between parents and infants/toddlers is key to developing small science concepts, new ideas, and skills (McHenry & Buerk, 2008; Sikder & Fler, 2018).

Family members are the first to interact with children and have a “sacred responsibility” to help children grow into members of society (Duncan et al., 2022, Foreword). In how family members treat and engage with infants and toddlers, an introduction to expectations for themselves and others begins to develop. Young infants seek to feel security from their family members. The adults surrounding the infant help establish comfortability, security, trust, and understanding. Similar to how infants and toddlers change as they develop new skills, adults adapt and change interactions as infants and toddlers grow. Infants and toddlers collectively learn through mimicry and repetition of the individuals in their lives.

Family members can work alongside educators to support infant and toddler development. This can be done by encouraging infant and toddler Patterns of Play. Patterns of Play are repetitive behaviors that children engage in to build their brains' capacities and construct new knowledge and understandings (Duncan et al., 2022). Family members can assist in providing experiences that allow children to take the lead in play scenarios involving various materials.

Summary:

As mentioned by Sidker and Fler (2018), many studies examine the role of parents in various types of development through everyday experiences in infant and toddler life. The literature mentioned above is just a few of the studies to highlight. Family members create an environment where their infants and toddlers grow and develop. As this chapter transitions into the benefits of nature-based learning, it should be understood that the introduction of concepts by family members could lead infants and toddlers to understand more abstract concepts later in school (Sikder & Fler, 2018). Through an infant and toddler nature-based program like this capstone, family members can grasp an understanding of nature and the best practices for engaging and encouraging their children.

Nature-Based Learning Benefits

Nature-based learning allows children to explore the natural world regularly while incorporating the traditional concepts of education (Prochner, 2021). Researchers, scientists, and educators have rigorously worked on exploring the benefits of nature-based learning and sharing them with the world. The care of infants and toddlers has seen an increase in various research due to the developmental importance of the

infant and toddler years (Li et al., 2017). This section lists the benefits of nature-based learning for infants and toddlers. While there are many benefits to nature-based learning, this section also highlights the societal drawbacks of nature-based learning. In order for a nature-based program to be successful, the benefits of nature-based learning must be encouraged by the community.

The Benefits of Nature-Based Learning

When children consistently experience and engage in nature-based learning, they become stronger, healthier, happier, and more empathetic (Duncan, Penix, & Haughey, 2022). As Duncan et al. (2022) explained, society is starting to recognize the scientific evidence that shows infant and toddler exposure to Earth's elements is positively linked to their psychological and emotional development and healthy immune systems. Nature interactions improve infants' and toddlers' cognitive development by improving their awareness, reasoning, and observational skills (Baker, 2015).

As interpreted in Duncan et al. (2022), *heuristic play* is a term by Elinor Goldschmeid that describes the type of play children engage in with their senses and real-world objects. Infants and toddlers build their imaginations through self-led play and exploration. Nature-based play allows children to engage with natural items and materials through open-ended discovery, introducing them to language and literature (McHenry & Buerk, 2008). These explorations can occur in indoor and outdoor settings; however, outdoor environments have been found to stimulate aspects of infant and toddler development more than indoor environments (Baker, 2015).

Exposure to nature has been positively linked to infant and toddler psychological and emotional development and healthy immune systems (Duncan et al., 2022).

Understanding the benefits of nature-based learning will further support the growth of nature-based programs and family engagement in the respective programs. While there are many benefits to nature-based learning, this next section highlights the societal drawbacks of nature-based learning.

Societal Drawbacks to Nature-Based Learning

Many individuals believe that nature-based learning places children in front of risks that impact their health and well-being. In my experience, dirt is often controversial as it is associated with uncleanliness. Some believe engaging with it builds the immune system, while others hold onto the fear of infants and toddlers putting dirt in their mouths and swallowing it.

