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Cultivating Environmental Connection and Deeper Learning through Field Trips to Outdoor
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Cultivating Environmental Connection and Deeper Learning through Field Trips to Outdoor
Learning Spaces: A Qualitative Analysis

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Abstract

Policymakers, scholars, and educators are concerned about youth well-being and the rise of chronic absenteeism, suggesting student disengagement from learning in school coupled with the rise of standardization practices. Researchers have studied the general benefits of outdoor learning spaces for increased student engagement and improved overall well-being. However, a gap remains in our understanding of how a specifically designed outdoor learning space, incorporating both natural elements and planned activities, can foster environmental connection and deeper learning for students, as there is limited research on outdoor learning field trips. This study employed a case study methodology to investigate how student learning experiences emerged during educational field trips to an outdoor learning space and what structures and planned activities are present at the outdoor learning space, utilizing a place-based education framework. Data includes observations of two elementary school field trips, post field trip surveys, and organizational documents. The findings indicate that the field trips not only fostered students' emotional and cognitive engagement with their environment through expressions of awe and wonder but also facilitated a deeper understanding of ecological concepts, highlighting the role of both deeper learning and supportive structures within the Outdoor Learning Space. This research advances the literature by examining student engagement, environmental connection, and potential non-cognitive outcomes like "Sense of Place" development and parental engagement within a designed OLS (Outdoor Learning Space) context.

Introduction

Educational leaders and policymakers have become increasingly concerned about the declining well-being among youth coupled with a rise in chronic absenteeism. According to statistics from the National Center for Education, school administrators note that chronic absenteeism—defined as missing ten percent or more of the academic year—has significantly increased, with seventy-four percent of elementary schools, seventy two percent of schools with lower student poverty rates, and seventy percent of rural schools. Compounding this issue is the rise of school accountability measures and standardization practices, which often prioritize rigid curricula and standardized testing at the expense of hands-on learning opportunities, such as field trips to outdoor learning spaces (Kenna & Russell III, 2015; Linn, 2000; Whitesell, 2016). As schools focus more on meeting standardized benchmarks, they may inadvertently limit the hands-on experiences that foster a connection to nature, ultimately leading to increased disengagement and absenteeism among students.

Similarly, studies indicate that children today spend less time outdoors compared to previous generations, raising concerns about the potential effects on their environmental connection and overall well-being (Dale et al., 2020; Chawla, 2015; Kahn & Kellert, 2002; Kuo et al., 2019; McCurdy et al., 2010; Tillmann et al., 2018). This substantial decrease in time spent outside may contribute to detachment from the natural world, which can negatively impact students.

Environmental connection refers to the relationship individuals, especially children, have with the surrounding world, including their comprehension, appreciation, and interactions with nature (Kahn & Kellert, 2002; Kuo et al., 2019; McCurdy et al., 2010; Tillmann et al., 2018). The potential effects of children being environmentally connected are particularly concerning for

early elementary students, who are developing their understanding of the natural world (Kahn & Kellert, 2002; Sobel, 2005). Elementary school serves as a fundamental stage for cognitive development, emotional well-being, and it is the foundation of the ability to understand the environment (Dewey, 1899; Kahn & Kellert, 2002; Kuo et al., 2019; McCurdy et al., 2010; Piaget, 1953; Tillmann et al., 2018; Wells, 2000). Additionally, research suggests that increases in sedentary lifestyles and overexposure to screen time could potentially hinder children's exploration of the natural world and their ability to form meaningful connections with it (Kahn & Kellert, 2002; McCurdy et al., 2010; Oswald et al., 2020). Early elementary school serves as a foundational stage for cognitive development, emotional well-being, and the foundation of environmental understanding abilities (Dewey, 1899; Kahn & Kellert, 2002; Kuo et al., 2019; McCurdy et al., 2010; Piaget, 1953; Tillmann et al., 2018; Wells, 2000).

As children become less connected to nature, they may also be less motivated to attend school, leading to increased absenteeism. In contrast, nurturing a strong relationship to the natural world through outdoor learning experiences can improve students' well-being, enhance their motivation to learn, and decrease absenteeism.

While traditional classroom learning can provide knowledge about environmental topics, immersive learning is important to create a deeper connection with nature to promote and develop cognitive, interpersonal and intrapersonal competencies (Dewey, 1899; Huberman et al., 2014; Kahn & Kellert, 2002; Kuo et al., 2019; McCurdy et al., 2010; Piaget, 1953; Tillmann et al., 2018; Wells, 2000). Outdoor learning fosters environmental understanding and connection through discovery in natural settings, however research has yet to demonstrate sufficiently how specifically designed outdoor spaces, incorporating both natural elements and planned activities,

can foster deeper emotional connections with nature among students (Chawla, 2015; Dale et al., 2020; Kahn & Kellert, 2002; Sobel, 2005).

Studies have documented positive impacts on children's academic performance, social-emotional development, and environmental awareness through outdoor learning practices (Ardoin et al., 2015; Kahn & Kellert, 2002; Kuo et al., 2019; McCurdy et al., 2010; Tillmann et al., 2018). However, much of this research focuses on the overall benefits of outdoor learning spaces (OLS) within the school site or immediate surroundings. A gap remains in our understanding of how specifically designed OLS, incorporating both natural elements and planned activities, can foster deeper emotional connections with nature and cultivate environmental connection among students (Chawla, 2015; Dale et al., 2020; Hoover, 2020). To address this gap this paper asks:

1. *How do student learning experiences emerge during an educational field trip to an outdoor learning space?*
2. *How do structures or planned activities emerge during an educational field trip to an outdoor learning space?*

Drawing upon the framework of place-based education (Sobel, 2005), I explore how students, teachers, parent chaperones and program staff interact with the natural elements, participate in planned activities, and express their connection to the environment during their field trips to the specifically designed outdoor learning space. Data collection includes observations of these interactions, along with an analysis of organizational documents (established values and guided curriculum) to understand the alignment between design and outcomes. Additionally, post-trip surveys are distributed to capture a wider range of perspectives and potentially identify any disconfirming information.

Review of Literature

Childhood Development and Nature

According to Dewey's (1899) philosophy of progressive education and Piaget's (1953) theory of cognitive development, early childhood provides the opportunity for fostering a positive relationship with nature and cultivating higher-order competencies (Dewey, 1899; Kahn & Kellert, 2002; Kuo et al., 2019; McCurdy et al., 2010; Piaget, 1953; Tillmann et al., 2018; Wells, 2000). These theories highlight the potential for hands-on exploration in nature and outdoor learning to support the development of school-based children.

According to research, hands-on learning outdoors produces improvements across cognitive, social, emotional, and behavioral disciplines in children (Ardoin et al., 2015, Kahn & Kellert, 2002; McCurdy et al., 2010; Sobel, 2005; Tillman et al., 2018; Wells, 2000). Further, literature suggests social interaction and collaboration can develop during exploration and discovery in the natural world (Kahn & Kellert, 2002; Sobel, 2005).

Using nature-based practices to improve overall well-being has been well documented in the literature over several decades (Hart, 1979; Kahn & Kellert, 2002; Lynch, 1977; Moore, 1986; Sobel, 2005). Chawla (2015) describes how this body of research began with observational studies in the 1970s, highlighting early works by Lynch (1977), Hart (1979), and Moore (1986). Lynch's (1977) work involved interviewing a small group of children aged ten to fifteen about their perceptions of their surroundings, observing their outdoor behaviors, and gathering insights from parents and local officials regarding changes in local conditions. Children were encouraged to express their feelings through drawings, guided tours, and photographs of significant places, revealing natural areas like riverbanks and woods provided essential spaces for independence in urban settings. Similarly, Hart's (1979) study in a small Vermont town involved all eighty-six

elementary school children, employing diverse methods such as model-building, geographic diaries, and child-led expeditions to uncover their favorite places, which included natural features and personal spaces rather than playground equipment. Moore (1986) expanded this research to the San Francisco Bay area, finding that, despite urban environments, children frequently favored natural elements, emphasizing that supportive environments foster exploration and skill development.