With nature-based learning, ecophobia can rise in individuals. David Sobel defined ecophobia as “a fear of ecological problems and the natural world” (Sobel, 1996, p. 8). For adults, there is an issue of what is developmentally appropriate to teach children regarding significant environmental issues and concepts. Topics like deforestation and climate change can be seen as too taboo and political for adults to communicate with younger children. These topics can be considered too complex for children’s understanding based on age. Educators will follow their curriculum in discussing such topics, but that can still draw concerns from family members. The drawback to items like this is that family members may have strong opinions on environmental topics and can feel uncomfortable with others discussing it with their children.

Summary

For a nature-based program to be successful, the community must encourage the benefits of nature-based learning and assist in enlightening those who may not fully appreciate or understand the benefits of nature-based learning. It is essential to understand that young children will discover the wonders of nature through varying experiences and develop an appreciation for life that cannot be fostered as profoundly in other avenues (Rosenow & Koralek, 2008). The following section looks at the avenues of infant and toddler access to nature-based learning.

Accessibility to Nature-Based Learning

There are gaps in education that segregate groups of all kinds; academically, culturally, socially, and much more. These gaps, which lead to a considerable disadvantage for future success, are too often caused by inadequate program funding, poor/unqualified educators, little to no parent involvement, frequent moves, and student obligations to work and care for family members (Camasso & Jagannathan, 2018). This section highlights some barriers that make families unable to access nature-based programming. Infant and toddler programming is limited in nature-based opportunities, and identification of the accessibility issue can help ensure that more programs are created.

Barriers to Nature-Based Learning

With family members being the first to interact with infants and toddlers, many attitudes are learned and influenced by the people surrounding the children. Ideas of what is best for a child's education are often rooted in culture and history that can be associated with gender, class, and race (Prochner, 2021). Ahmetoglu (2019) cited that the time spent

outdoors and in nature for children is affected by parental attitudes, “Parents can directly promote children’s outdoor recreation by providing transport, security, materials, and participating in the activities personally” (p. 234). Parents can have many fears about infants and toddlers engaging in nature-based activities (Adams, 2013; Rosenow et al., 2008; Williams, 2008). Some parents disagree with nature-based activities because of the engagement with dirt and varying weather conditions (Williams, 2008). Some parents keep their infants and toddlers inside and provide less time spent outdoors (Adams, 2013; Ahmetoglu, 2019; Rosenow et al., 2008; Williams, 2008).

When discussing infants in urban settings, Williams (2008) shared how “helping infants explore the earth is not always practical” (p. 22). Living in the city versus rural areas is a barrier for infants and toddlers. Exploring nature in urban areas can be seen as a daunting task by family members. With the growth of urbanization, there is a large decline in access to green spaces for families to engage in (Ahmetoglu, 2019). Family members share concerns about the programming location and surrounding air-quality issues, safety issues, traffic, and public access (Ahmetoglu, 2019; Rosenow et al., 2008; Williams, 2008). Environmental conditions, like air pollution, create physiological and emotional stress on infants and toddlers that can lead to impairments in development (Duncan et al., 2019).

Family income is another barrier that impedes infant and toddler access to nature-based learning opportunities. Income can impede family access to high-quality childcare, of which nature-based programs are categorized (Duncan et al., 2019). The concerns about air quality mentioned earlier are supported by the fears of economically

disadvantaged families living in areas with higher exposure to pollution (Duncan et al., 2019).

Barriers to nature-based learning can come in a variety of forms. For example, infants and toddlers are often confined to strollers when in outdoor settings. Strollers impede infant and toddler interactions with nature (Duncan et al., 2022). There are also barriers caused by tactile sensibilities, which hinder an infant and toddler's access to nature-based learning (Duncan et al., 2022).

Summary

Barriers to nature-based programming are heavily influenced by the surroundings of infants and toddlers. By identifying the income gaps and educational disparities, there is a chance that all children could have equal nature-based learning opportunities and set the foundations for becoming productive citizens of society (Duncan et al., 2019). To improve accessibility to nature-based learning, quality care must be provided for infants and toddlers. By creating programs that can support infant and toddler developmental growth, facilities can reach more families in the community. In the research conducted by Brownlee et al. (2009), directors and workers of childcare centers defined quality infant care as “meeting the affective needs of infants” (p. 468). Assuring these needs are met assists in creating accessible programming, like nature-based schools. The literature review will now examine the types of programs available in nature-based learning.

Nature-Based Programming

The Natural Start Alliance 2020 snapshot expresses how nature preschools build children's connections to the places where they live, build stewardship confidence, and create a foundation for environmental literacy (NAAEE, 2022). The Will Smith Zoo

School and San Antonio Zoo's mission is to inspire students to love, engage with, act for and protect animals and the places they live (San Antonio Zoo, n.d.). This section shares information on nature-based programming and how these programs incorporate nature-based learning. To continue the expansion of nature-based learning, it is essential to provide experiences to the community.

Types of Nature-Based Programming

Nature-based programs have gained recognition around the world intending to help children understand “that humans are a part of nature, strengthen their sensitivity towards nature, and encourage them to take more responsibility for nature (Jeronen et al., 2009, as cited in Ahmetoglu, 2019, p. 234).

Nature, Forest, and Green Schools are just a few on the list of nature-based programming. Forest schools began in Germany in the early 20th century and traveled through Europe until reaching the United States in the 1990s (Prochner, 2021). As quoted in O'Brien and Murray (2007), forest schools allow children of all ages frequent hands-on opportunities to learn and develop confidence in a woodland/forest environment. Green schools, like Green School International, have become a global movement to promote learning through sustainability and environmental literacy (Green School International, n.d.).

Research has looked into varying programs for children older than three years, but less attention has been directed to infant experiences in childcare programs (Brownlee et al., 2009). Programs for children older than three years of age and leading to five years old are categorized as preschools. Acar and Torquati shared how nature-based preschools offer many opportunities for positive behavior development through interactions and play

(as cited in Ahmetoglu, 2019, p. 234). Zoos have come to embrace the importance of nature-based early learning. Preschool programs, Zoo Schools, are being added to their education departments. The San Antonio Zoo has been a leader in nature-based preschool programming by establishing one of the largest nature-based preschool programs since 2004 (Davis, 2018). The Will Smith Zoo School at the San Antonio Zoo is a fully licensed preschool with NAEYC accreditation (Will Smith Zoo School, n.d.).

Summary

The roles of childcare facilities and schools are often associated with providing a space for children to meet the physical and emotional needs of children while parents are working (Brownlee et al., 2009). As explained, nature-based programs can be found in various forms that encourage children to explore nature and its elements. As this chapter concludes, there is a better understanding of how a nature-based zoo preschool can promote learning in infants and toddlers.

Conclusion

In this chapter, a look into the literature supporting the importance of infants and toddlers in nature-based settings has been explored. The literature has shown how infants and toddlers develop and identified the most important stages of development. Family members create an environment where their infants and toddlers grow and develop. Nature-based learning has various benefits, and adults can have differing opinions on nature-based learning. Nature-based programs can be inaccessible to infants and toddlers through physical, social, or emotional barriers. The chapter ended with a look at the specific types of nature-based programs available in which children could participate.

The next chapter describes a project that answers the question: *How can an infant/toddler program designed to explore the benefits of nature-based learning reach San Antonio, TX families when created by a nature-based zoo preschool?*

CHAPTER THREE

Project Description

Introduction

In the previous chapter, I reviewed the literature that reflects and informs us of the infant and toddler field and the connection to nature-based learning. I have identified a need for infant and toddler nature-based programming through the literature review. This chapter provides an overview of the project that answers the question: *How can an infant/toddler program designed to explore the benefits of nature-based learning reach San Antonio, TX families when created by a nature-based zoo preschool?* The project created an infant/toddler program that will be proposed to the leadership of the nature-based zoo preschool. Before describing the details of the project, it is important to note the rationale behind the project.