Subsequently, in the 1990s, there was a notable shift toward quasi-experimental and correlational designs to investigate the benefits of access to nature for children's overall well-being (Chawla, 2015). Additionally, these studies found that increased exposure to natural environments was associated with improvements in children's cognitive functioning, emotional regulation, and social interactions, highlighting the importance of nature in fostering healthy development and well-being (Ardoin et al., 2015; Kuo et al., 2019; McCurdy et al., 2010; Wells, 2000).

Since this shift to quantitative studies, there has been a decrease in the qualitative experiences reported in nature-based learning which are important to understand the nuanced and subjective ways in which children engage with natural environments. This decline raises important questions about how children's lived experiences in nature can inform educational practices and policies, as well as highlighting potential gaps in research regarding the emotional, social, and cultural dimensions of nature-based learning that quantitative measures may overlook.

Outdoor experiences provide children with opportunities for hands-on exploration, which enhances cognitive function and fosters curiosity and creativity (Ardoin et al., 2015; Kahn & Kellert, 2002; Kuo et al., 2019; McCurdy et al., 2010; Wells, 2000). Additionally, social

interactions and collaborative activities in natural settings help develop social skills and build a sense of community among children (Sobel, 2005). These findings highlight the importance of integrating outdoor learning into educational experiences, as they facilitate cognitive enhancement but also promote creativity and social development.

Conversely, deficient exposure to outdoors can hinder development. Studies highlight sedentary lifestyles, and excessive screens may impede physical and cognitive growth (McCurdy et al., 2010; Oswald et al., 2020; Wells, 2000). Children who spend too much time indoors are at a higher risk of developing attention disorders, anxiety, and depression (Tillmann et al., 2018). Further, the lack of interaction with natural environments can lead to a diminished sense of environmental connection (Chawla, 2015).

Additionally, the increasing spread of urban development over the past century has notably reduced natural area availability for many students. Urbanization led to losses of green spaces, such as parks and forests, which are essential for outdoor play and learning (Jarvis, 2020). This reduction in accessible nature adds to the developing detachment between children and the natural world, can impact their overall well-being and environmental connection (Tillmann et al., 2018).

The rise of technology and social media has undeniably contributed to reducing the time students spend outdoors exploring nature. The growth of digital devices in education has shifted children's attention from outdoor play to screen-based activities. Research suggests that increased screen time is correlated with diminished outdoor activity and exploration (Oswald et al., 2020 & McCurdy et al., 2010). By addressing these issues, this research aims to explore how specifically designed outdoor learning spaces can counteract these trends and foster a deeper connection between children and nature, supporting their overall development and well-being.

Engagement in Deeper Learning

Connection to nature is important for physical and emotional well-being, but also for facilitating deeper learning experiences that challenge students to apply insights creatively. Deeper learning is an educational framework prioritizes these core concepts: academic content, critical thinking, problem-solving, collaboration, effective communication, self-directed learning, and the development of academic mindsets (Hewlett Foundation, 2013 & Huberman et al., 2014). Research explores the significance of deeper learning in schools, highlighting its role in fostering a comprehensive understanding of academic content and the ability to apply knowledge in real-world contexts (Richardson et al., 2024 & Huberman et al., 2014). By actively participating in educational activities requiring application of lessons, students engage in deeper learning.

Deeper learning activities should build upon a well-defined knowledge base that students have either already encountered or will be introduced to within the context of their work (Hewlett Foundation, 2013 & Huberman et al., 2014). According to Huberman et al. (2014), deeper learning can be characterized by cognitive, interpersonal, and intrapersonal competencies. *Cognitive skills* involve comprehending, examining, and applying ideas across various subjects, this incorporates critical thinking and problem-solving. *Interpersonal competencies* relate to communicating, collaboration, and engagement with others in social contexts, fostering participation and teamwork. Lastly, *intrapersonal competencies* emphasize self-awareness and emotional intelligence, encouraging students to reflect on their thoughts, feelings, and experiences, which includes traits like curiosity and a sense of place.

Nature-based experiences has demonstrated that they can enhance these deeper learning competencies. Such experiences can enhance students' motivation, curiosity, and sense of

wonder, leading to deeper engagement with academic material (Chawla, 2015; Dale et al., 2020; Hoover, 2020; Kahn & Kellert, 2002; Sobel, 2005). Outdoor learning spaces provide opportunities for students to explore, investigate, and make connections between classroom learning and real-world experiences, fostering a deeper understanding of concepts and promoting meaningful learning outcomes (Chawla, 2015; Dale et al., 2020; Hoover, 2020). By immersing students in nature and encouraging active exploration, outdoor learning environments create a context that naturally promotes engagement in deeper learning. The authentic experiences and opportunities for collaboration in outdoor settings can motivate students' curiosity, creativity, and problem-solving skills, leading to deeper learning experiences.

Environmental Connection

The literature highlights the many benefits that a connection with nature can have for children's development and well-being (Chawla, 2015; Dale et al., 2020). The idea of environmental connection captures the emotional, cognitive, and behavioral relationship that children form with the natural world. Research emphasizes how immersing oneself in the natural world can cultivate self-discipline, nurture creativity, and instill a sense of wonder in children (Chawla, 2015; Dale et al., 2020; Hoover, 2020; Kahn & Kellert, 2002; Sobel, 2005).

These studies demonstrate that outdoor education experiences, such as field trips and other nature-based activities, enable students to gain a deeper understanding of natural concepts while enhancing their self-discipline and creativity (Chawla, 2015; Dale et al., 2020; Hoover, 2020; Kahn & Kellert, 2002; Sobel, 2005). However, Chawla (2015) calls for more qualitative research to understand the nuanced effects of outdoor education on children and their caretakers. Despite the clear benefits identified, there is a gap in the research regarding qualitative experiences of outdoor education experiences of children and their caretakers. This gap

underscores the importance of conducting qualitative case studies to explore the experiences of children and their caretakers and to better understand the natural and learning experiences of these educational practices.

Existing research established the effectiveness of school gardens and other agriculture-focused outdoor learning programs in promoting environmental knowledge, attitudes, and responsible behaviors (Alexander & Grannum, 2022 & Huys et al., 2017). Some studies using qualitative methods have identified specific mechanisms through which hands-on experiences in outdoor settings foster environmental stewardship and sustainable practices among students (Chawla, 2015; Dale et al., 2020; Hoover, 2020). However, this leaves a gap in understanding the qualitative experiences of students, teachers, parents, and program staff in outdoor learning, their perceptions of the learning environment, and the specific mechanisms by which outdoor learning might influence learning. More research is needed to understand how these elements interact and work together to understanding of how specifically designed outdoor learning spaces, incorporating both natural elements and planned activities, can foster more meaningful experiences for students compared to at their traditional school sites.

Outdoor Learning Space

An OLS is a designated outdoor area intentionally created to facilitate learning experiences. Outdoor learning can transcend traditional education by immersing students in organic experiences within natural environments, and studies suggest that outdoor learning fosters deeper understanding of science concepts through hands-on exploration and observation (Chawla, 2015; Dale et al., 2020; Hoover, 2020; Kahn & Kellert, 2002; Sobel, 2005). Outdoor learning can take various forms, such as students exploring their natural surroundings or

participating in activities like scavenger hunts. Additionally, outdoor learning can involve teachers conducting lessons outdoors, utilizing the environment as a classroom.

Kahn and Kellert (2002) explain distinct types of educational experiences that children may have in outdoor learning practices, including *direct* and *indirect* experiences. Direct experience involves actual physical contact with natural settings and nonhuman species. The child's direct experience of nature is viewed as unplanned rather than formally organized into structured programs and activities.

In contrast, a child's indirect experience of nature involves actual physical contact but occurs in more restricted, programmed, and managed contexts. Nature in these situations is typically the product of deliberate and extensive human mastery and manipulation. Examples may include children encountering plants, animals, and habitats in zoos, aquariums, and natural history or science museums.

In the context of this study, the focus leans more toward indirect contact with nature; however, the curriculum and natural habitats in the park are designed to facilitate opportunities for direct contact. This includes features such as restored natural habitats, structures made from recycled trees sourced from the park, and more formally structured learning areas, both indoors and outdoors. Students are provided with the chance to independently explore and interact with the elements of the intentionally designed outdoor learning environment.