Rationale

When children consistently experience and engage in nature-based learning, they become stronger, healthier, happier, and more empathetic (Duncan et al., 2022). As Powers and Williams-Ridge (2019) shared in their book *Nature-Based Learning for Young Children: Anytime, Anywhere, on a Budget*, nature experiences can still allow programs to meet standards, prepare for future learning, and meet curriculum expectations. While the guide is geared towards establishing preschool programming, the information and lesson recommendations can be modified to be developmentally appropriate for infants and toddlers. Planning and establishing a program's fine details can create a unique experience for each participant.

In order for a nature-based program to be successful, the benefits of nature-based learning must be encouraged by the community and used to provide insight to those against nature-based learning. It is important to understand that young children discover the wonders of nature through varying experiences and develop an appreciation for life that cannot be fostered as profoundly in other avenues (Rosenow & Koralek, 2008).

Project Description

This project established the foundations of an infant/toddler program at a nature-based zoo preschool. The project is a guidebook that includes the participants' schedule and activities plan for an infant/toddler program. The program design was inspired by Rachel Larimore's framework for establishing nature-based preschools. When developing a program, there are multiple items to consider. Larimore stated that program development should have a general philosophy, an understanding of the governing body regulations, and specific program details. These details include identifying the ages of children involved, length of class time, amount of children and staff, and teacher-child interactions (Larimore, 2017). It is important to highlight how high-quality programs for infants and toddlers include a soothing environment, secure spaces, personal touches, simple and inviting materials, and small physical challenges (NAEYC, n.d.).

The project was presented in a guidebook format to provide a detailed program design structure. When implemented, the program is conducted in multiple four-week sessions within the zoo preschool's semester. The program's class consists of infants and toddlers with one family member. It is conducted in the manner of a half-day program that follows a schedule. Family members are taught the benefits of nature-based learning while engaging with their child(ren).

Each class is set for a specific theme around nature exploration. Classes have themes such as water-play, mud-play, sand-play, and loose parts. Each theme highlights its benefit to infant and toddler engagement. During the water-play lessons, families identify ways to work with water appropriate for their child's age. The lesson on mud-play invites family members to get muddy with the child. The sand-play lessons allow family members to identify ways for their child to stay engaged. Loose parts play is a lesson in which family members can learn how materials can be utilized outdoors to promote learning and play. The infants and toddlers engage in the space with varying activities based on the class theme. The family members observe their children and are encouraged to engage with their child and nature to promote the best learning environment.

When designing a program, it is vital to consider the social perspective of human learning. As described in chapter 24 of *21st Century Education: a reference Handbook* (2008), the social perspective focuses on social interaction and the role of interactions within social contexts. Through this lens, learning occurs through participation in activities. This theory supports the development of an infant and toddler program, as the participants learn through the observations and hands-on experiences of engaging with the natural elements in each lesson.

Audience

In this project, zoo leadership is the intended audience. Through the creation of the guidebook and this paper, zoo leadership could see how important it is to include infants and toddlers, and their families, in a nature-based program at the current zoo preschool.

In the program, families with infants and toddlers are the intended audience. Current families of the zoo preschool with younger siblings are invited to register. Inviting families with younger children makes a motion to create an all-inclusive program. As stated by Monroe and Krasny (2016), “Environmental groups and educators should focus programming and outreach that promotes the importance of nature play specifically toward groups that statistically have less inclination and less access to outdoor play” (p. 171). Educators should collaborate with local families to provide their infants and toddlers with developmentally appropriate, high-quality, nature-based learning experiences.

Setting

The zoo preschool is located in central San Antonio, just a few minutes north of the Downtown area. With a population of almost 1.5 million, San Antonio is one of the fastest-growing and seventh-largest cities in the United States (United States Census Bureau, 2020; Visit San Antonio, 2023).