An Outdoor Learning Space (OLS) is a designated outdoor area intentionally designed to facilitate these educational experiences. OLS can enhance learning by immersing students in natural environments, promoting hands-on exploration and observation, which can deepen their understanding of scientific concepts (Chawla, 2015; Dale et al., 2020; Hoover, 2020; Sobel, 2005). Incorporating elements like diverse vegetation, water features, and natural materials in

OLS can also promote positive emotions and increase students' engagement with nature (Chawla, 2015; Dale et al., 2020; Hoover, 2020; Kahn & Kellert, 2002; Sobel, 2005).

Studies suggest that specific design elements in OLS, including diverse vegetation, water features, and natural materials, can promote positive emotions and enhance engagement with nature (Chawla, 2015; Dale et al., 2020; Hoover, 2020; Kahn & Kellert, 2002; Sobel, 2005).

Additionally, research emphasizes the importance of planned activities within OLS, curriculum-based programs tailored to the natural environment can deepen understanding and foster connection (Chawla, 2015; Dale et al., 2020; Hoover, 2020; Kahn & Kellert, 2002; Sobel, 2005). However, further exploration is needed to understand how design elements and planned activities interact to enhance student engagement and connection to the environment. Hands-on, deeper learning in natural settings allows students to engage with academic content in meaningful ways, often leading to a better understanding of environmental concepts (Chawla, 2015; Dale et al., 2020; Sobel, 2005). This study aims to fill these gaps by investigating how specific design elements and planned activities in outdoor learning spaces (OLS) affect student engagement and their connection to the environment as well as specific structures within the learning space to promote these experiences. By gathering insights from students, teachers, and parents, this research will examine how these elements can enhance educational experiences.

Educational Field Trips

Field trips offer a tool for educators to provide students with hands-on learning experiences in new environments (Behrendt & Franklin, 2014; Dale et al., 2020; Hoover, 2020). Researchers suggest that environmental education field trips can lead to increased environmental knowledge and potentially positive impacts on students' environmental attitudes and connection to nature (Chawla, 2015; Dale et al., 2020; Hoover, 2020). Unlike traditional field trip locations

which often consist of museums, historical sites, or indoor facilities that primarily focus on static exhibits or guided tours, OLS can leverage the natural environment itself as a learning tool. Studies of field trips to outdoor places have been conducted in various settings, including wetlands, rivers, national, state, and local parks, wildlife reserves, and public forests (Chawla, 2015; Dale et al., 2020; Hoover, 2020; Sobel, 2005). These spaces can be designed to incorporate diverse plant life, water features, and natural materials, fostering a deeper connection with nature (Chawla, 2015; Dale et al., 2020; Hoover, 2020). Curriculum-based activities tailored to the unique features of the OLS can further enhance engagement and learning objectives (Sobel, 2005).

Thus, while scholars highlight the potential of outdoor learning, a gap remains in understanding how outdoor learning field trips can be used to enhance engagement at specifically designed spaces (Chawla, 2015; Dale et al., 2020; Hoover, 2020; Sobel, 2005). Ardoin et al. (2015) and Tillmann et al. (2018) conducted systematic and literature reviews on student outcomes in outdoor learning. While their findings provide insights into effectiveness, they primarily rely on generalized results that may overlook the nuances of engagement in specifically designed environments. Moreover, in the last twenty years, most studies on outdoor learning are quantitative or systemic reviews of existing literature, focusing on school-based engagement in outdoor learning (Ardoin et al., 2015; McCurdy et al., 2010; Tillmann et al., 2018). This leaves a gap in understanding the qualitative experiences of students, teachers, and parents in outdoor learning, to identify specific experiences or perceptions through which outdoor learning might influence engagement in deeper learning and environmental connection.

Importantly, recent research indicates that field trips can positively impact student achievement, even within the current climate of high stakes testing and school accountability. A

study utilizing six years of student-level data found that field trips to informal science education institutions in New York City had small positive effects on students' performance on the state's standardized eighth-grade science exam (Whitesell, 2016). This evidence suggests that field trips can serve as effective tools for providing the enrichment experiences that families desire without compromising student test scores, thus potentially helping to reduce achievement gaps (Kenna & Russell III, 2015; Linn, 2000; Whitesell, 2016). This finding is particularly meaningful for policymakers and administrators, as it reinforces the value of integrating field trips into educational curricula, demonstrating that these transformational educational practices can succeed in the era of accountability.

Conceptual Framework

This research explores Sobel's (2004) framework of place-based education to conceptualize the interplay between a designed outdoor space, learner interactions within that space, and engagement in deeper learning within a specifically designed outdoor learning space (OLS). Place-based education draws from Dewey's (1906) progressive education philosophy which emphasized learning through experience and Piaget's (1953) constructivism theory focusing on the importance of hands-on experiences for cognitive development. Sobel's (2004) framework builds on these foundational theories proposes that local environments can serve as active classrooms where students engage in real-world, hands-on learning and problem-solving across disciplines through practical examples and case studies highlighting how integrating real-world experiences and community involvement can enhance educational outcomes. PBE (Place Based Education) describes an environment and approach where students explore surroundings, engage with local issues, develop a sense of place and community. An example of place-based education (PBE) could be a field trip to a local river where students participate in water quality

testing. During this experience, they learn about the ecosystem, the importance of clean water, and the impact of human activity on their local environment. By integrating local environmental and community contexts into the curriculum, PBE aims to make learning more relevant and meaningful for students.

PBE is thought to foster deeper learning by engaging students with real-world issues and challenges in their local environment through cognitive, interpersonal, and intrapersonal competencies. This promotes students to delve deeper into complex concepts through questioning and exploration (Sobel, 2005). A designed OLS a learning environment in which PBE can occur. A designed OLS has various kinds of natural environments for students to explore—such as vegetation and water features—as well as specially designed and dedicated activity areas and structures that support students to engage in learning within and about these environments. In an OLS, such elements are designed to accompany planned learning activities, such as curriculum-based programs specifically tailored to the local natural environment and integrate deeper learning competencies during educational field trips. Drawing upon PBE principles, these features and curricular activities actively engage students with the natural world and promote learning objectives.

The interaction of intrapersonal, interpersonal, and cognitive competencies is central to this engagement. *Cognitive competencies* are developed as students analyze and apply knowledge gained through hands-on experiences in the OLS, enhancing their critical thinking and problem-solving skills. For example, while investigating a local ecosystem, students might apply scientific principles to understand relationships, thereby deepening their cognitive engagement.

Interpersonal competencies are fostered through collaborative activities that require communication and teamwork. As students work together to complete tasks, such as building bee hotels or conducting a nature scavenger hunt, they learn to share ideas and support one another, enhancing their social skills and collaborative abilities.

Intrapersonal competencies are fostered as students reflect on their experiences and develop a sense of self-awareness and emotional intelligence. Engaging with the natural environment encourages students to explore their feelings of curiosity and wonder and their connection to the world around them. This reflective process can lead to a greater appreciation for nature and a stronger sense of place.

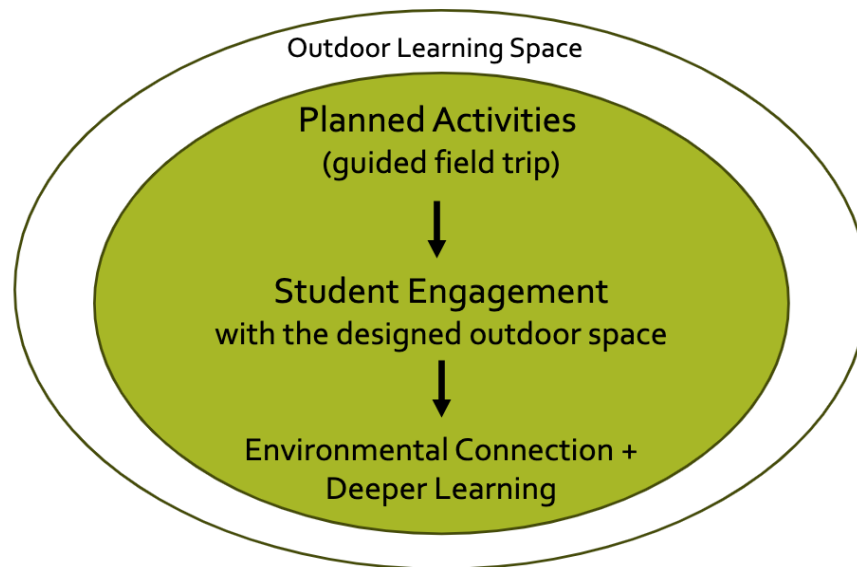
Together, these competencies help understand the framework for deeper learning within the OLS, as shown in Figure 1 below. I theorize that engagement in deeper learning can be observed at the OLS during field trips through a set of student actions and interactions: *exploration, participation, curiosity, and positive reactions*. These student actions and interactions, and examples of how they might be observed are detailed in appendix B.

To guide this research that explores the interplay between design elements, planned activities, and their influence on student engagement with deeper learning and connection with the natural world, Figure 1 below illustrates the framework for place-based education (PBE) within the context of an outdoor learning space (OLS). The framework depicts a chain of learning that starts with planned curricular activities offered during the field trip and designed to engage students in deeper learning with the natural elements and features within the OLS. This intentional instruction enables students to interact with the outdoor environment and aims to foster student engagement in deeper learning, curiosity, and exploration. Through active participation in hands-on experiences and collaborative learning opportunities, students develop

a deeper connection with the local environment and the concepts being explored. This engagement in deeper learning is believed to enhance students' environmental connection and cognitive, interpersonal, and intrapersonal competencies in the educational setting. The framework suggests a process where planned activities lead to student engagement with the designed outdoor space, resulting in environmental connection and deeper learning outcomes.

Figure 1

Framework of Place-Based Education within the Context of an OLS



Methods

This study explores:

1. *How do student learning experiences emerge during an educational field trip to an outdoor learning space?*
2. *How do structures or planned activities emerge during an educational field trip to an outdoor learning space?*

Methodology and Study Setting

A single-case study (Yin, 2018) is a useful methodology for the research question exploring student engagement and environmental connection in a specific outdoor learning space. The setting of this study is an award-winning one-hundred-acre OLS with diverse vegetation—including various forest-like trees, a pond and wetlands, and an English garden— as well as sports courts, play structures and dedicated areas for programming to promote exploration and hands-on activities, offering a unique environment for students to connect with nature. Field trips to this OLS offer a "critical case" for exploring student, teacher and parent engagement and environmental connection at an outdoor learning space (Yin, 2018). Its design, diverse natural features, and focus on place-based education make it a valuable example for understanding the potential of these spaces.

Study Setting

The OLS is in the central region of the United States. This educational park facilitates approximately 40 guided field trips annually, targeting a diverse range of grades, particularly focusing on students from title I schools in the same community as the learning space. Each field trip is designed to align with state educational standards, ensuring that they meet the learning objectives for the respective grade levels.

The OLS provides several different free educational experiences, year-round for students and their families. This includes a pop-up science, technology, engineering, art and mathematics (STEAM) cart, an outdoor mobile library, explorer backpacks, teacher-led and guided field trips. All the field trips to the OLS are standard aligned and grade specific for teachers and program staff to lead students on an educational experience. Guided field trips at this OLS are two hours long and consist of a range of structured and open learning activities.

This study focuses on observations of guided field trips involving a curriculum designed for second grade, titled the “Diversity of Life: Pollinators and Plants.” During the Pollinators field trip, as students arrive, they are provided with scavenger hunt sheets and magnifying glasses, ready to explore. Facilitators lead them through a series of activities, beginning with bee breathing exercises fostering participation and curiosity. The group continues with a Pollinator Walk, observing local plants and wildlife in various habitats within the park. They note the presence of red-winged blackbirds and eastern grey squirrels while learning about the significance of plants in attracting pollinators. In the Urban Forest, facilitators explain the role of bats as pollinators. At the English garden, students learn about Monarch butterflies and the essential resources provided by Monarch Waystations during their migration. The hands-on portion of the trip involves creating seed bombs and bee hotels, where students actively participate in promoting pollinator habitats. The field trip concludes with a reflective discussion, encouraging students to share their experiences and consider how they can support pollinators in their own communities.

Participants

This study focuses on two field trips of two different classes and schools to the outdoor learning space that participated in the Pollinators curriculum. One field trip involved a rural school with 2 classes of students, totaling 31 students and 17 chaperones. The other field trip included a suburban school with 21 students and 2 chaperones in attendance. Both schools were within a 40-mile radius of the outdoor learning space.

Participants were selected using purposeful sampling, with specific criteria that included students in early elementary grades who were actively participating in the Pollinators curriculum. The decision to focus on early elementary students was driven by the understanding that this

developmental stage is critical for fostering foundational connections to the environment and cultivating an interest in nature. The Pollinators curriculum was chosen for this study because it was the most attended program during the 2022-2023 academic year, indicating its popularity and relevance among educators and students. Focusing on a single curriculum allows for a more in-depth exploration of how structured educational experiences, such as field trips, can foster deeper learning and enhance environmental connections.

Participants for this study were recruited to participate in guided field trips to the OLS. The sampling criteria included students from two different schools (one rural and one suburban), their teachers, parent chaperones, and program staff. Recruitment was conducted through direct outreach to the schools, with invitations extended to participate in the field trips specifically targeting the pollinator curriculum. This approach ensured that the participants were not only relevant to the study's focus but also provided insights into the experiences of students in both rural and suburban contexts.

Data Collection

I used direct nonparticipant observations to trace how students, teachers, parents, and program staff interact with the natural elements, participate in planned activities, and express their connection to the environment during a field trip to a specifically designed OLS. This included being physically present and actively observing the field trips unfolding to record behavior in the environment where it naturally occurs while retaining the position of neutrality by being a non-participant (Ciesielska et al., 2018).

Data includes twenty-three pages of field notes from two observations, involving a total of 75 study participants, five post field trip teacher surveys, and two organizational documents. Guided by the conceptual framework, field notes captured low-inference descriptions of student,

teacher, parent chaperone and facilitator interactions, both verbal and nonverbal, along with their engagement with the environment. Higher-inference interpretations and connections to the conceptual framework were noted in the margins. See Appendix D for a sample of one page of field notes.

Field notes are analyzed for interactions and behaviors of engagement in deeper learning, environmental connection, and non-engagement, and OLS design and curriculum features. Organizational documents include the established values and guided curriculum of the OLS. Analysis identified learning goals and design principles, allowing for triangulation with observational data to understand the connection between design and results.

Document Analysis

To gain a deeper understanding of the alignment between the OLS design and intended learning outcomes, organizational documents (established values and guided curriculum) were analyzed. The guided curriculum outlines the educational standards and objectives that shape the curriculum, detailing how outdoor learning experiences can meet state educational standards. The established values document articulates the core principles and beliefs of the organization's approach to education. These documents provided insights into the overarching goals and structure of the outdoor learning experience. By comparing observed student experiences and organizational curriculum documents, the research can show how the OLS intends for engagement in deeper learning and environmental connection to be fostered through its designed spaces and activities.

Post Field Trip Surveys

To gather different perspectives and potentially identify disconfirming evidence, post-trip surveys were administered to the five teachers and support staff attending the field trips to the

OLS. These surveys aimed to capture a broader range of experiences and opinions related to the field trip. The questions included in the survey focused on participants' perceptions of the outdoor learning experience as well as the effectiveness of the curriculum and learning space in meeting educational objectives. In total, all five invited participants completed the surveys, resulting in a 100% response rate. A copy of the survey instrument is included as appendix C for further reference.

Threats to Validity

This qualitative study, which examines two field trips within a single Outdoor Learning Space (OLS), acknowledges the limitation of generalizability due to its focused scope. While the findings from this in-depth investigation of a critical case may not be generalizable, it aims to contribute to theoretical understandings of how thoughtfully designed OLS can enhance student engagement in place-based learning, deeper learning, and foster connections to the environment.

An important consideration in this study is the potential for researcher bias, which can arise from the observational nature of the data collection. To mitigate this risk, I am implementing several strategies. First, I will specify and operationalize my conceptual framework to provide clarity on the concepts being studied and to guide my observations. This step will help ensure that my interpretations remain grounded in the theoretical context I am exploring. Additionally, I will employ triangulation by incorporating multiple data sources, such as organization documents (established values and guided curriculum), field notes from observations, and post-field trip teacher surveys. This approach will help validate the findings and provide a deeper understanding of the experiences within the OLS.