The program is based on a zoo preschool and utilizes various areas of the campus. The Will Smith Zoo School campus sits on two acres of land containing a variety of outdoor learning environments (OLEs). Will Smith Zoo School is a demonstration site for the (Outdoor Learning Environment) OLE! Texas research-based initiative where early childhood spaces were designed to promote physical activity and a connection to the natural environment (Texas Children in Nature Network, n.d.). The OLEs at the zoo preschool include gardens, differing elevations, looping paths, and many other design elements that promote the physical development of the zero to five-year-old children participating in the programs.

The program would be facilitated and staffed by staff members of the zoo preschool. As it is the first time a program like this is implemented, it starts small. This allows me, an administrator, to be the primary facilitator. As the program grows, more zoo preschool staff will be assigned to facilitate the program. The program does not occur every day. This program occurs on specific, predetermined dates over four weeks.

Timeline

In developing the program, the timeline reflects the steps taken to design each component. The survey was the first component created to ensure an understanding of the objectives of the overall program. The mud-play, water-play, sand-play, and loose parts sessions were created individually to ensure they provide developmentally appropriate activities for the infant and toddler ages. Once all lessons and schedules were created, the guidebook was compiled.

The guidebook was presented to the zoo preschool leadership to identify the official start date for the program to be implemented. Once approved, the program will be scheduled for multiple four-week sessions to accommodate interested participants.

Assessment

Once the program is presented to the zoo preschool leadership team, there can be a discussion about their assessment of the overall structure and design of the infant/toddler nature-based program.

In the program, a survey is suggested for participating families to see how their thoughts on nature-based education have shifted through participation and the completion of the program. A copy of the survey can be found in Appendix A. The survey allows me to identify how the program impacts the family. By comparing the survey from the first

day to the last day, I can identify the success of how many families could access the nature-based program. Through completing the survey, I can also identify if families better understand the benefits and importance of nature-based education. The information received in the optional survey assists in providing feedback to the zoo school leadership for the program's sustainability.

A component of the survey invites the family to share their zip code. By providing the zip code, I can assess the reach of the infant/toddler program to the San Antonio, TX community.

Summary

Chapter three described the project details of a program plan that answers the: *How can an infant/toddler program designed to explore the benefits of nature-based learning reach San Antonio, TX families when created by a nature-based zoo preschool?* The setting of the project was explained to emphasize the locational elements incorporated. The intended audience was described to identify further how the project will support the desire for more infant and toddler programming. The chapter also broke down the timeline for the project in designing an infant/toddler program. The chapter concluded with a look at how the program would be assessed to ensure it can be modified for future growth and sustainability. Chapter four leads us to a reflection on the project and its components.

CHAPTER FOUR

Conclusion

Introduction

In the previous chapter, I described the Capstone Project and its components. In this final chapter, I reflect on the capstone as a whole. This project aimed to answer my research question: *How can an infant/toddler program designed to explore the benefits of nature-based learning reach San Antonio, TX families when created by a nature-based zoo preschool?* The project is a structural guide to an infant/toddler program that introduces families to four elements of nature-based learning: loose parts, mud play, sand play, and water play. Through an infant and toddler nature-based program, like this project, family members can grasp an understanding of nature-based learning and the best practices for engaging and encouraging their children in nature activities.

In this chapter, I reflect on the creation of the Capstone Project and its impact. I look at my learnings from the literature review and how that increased my knowledge in the world of infant and toddler development. Upon reviewing the literature in my Capstone work, I identify a small amount of research and programs specifically geared toward infants and toddlers in nature-based settings. I then discuss the possible implications and limitations of this project. I share ideas on how this capstone can lead to future related projects. I conclude my reflection by sharing details of the first outreach opportunity related to this capstone and highlighting the benefits to my profession. Creating a guide to an infant/toddler program allows me to establish it in my current zoo preschool and invite other nature-based facilities to understand the importance of including younger age groups.