Positionality

As an independent contractor at the OLS, my role allows me to bring a unique perspective to this study, as I have firsthand experience with the field trip curriculum and the learning environment. This positionality strengthens the study by providing knowledge that can enhance data interpretation. However, it also poses potential biases, as my familiarity with the OLS may influence my observations and analysis. To help combat these biases, post-field trip surveys will be utilized to gather additional perspectives from teachers.

Ethics

To ensure that the study was conducted ethically, I obtained informed consent from all participants, including students, teachers, and parents. Parental permission forms were collected from all students participating in the observed field trips. I provided clear information about the study's purpose, procedures, and voluntary participation. Additionally, I ensured the confidentiality of all participants by anonymizing data and securely storing it. Ethical approval was sought from the institutional review board prior to data collection.

Data Analysis

Before analysis, ten a priori codes were developed based on the existing literature and theoretical framework, as provided in Appendix B. These codes included, critical thinking, collaboration, communication, awe/wonder, curiosity and exploration. After obtaining documents and completing observations, twenty emergent codes developed, highlighting designed areas of the outdoor learning space and teaching methods employed by the outdoor learning space facilitators applied during each episode that was observed. For example, an emergent code such as questioning and visual aids was applied throughout the observations to demonstrate the facilitator teaching methods during the field trips

After all the a priori codes and emergent codes were used to code the transcribed observations, documents, and surveys, a thematic analysis was conducted, and three themes emerged. These themes are *Environmental Connection and Experiencing Deeper Learning Opportunities and Supporting Structures within the Learning Space*.

In one instance, during the observations, collaboration was applied when students were seen engaging in discussions, sharing ideas, and building upon each other's contributions. To ensure the accuracy of these themes, triangulation was employed, where the themes identified from observational data were compared with findings from documents and surveys. For instance, insights gained from the outdoor learning space guided curriculum were cross-referenced with observational data and surveys were used to further illustrate the findings. This process allowed for a deeper understanding of how these themes were interrelated.

Additionally, after identifying the themes, I took several steps to check for alternate explanations or disconfirming evidence—such as instances of disengagement. This included revisiting the data for any instances that contradicted the emerging themes and consulting with peers for feedback on the interpretations made. Addressing potential biases and ensuring a thorough analysis was completed in validating the findings.

Regarding the survey analysis, it is important to note that the survey was qualitative, consisting of open-ended questions. This format allowed for descriptive responses, which were then subjected to thematic analysis using the same codes applied to the observational data. By maintaining consistency in coding across different data sources, a cohesive understanding of the themes was achieved, thereby reinforcing the reliability of the findings. This approach to data analysis not only enriched the study but also ensured that the themes identified were well-grounded in the evidence collected.

Findings

Data were collected through observations of two guided field trips with early elementary students and triangulation with the curriculum materials and post field trip survey. Thematic analysis revealed two main types of learning experiences that emerged during the field trip—*Environmental Connection and Experiencing Deeper Learning Opportunities*. Additionally, the analysis points to two primary structures and planned activities that supported these learning experiences—*curriculum objectives and facilitation and alignment of the curriculum with designed physical elements*. These findings underscore the significance of both the learning experiences and the supportive structures within the Outdoor Learning Space.

Environmental Connection

Environmental connection refers to the relationship that individuals, particularly children, develop with their surrounding environment. This includes their understanding, appreciation, engagement with nature, and their interactions with it. Environmental connection manifested in two ways — as students expressed connection to nature, and as students expressed ‘sense of place’ — a connection to not only their natural environment but also their location and local community. During both field trips, students expressed their environmental connection through key behaviors: *1) displaying emotions of awe and wonder about nature, 2) connections to place, and 3) interacting with the people and community at the OLS*. Each of these behaviors highlights the students' emotional and cognitive engagement with the natural world and the local community, illustrating how their sense of place enhances this connection. Below, I will present the observations from each field trip in turn, illustrating how these behaviors manifested. Each of these categories highlights the students' emotional and cognitive engagement with the

natural world and with the park, illustrating how their environmental connection fosters a sense of place within this specific environment.

Displaying emotions of awe and wonder about nature

Environmental connection emerged as students expressed emotions of awe and wonder about nature that fostered their interest in learning. During the Suburban School Field Trip, for example, one student pointed eagerly at a bird in the pond and exclaimed, “Woah, what’s that?” prompting other students to look (Student, Suburban School Field Trip). The OLS program added, “We usually see blue herons, but that is a green heron.” (OLS Program Staff A). All students lined up to observe the heron in the pond, illustrating their collective engagement and enthusiasm for learning through exploration. During another part of the trip, one student overheard suddenly exclaiming, “This place is so nice!” (Student, Suburban School Field Trip). While walking past the Koi Ponds, another student was observed with the magnifying glass investigating the pond and exclaimed excitedly, “There are water lilies!” (Student, Suburban Field Trip). During another part of the field trip, another student remarked, “This place is so beautiful; how do you get all the plants?” (Student, Suburban School Field Trip).

During the Rural School Field Trip, students and parents alike shared their excitement about the ecosystem surrounding them.

“This place is so nice, see look!” while pointing out plants. (Student, Rural School Field Trip).

“Look at the leaves above us” while pointing and touching. (Parent, Rural School Field Trip). This prompted the response from another student, “I love being in nature, I am a nature girl!” (Student, Rural School Field Trip).

During other parts of the Rural School Field Trip, one student pointed excitedly and shouted, “Armadillo!” prompting other students to turn and look. Upon spotting a bumblebee, another student exclaimed, “This is crazy!” (Student, Rural School Field Trip). These enthusiastic responses illustrate their connection to the natural world and their growing appreciation for the environment.

The interactions and enthusiastic remarks highlighted the deep connection and wonder that students—and their parents—felt towards the natural world, reinforcing the importance of such experiences in fostering environmental connection.

Environmental connection through emotions of awe and wonder also emerged as students were observed physically engaging with curiosity about various elements of the ecosystem. For example, during the Rural Field Trip, several students were observed talking about and feeling the turf-grass in the OLS, as indicated in the field notes below:

“Look how nice their grass looks!” (Student, Rural School Field Trip).

The teacher replied, “Do you think it is real grass?”

“Yes! But how do they get it to look so nice?” (Student, Rural Field Trip).

“The park has specific people who go around and take care of the grass and the plants.”
(OLS Program Staff B, Rural School Field Trip).

Students also expressed awe and wonder as they made discoveries about the plants and animals they encountered. For example, during the Rural School Field Trip, one student pointed at a bee in the Monarch Waystation and exclaimed, “That’s a bee!” Another student added, “I can see it... We have never been that close to bees before” (Student, Rural School Field Trip).

During a final reflection session, students shared their favorite moments when OLS Program Staff asked, “What was your favorite part of the pollinator walk?” (OLS Program Staff B). One student responded, “The bat house with bees!” (Student, Rural School Field Trip). Another exclaimed, “This whole place was my favorite!” (Student, Rural School Field Trip).

These expressions and interactions signal how the children became curious about and positively connected to the space. These interactions also suggest that students are not passively receiving information; they are immersing themselves in the natural world around them, cultivating a deeper emotional connection and a personal identification with this specific place.

Connections to Place

One-way environmental connection emerged through a sense of place during the field trips is when students shared about their prior experiences at the Outdoor Learning Space (OLS). During the Suburban Field Trip, the OLS Program Staff initiated this connection by asking a series of questions: “Raise your hand if you’ve been to [OLS] before”; “Raise your hand if you’ve been here 5 times”; “Raise your hand if you’ve been here 100 times.” (OLS Program Staff B). Nearly all students raised their hands for the first question, half the hands were raised for the second, and two students kept their hands raised for the third. Similarly, on the Rural Field Trip, the program staff asked, “Raise your hand if you’ve been to [OLS] before” and “Raise your hand if you have never been here.” About 14 of 31 students raised their hands as if they had been there before.

During the Suburban Field Trip, students also demonstrated prior knowledge of specific areas within the park. For example, a student pointed to the log climb area and said, “I walked on that log on Sunday” (Student, Suburban School Field Trip).

The students' familiarity with the OLS outside of this organized field trip highlights the value of these visits in building a foundation of environmental connection.

A sense of place also emerged as students expressed desires to have future experiences or to stay longer at the OLS. For example, during the Suburban Field Trip, when a teacher encouraged the group to walk faster to avoid staying until nightfall, one student responded, “I want to be here until nightfall!” (Student, Suburban School Field Trip). Additionally, while walking around the boathouse a student expressed, “I want to ride one of those boats!” (Student, Suburban School Field Trip). This eagerness to extend their time in the OLS highlights their growing attachment to and anticipation for future visits.

When asked about how they would rate the classes enjoyment of this field trip on the survey, one teacher noted that the students continued talking about their experience in the days after returning to school: “The field trip was very engaging and a wonderful opportunity for our students. They absorbed the material and as stated before, they are still talking about what they learned” (Teacher, Rural School Field Trip).

This statement illustrates that the students not only absorbed the content during their field trip but also retained and continued to discuss their experiences afterward. Such ongoing conversations indicate a growing connection to the place of the OLS, suggesting that the students have developed a sense of place rooted in their personal experiences and interactions with the unique ecosystem. When students express a desire to revisit and reflect on their learning, it signifies an emotional attachment to the environment that extends beyond the initial visit.

Expressing connection to the people and community at the OLS

A sense of place also emerged through friendly spontaneous interactions between students and program staff. For instance, during the Suburban School Field Trip, horticulture

staff drove by on a cart and a student proudly showed off a leaf he had found. When the staff member asked if he wanted to trade, the student happily exchanged leaves. Then was observed showing off his leaf to his peers.

Additionally, during the Rural School Field Trip when walking past the horticulture staff, the OLS program staff encouraged the students to say hi, and they did so in unison. Which prompted the conversation about what the staff were doing, to which the OLS program staff replied, “They are taking care of the land at the park!” (OLS Program Staff B).

Overall, the observations suggest that the OLS fosters a strong environmental connection that extends beyond the curriculum's explicit instruction. Students' pre-existing familiarity, the program staff's emphasis on unique features, and opportunities to connect classroom learning to the space all contribute to a deeper sense of place. This approach enhances students' appreciation for the environment, reinforcing their role within it and cultivating a lasting connection to the natural world.

Experiencing Deeper Learning Opportunities

Students' experiences of deeper learning opportunities emerged during the field trips as students actively engaged with the concept of pollinators. Deeper learning experiences became evident as students: *1. Developed new understandings of pollinators, and 2. reflecting on their experiences.* Below, I present the observations from each field trip, organized by these themes.

Developing New Understandings of Pollinators and Plants

Students demonstrated their developing understanding of pollinators and plants during the field trips. During the Suburban School Field Trip, during a discussion about what makes pollinators special, students made connections between the curriculum and their real-world observations, as illustrated in the below excerpt from field notes:

“They make flowers grow” (Student, Suburban School Field Trip).

“What happens when bees travel with pollen?” (OLS Program Staff, Suburban School Field Trip).

“They move it to other flowers to help plants grow” (Student, Suburban School Field Trip).

“With their wings, they can push out pollen to another flower nearby” (Student, Suburban School Field Trip)

These reflections highlight the students' ability to articulate personal insights and feelings about their experiences, displaying their engagement with the curriculum material. This discussion indicated how students were engaging in critical thinking and developing new cognitive competencies as they made the effort to connect new information with prior knowledge and apply critical thinking to understand the environment.

The development of new understandings of pollinators was also observed during the Rural School Field Trip, as illustrated in the excerpt of field notes below:

The OLS program staff asked, “What do pollinators do?”

“They move pollen and drink out of the flowers” (Student, Rural School Field Trip).

Another student remarked, “I have a hummingbird feeder at home- two of them!”

The OLS program staff asked: “How can we help pollinators in the future?”

“By giving them flowers!” (Student, Rural School Field Trip).

Students also demonstrated new understandings of the plants they learned about or observed during the Rural Field Trip. For example, a student asked while point to a plant, “This is sweet pea?” (Student, Rural School Field Trip). The OLS program staff replied, “That’s correct, you will have to mark it on your scavenger hunt!” (OLS Program Staff B).

At the end of both trips, students shared reflections that revealed a deepened understanding of pollinators and their habitats. They discussed their favorite moments, such as observing the bat house and walking across the wetlands, and articulated new insights, including recognizing that birds can also serve as pollinators.

These interactions highlight how the field trip created opportunities for students to develop new cognitive competencies for deeper learning by applying their knowledge about pollinators to real-world contexts and engaging in meaningful dialogue that deepened their understanding of the ecosystem.

Feedback from the post-field trip teacher survey also suggested that the field trip afforded students with opportunities for deeper learning. When asked, “In what ways, if any, did this field trip provide longer lasting impacts on your students,” teachers responded:

I think most students are more likely to be interested in what they are learning if they can see it for themselves, for example, bees pollinating. That real-life example and heightened interest will help students remember what they learned and keep them wanting to learn more. (Teacher, Suburban School Field Trip).

Through engagement and hands on experience, the students better understand the importance and function of pollination with regard to our environment. (Teacher, Rural School Field Trip).

Reflecting on Experiences

During the field trips, students also demonstrated deeper learning experiences through instances of growing self-awareness and reflection on their learning experiences, signaling the development of another dimension of deeper learning— intrapersonal competencies. Students expressed insights about their own identities in relationship to their experiences at the park and

to self-reflect on thoughts, feelings, and experiences through asking questions, seeking explanations, and noting their new learning. For example, during the Suburban School Field Trip, a student showed self-awareness as they commented, “I like to look at grasshoppers and put them in my hand. You can literally become an insect inspector” (Student, Suburban School Field Trip). Other students expressed self-awareness as they expressed a role they wanted to play in specific learning activities. For example, about the scavenger hunt, one student exclaimed, “I am going to find all of them!” while another responded, “I’m looking for the rattlesnake master” (Students, Rural School Field Trip). In the post-trip survey, one Rural School teacher reported appreciation for how the field trip enabled their students’ learning because it was “very age-appropriate for our students.”

In summary, the findings highlight how the field trips facilitated students’ development of new cognitive competencies—in the form of new understandings of the ecosystem—and intrapersonal competencies. These experiences allowed students to connect their classroom knowledge to real-world contexts, reinforcing their understanding of environmental concepts and enhancing their overall learning experience.

Supporting Structures within the Learning Space

This section examines the structures at the OLS that positively supported the student learning experiences of environmental connection and deeper learning described above. In this context, 'structures' refers to curriculum and facilitation guides as well as designed physical elements of the Outdoor Learning Space (such as the bat house and gardens). Triangulation of the observational data with organizational documents revealed two structures that were activated and supported the student learning experiences above: *1. Curriculum objective and facilitation and 2. Alignment of curriculum with designed physical elements.*

Curriculum Objectives and Facilitation

The OLS guided curriculum is designed to meet state standards in science and physical education. As indicated in the curriculum objectives outlined in Figure 2 below, the pollinators curriculum seeks to involve students as scientific investigators in the park as well as make learning fun to foster enjoyment of outdoor learning.

Figure 2

OLS Guided Field Trip Objectives

Objectives:

1. 2.PS1.1 Plan and investigate to describe and classify different kinds of materials by their observable properties.
2. 2.LS4.1 Make observations of plants and animals to compare the diversity of life in different habitats.
3. 2.ESS1.1 Use information from several resources to provide evidence that Earth events can occur quickly or slowly.
4. S1.E5 Dance- Performs a teacher and/or student-designed rhythmic activity with correct response to simple rhythms.
5. S1.E27 Outdoor Pursuits- Describes outdoor activities (e.g., scavenger hunt, nature walk) for physical activity and enjoyment.

The curriculum emphasizes the importance of teacher and parental engagement in enhancing the educational experience. As shown in the excerpts from facilitation guides in Figures 3-7 below, the park staff facilitators are provided with detailed suggestions about how to prompt students and parents to become curious and involved in the park and the planned learning activities throughout the pollinator field trip.