Major Learnings

Learning opportunities are endless and can be found anywhere. I have learned about physical barriers to nature-based education related to location, transportation, and demographics. My biggest takeaway from the identified barriers is how much parents, themselves, can be a barrier to a child's educational journey. As described in a few of my resources, parents can fear infants and toddlers engaging in outdoor nature-based activities, such as mud play and risky play (Adams, 2013; Rosenow et al., 2008; Williams, 2008). These fears hinder the opportunity for infants and toddlers to experience a program like the one I created in this capstone project. I can understand why parents choose what is best for their children; however, through projects and programs like this, I can hope to educate adults on how important it is to engage with nature-based opportunities.

Unexpected Learning

When I first searched for resources about infants and toddlers in nature-based learning, I was only able to locate four resources. Seeing those four resources discouraged me, as my knowledge of early childhood education stems from my hands-on experiences at work. For a short period, I thought: Should I work on a different topic with more resources? Instead of changing topics, I chose to move forward and create a capstone that could become a fifth resource for the topic of infants and toddlers in nature-based learning. As mentioned in the introduction of this chapter, a small amount of research and programs were identified to be geared toward infants and toddlers in nature-based settings. This was my most unexpected learning experience. In the next section, I review the possible implications and limitations of the project.

Implications and Limitations

When working with infants and toddlers, it is crucial to implement developmentally appropriate practices. If a program was created but did not meet the developmentally appropriate needs of the children, then issues can arise. I have always been taught to follow best practices when working with children. Best practices ensure that standards are being met and positive engagement is occurring. This promotes positive outcomes for infant and toddler programming.

In creating this project, I did not feel any limitations. I engaged in this project utilizing a “the world is your oyster” mentality. As this project will directly impact my work, my supervisor encouraged the freedom to create a program that would best support the philosophy of our current program. As more facilities look to ours for nature-based learning inspiration, I will be able to share the details of the infant and toddler program’s development and future installation.

Future Projects

Infant and toddler programming is limited in nature-based opportunities, and identification of the accessibility issue can help ensure more programs are created. If others were to create more projects on infant and toddler programming, I would suggest identifying more barriers that may have been missed in this project. Other facilities and researchers can look into the barriers caused by their programs. By identifying their barriers, facilities can work on modifying their programs to best meet their intended participants' needs. This capstone project was developed by identifying one of the barriers of my current facility, in which we only cater to three, four, and five-year-old children.

Another suggestion would be for larger organizations, such as City Parks & Recreation departments, to adopt a program similar to the one designed in this capstone. An infant and toddler program could work in a park setting. If a city park were interested in identifying how to bring more visitors, this project could benefit them. It would allow them to reach their local families and use the components of their parks that make them unique. If a park has a creek/stream area, that could be the backdrop for a water-play lesson. If a park has a sandy spot, they could invite families to explore sand-play with their infants and toddlers. City Parks are often the only way families have access to nature, and including an educational element would encourage more time outdoors.

My final suggestion would be to utilize this project for data collection. The Family Survey, located in Appendix A, has a line for the zip code. At the end of the program, the zip codes can be entered into a data collector and used to assess how far the program has reached families geographically. The next component would be comparing and assessing the program's growth as it continues. After multiple sessions, the data can be assessed to see if the same communities are participating in the program or if the program is reaching new communities.

In summary, this capstone project provides a baseline for identifying the accessibility to infant and toddler nature-based programming. The project can be incorporated into assessing an organization's barriers, inviting more families to city parks, and collecting data.

Project Outreach

In designing an infant/toddler program for the nature-based zoo preschool where I work, I envision sharing the information with other organizations and individuals in the

field of early childhood education. The ideal place to share information and resources is at conferences. My first-ever conference presentation will be regarding this Capstone Project.