Figure 3

OLS Guided Field Trip Curriculum: Parental Involvement

Parental Involvement

- Encourage parents to join the walk as chaperones, providing additional support and engagement.
- Suggest parents help students with their scavenger hunt sheets.
- Offer resources for parents to continue the conversation at home about local pollinators and how to create pollinator-friendly spaces in their yards.

Alignment of Curriculum with Designed Physical Elements

Another important enabling structure for learning was how the curriculum aligned with and guided the learning through a variety of designed physical spaces within the park. Below, I

present observations by key activities that took place during each designed physical space involved in the pollinator field trip, including the *1. Introduction to pollinators, 2. Pollinator Walk, 3. Observations at the Bat House, and 4. Experiences in the Sky Garden*. For each space, I show how facilitation guides for park staff supports parental involvement and the emergence of students' environmental connection and deeper learning.

Introduction to Pollinators

The field trips started with a brief introduction to pollinators where students, teachers, parent chaperones and program staff participated in bee breathing and animal behavior movements. Parents and school staff assisted in distributing magnifying glasses and scavenger hunts. On the Suburban Field Trip, the OLS program staff emphasized the importance of exploration, stating, “Now we know about pollinators; we are going to act like scientists” (Program Staff A). Immediately following this instruction and receiving their “Pollinator Scavenger Hunt” and magnifying glass, a student said, “Is that a squirrel?” while pointing one out to his classmates. (Student, Suburban School Field Trip). On the Rural School Field Trip, parents and school staff assisted in distributing magnifying glasses and scavenger hunts, and their teacher also demonstrated to students how to “investigate” by holding up the magnifying glass.

The curriculum supported program staff to involve students and parents as scientific investigators, as illustrated in Figure 4 from the OLS guided curriculum.

Figure 4

OLS Guided Field Trip Curriculum Introduction

1. Introduction (10 minutes) (BOTH Facilitators)

- Gather students **outside the lodge**.
- Distribute scavenger hunt sheets, magnifying glasses, and pencils.
- Briefly introduce the concept of pollinators and their significance in the ecosystem.
- Explain that [REDACTED] is filled with flowers and plants that bring pollinators to the park.
- **Encourage students to act like scientists:** ask a lot of questions, look closely using your magnifying glasses, and observe everything; write down interesting things they see, hear, and touch, and experience while walking through the park.

By actively involving parents and teachers in the learning process, the program staff created a collaborative atmosphere that encouraged meaningful connections to the natural world. This facilitation supported by curriculum design strengthened the class engagement with nature.

Pollinator Walk

During the pollinator walk, the program staff encouraged students, parents, and teachers, to participate in discussions and share their observations. As they explored the Wetland Gardens, participants were guided to observe various plant and pollinator interactions. The curriculum is intentionally designed to support this engagement by incorporating targeted discussion questions and structured opportunities for sharing experiences, as shown in Figure 5 below. For example, the curriculum instructs facilitators to "stop and ask students to note flowers," prompting active observation and dialogue.

Figure 5

OLS Guided Field Trip Curriculum

2. Wetland Gardens (10 minutes) (Person 2)

- Begin the walk toward the **Wetland Gardens**. Instruct students to form a quite single file before crossing through the Wetlands.
- Now, let's practice some "Bee Breathing."
- Take a deep breath in, and as you breathe out, say "buzz" softly.
- Let's do this a few times together!
- Tell them to keep their eyes open to pollinators and plants.
- Point out **red-winged blackbirds and eastern grey squirrels**; encourage students to observe their behaviors.
- The Wetland Gardens are home to **tallgrass prairies**, which include **eastern gamma grass and cattails**. These plants act as a natural filter to clean the water before it enters Peggys Pond.
- Stop and ask students to note any flowers or plants that attract pollinators.
- Point out **Sweet Pea flowers** over in wetlands. Behind the area where we stop to write.
- Discuss the importance of these plants in the Wetland ecosystem and how they support local wildlife and pollination specific to that area of the park.

This facilitation approach and curriculum appeared to create opportunities for dialogue to foster a deeper understanding of the ecosystem. For example, on the Suburban Field Trip, as the program staff introduced the Wetland Gardens to students, their interaction fostered the students' curiosity for the learning environment, as illustrated in the excerpt from the field notes below.

“Turn around and look at the cattails... the Wetland Gardens at [OLS] serve as a natural filter for the pond water” (Program Staff B).

Students gather to observe cattails.

“That’s so cool” while pointing at cattails (Student, Suburban School).

During the Rural Field Trip pollinator walk, the presence of parent chaperones helped students on the field trip identify the natural elements in the OLS. For instance, a parent pointed out cattails, prompting their student to remark, “Those look like hotdogs” (Student, Rural School Field Trip).

This interaction exemplifies the concept of parental engagement, as parents not only supported their children's learning but also actively participated in the educational process, reinforcing the collaborative atmosphere that the program staff cultivated throughout the field trips. These interactions exemplify the concept of parental engagement, as parents not only supported their children's learning but also participated in the process, reinforcing the educational experience.

The Bat House

Next, the students visited a bat house hanging from a tree and learned about the benefits of bats in pest control and their significance in the local ecosystem. This segment of the field trip was designed to foster engagement among students, teachers, and parents, as shown in Figure 6 below.

For example, during the Suburban Field Trip, the OLS Program staff stopped students at a Bat House in the tree and talked about how bats act as pollinators. This fostered engagement as students moved to observe the bat house and pointed it out to their classmates, as illustrated in the excerpt from the field notes below.

One student was observed pointing the bat house out to her peers exclaiming,

“I see it!” (Student, Suburban Field Trip)

The program staff then prompted further inquiry by asking,

“Bats are known to be a pest controller, what does that mean?” (Program Staff)

“That they eat bugs and insects” (Student, Suburban Field Trip)

All students agreed, demonstrating their understanding of the topic. (e.g., Suburban School).

The curriculum aligned with the designed natural element in the park fostered a dialogue that encouraged deeper inquiry and collective understanding, as shown in the guided curriculum in figure 6 below.

Figure 6

OLS Field Trip Guided Curriculum Observing the Bat House

3. Slide Vail- Bat House (5 minutes) (Person 1)

IF GROUP IS MOVING SLOW POINT OUT/DISCUSS WHILE WALKING

- Walk towards the Slide Vail, stopping at the Bat house to engage in a conversation.
- Introduce the "Leave the Leaves" concept:
- Discuss how fallen leaves provide shelter for various pollinators during winter, including bees, turtles, larvae, fireflies, toads, moths, insects, and spiders.
- Encourage students to think about how their actions at home can support local wildlife. [REDACTED] also "leaves the leaves" in many areas of the park to provide a habitat for these animals and insects.
- Many pollinators migrate to warmer climates or bury themselves under soil or leaves to stay warm during winter.

Hibernating Pollinators: Define hibernation for the group. Ask students what other animals hibernate.

- **Bats, beetles, ladybugs, moths, and bees** are examples of pollinators that hibernate.
- Ladybugs resort to group hibernation, huddling together in cracks, crevices, tree bark, or even inside homes.
- Brown bats can hibernate for more than six months, wrapping their wings around themselves to stay warm.
- Some butterflies hide in logs or hollow trees to hibernate during winter.

The Sky Garden

Participants then moved on to the Sky Garden, where they observed pollinators in action and learned about the plants that support their migration, particularly at the Monarch

Waystation. The curriculum is intentionally designed to promote engagement while teaching classroom concepts and standards—as shown in figure 7 below.

Figure 7

OLS Guided Curriculum the Sky Garden

4. Sky Garden (20 minutes) (Person 1)

- Arrive at the Sky Garden, highlighting the Monarch Waystation.
- Discuss the significance of *Monarchs and their migration patterns*: Monarch Waystation provides monarch butterflies with all the resources they need during their migratory journey from as far north as Canada to Mexico in the south. That is around 2,500 miles, the same distance as walking our park trails 438 times!
- Show the laminated Monarch Waystation info sheet and go over the information listed on it with the students.
- Instruct students to walk around the entire circle of Sky Garden quietly and listen and look for pollinator and plants.
- **POINT OUT RATTLESNAKE MASTER TO STUDENTS WHILE WALKING AROUND SKY GARDEN.**
- After, have students gather in a circle in the middle of Sky Garden and have them write or draw what they observed during their pollinator walk.