This Capstone Project will be included in a presentation at the 2023 Inside-Outside International Conference on June 13, 2023. The session is titled *Nurture & Nature: Accessibility to infant and toddler programming at nature-based schools*. The session will allow conference attendees to learn about the benefits of nature-based learning for infants and toddlers, as identified in Chapter 2. Infant and toddler programming is limited in nature-based opportunities, and acknowledging and identifying the accessibility issues can help ensure that more programs are created. Attendees will examine the barriers families with infants and toddlers face when considering nature-based learning opportunities and ideas on breaking those barriers. In the session, attendees will: (1) reflect on how their current facilities and organizations include infants and toddlers in programming; (2) modify a lesson to fit the needs of infants and toddlers based on the presentation and information provided; (3) share any ideas that may have been inspired from the session on how to establish infant and toddler programming within their facility. Attendees will also be able to engage in sensory play during this presentation. The natural items for sensory play will symbolize the many ways infants and toddlers can experience nature-based learning and play.

At the end of the presentation, attendees can view the guide created for this Capstone and the many resources that assisted in developing the Capstone and infant/toddler program. Through this conference experience, I plan to keep the conversation open for infant and toddler nature-based programming.

Benefits to the Profession

The world of education is constantly changing and improving with new techniques and materials. By creating a project like this program, I am adding to the level of knowledge on infant and toddler nature-based learning opportunities for any individual or facility.

Through this project, I can encourage families with infants and toddlers to consider a nature-based zoo preschool as their child's first educational experience. It is essential for families to feel comfortable with their choice of their child's school. If a program, like an infant/toddler one designed in this capstone, can eliminate parents' fears, then there is hope. There is hope that the child will receive a high-quality education while learning to be compassionate to the world around them. The many benefits, such as health and developmental, can be further explored and witnessed when engaging in nature-based learning programs.

I feel this project will also help educators grow. I started as an informal educator, so I had the benefit of learning about nature-based education first-hand. I have worked alongside educators in the traditional setting, and they mentioned how nature-based learning was either avoided, minimal, or disapproved of. Through the program developed in this project, educators can better understand developmentally appropriate practices and how they can be modified to include nature-based learning opportunities.

Finally, this project could encourage more zoos to create early childhood education opportunities. Zoos could use this project to develop a program that invites families with younger children to their facilities. Working in a zoo preschool has allowed me to see the demand for nature-based learning opportunities, even more so in unique

settings like zoos. This public setting would give society a better understanding and perspective on the importance of nature-based learning for children from birth to age three.

Conclusion

The idea for this project presented itself when trying to identify ways to bring more families into my nature-based zoo preschool. With many families inquiring about bringing their under three-year-old children, I asked the question: *How can an infant/toddler program designed to explore the benefits of nature-based learning reach San Antonio, TX families when created by a nature-based zoo preschool?* For one year, I dove into the world of infant and toddler programming. While the information on infant and toddler development had been established for years, I was just becoming familiarized with the topic, as our program only caters to three, four, and five-year-olds.

In completing this project, I grew my library with books on nature-based learning, such as *Nature-based learning for young children: Anytime, anywhere, on any budget* (2019) by Powers, J., Williams-Ridge, S., and books on infant and toddler development such as *The honeycomb hypothesis: How infants, toddlers and two-year-olds learn through nature play* (2022) by Duncan, S., Penix, S., & Haughey, S. These books allowed me to discover nature-based lessons that could be modified to be developmentally appropriate for infants and toddlers.

My goal is that this project encourages families to consider and participate in nature-based programs when starting their child's educational journey.

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APPENDIX A

Participating Family Survey

Date of Program _____

Age of Child in Program _____

Zip Code _____

Please rate the following statements based on your current knowledge and experience.

1 - Strongly Disagree — 5 - Strongly Agree

I know what nature-based education is.	1	2	3	4	5
I know the benefits of nature-based learning for my infant/toddler.	1	2	3	4	5
My child has access to explore nature on a regular basis.	1	2	3	4	5
My family lives in an area where nature can be accessed for engagement.	1	2	3	4	5
I am comfortable with my child engaging in nature.	1	2	3	4	5
I plan to enroll my child into a nature-based preschool, like zoo school.	1	2	3	4	5