For example, on the Suburban Field Trip, as the class approached the Monarch Waystation, the program staff guided the students by instructing them, “Shhh. Do you see the hummingbirds?” while pointing out several hummingbirds collecting nectar (OLS Program Staff C). This prompted the students to pause, notice the hummingbirds, and experience wonder about the natural world, exclaiming, “Woah,” as hummingbirds fly past the group to their next flowers (Student, Suburban School Field Trip).

Another example of the program staff's facilitation was evident through their reflective questioning during the walk in the Sky Garden. For instance, the staff asked, “What trees were all around us?” to which students responded in unison, “Taylor Juniper” (Suburban School Field Trip). This prompting reinforced students' knowledge and encouraged them to actively participate in discussions about their environment.

After the pollinator walk, the OLS Program Staff prompted the students to write down their reflections. This facilitation moves guided by the curriculum helped students recognize their new conceptual understandings and self-reflect. For example, one of the Rural School

teachers was observed engaging with students, asking questions as excerpted from the field notes below.

“What did you see?” (Teacher, Rural School Field Trip).

“I saw a bee on a flower!” pointing to her drawing (Student, Rural School Field Trip).

“I drew a cattail” (Student, Rural School Field Trip).

Another student was observed drawing a bat house.

In conclusion, through planned activities and curriculum, such as the pollinator walk, observations at the bat house, and interactions in the Sky Garden, students were able to connect classroom knowledge with real-world observations. The outdoor learning space environment and habitats, enhanced by the active involvement of parents and the skilled facilitation of program staff, encouraged curiosity and inquiry while teaching essential concepts and standards that are best experienced outside the confines of a traditional classroom. This approach allowed students to express their thoughts and discoveries openly, strengthening their connections with one another and the wonders of nature.

Discussion

This study explored:

1. *How do student learning experiences emerge during an educational field trip to an outdoor learning space?*
2. *How do structures or planned activities emerge during an educational field trip to an outdoor learning space?*

Thematic analysis revealed three key themes: *Environmental Connection, Experiencing Deeper Learning Opportunities, and Supporting Structures within the Learning Space*. Previous research highlights the potential of outdoor learning for environmental understanding and

connection to nature (Chawla, 2015 & Dale et al., 2020). However, a gap exists in understanding how specifically designed OLS, incorporating both natural elements and planned activities, can foster these outcomes (Chawla, 2015 & Dale et al., 2020). This study directly responds to Chawla's (2015) call for more qualitative research by examining the nuanced interactions among students during a field trip to the OLS and supporting structures at the OLS.

Chawla (2015) emphasizes the necessity of qualitative research to capture the complex interactions of outdoor education on children and their caregivers. Despite the recognized benefits of outdoor learning, there is a lack of studies that delve into the lived experiences of participants. This study addresses that gap by providing qualitative insights into how a specifically designed OLS can facilitate learning experiences. By focusing on the interactions and experiences of students, teachers, and parents, this research contributes to a deeper understanding of the natural and learning experiences that such educational practices can offer.

While prior research emphasizes the benefits of outdoor learning for students (Chawla, 2015; Dale et al., 2020), the study highlights a gap in existing literature regarding the potential of OLS to create transformative learning experiences that are inherently different from conventional educational settings. By facilitating direct interactions with nature and promoting collaborative learning, these environments enable students to engage with their surroundings in ways that encourage critical thinking, problem-solving, and a sense of place. The study highlights that learning through engagement in outdoor settings not only enhances environmental knowledge but also cultivates a deeper emotional and cognitive connection to the environment—an outcome that traditional classroom settings may struggle to achieve.

Moreover, the increasing emphasis on accountability and standardized practices in education often marginalizes experiential learning opportunities, such as field trips to outdoor

learning spaces (Whitesell, 2016). This trend can limit the potential for deeper learning competencies that arise from hands-on experiences in nature. By integrating accountability measures with the design of OLS, educators can create structured yet flexible learning environments that not only meet educational standards but also activate deeper learning competencies among students.

Beyond that, this study highlights the potential role of parental engagement in enhancing those benefits. While Place-Based Education (PBE) emphasizes the importance of using the local environment for learning and fostering environmental responsibility (Sobel, 2004), this study delves deeper into a specific aspect of PBE – field trips to Outdoor Learning Spaces (OLS). The observations at the OLS, a specifically designed OLS, highlight the potential role of parental engagement in enhancing the benefits of PBE. The program's design, with its combination of natural elements and planned activities, fostered a unique environment where parents actively participated alongside their children. This parental co-participation, which goes beyond the typical PBE approach, created a collaborative learning experience where students felt included and motivated to learn. The observed level of parental engagement at the OLS suggests that specifically designed environments might have an under-explored potential to promote collaborative learning between students and parents in the context of environmental education. Further research is needed to explore collaborative learning on student environmental knowledge, attitudes, and behaviors.

Implications

This analysis is based on observations from a limited number of field trips involving an early childhood population. To determine the generalizability of these findings, further research is needed with a larger and more diverse sample across different grade levels and various

Outdoor Learning Space (OLS) settings. Additionally, as a contractor for the Outdoor Learning Space, I may possess inherent biases that could influence the interpretation of the data. Future research should aim to seek disconfirming information and explore alternative perspectives to enrich the current understanding of the subject.

Despite the limitations, this research advances literature by providing qualitative experiences of students, teachers, and program staff during field trips to a specifically designed outdoor learning space. Notably, there is substantial investment that goes into creating these environments, and this study demonstrates that such investment is valuable, as it fosters deeper learning and stronger environmental connections among all participants.

In the context of rising chronic absenteeism, the increasing standardization of educational practices, and the prevalence of sedentary lifestyles and electronic distractions, the importance of experiential learning opportunities like those offered by OLS becomes even more pronounced. These factors contribute to a disconnection from nature and a decline in student engagement, which can further exacerbate absenteeism. By providing opportunities for hands-on, collaborative learning in outdoor settings, OLS can serve as a counterbalance to these trends, promoting not only academic achievement but also physical activity and emotional well-being.

The study highlights an under-researched aspect of student engagement during OLS field trips – parental involvement. Observations suggest that specifically designed OLS environments might promote collaborative learning between students and parents, potentially leading to enhanced environmental learning outcomes. By integrating parental engagement into the learning process, these outdoor settings not only enrich students' experiences but also reinforce the importance of community involvement in education.

The qualitative data gathered offers insights into the potential benefits of OLS programs and can inform the development of future research questions and methodologies. Further investigation is needed to understand the relationship between outdoor learning spaces, student interactions, and the resulting learning outcomes, particularly in the context of educational accountability and standardization pressures that often limit such enriching experiences. By addressing the challenges posed by chronic absenteeism, sedentary lifestyles, and overreliance on electronics, this research serves as a foundation for exploring how OLS can be integrated into curricula to support educational practices that prioritize both academic success and a connection to the natural world.

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Appendix A: IRB Outcome Letter



Institutional Review Board for the Protection of Human Subjects

Approval of Initial Submission – Expedited Review – AP01

Date: March 12, 2024

IRB#: 16908

Principal Investigator: Katie Ashton

Approval Date: 03/12/2024

Status Report Due: 02/28/2025

Study Title: Cultivating Environmental Connection through Outdoor Learning in the Oil Capitol

Expedited Category: 7

Collection/Use of PHI: No

On behalf of the Institutional Review Board (IRB), I have reviewed and granted expedited approval of the above-referenced research study. To view the documents approved for this submission, open this study from the *My Studies* option, go to *Submission History*, go to *Completed Submissions* tab and then click the *Details* icon.

Requirements under the Common Rule have changed. The above-referenced research meets one or more of the circumstances for which continuing review is not required. However, as Principal Investigator of this research, you will be required to submit an annual status report to the IRB.

As principal investigator of this research study, you are responsible to:

- Conduct the research study in a manner consistent with the requirements of the IRB and federal regulations 45 CFR 46.
- Obtain informed consent and research privacy authorization using the currently approved, stamped forms and retain all original, signed forms, if applicable.
- Request approval from the IRB prior to implementing any/all modifications.
- Promptly report to the IRB any harm experienced by a participant that is both unanticipated and related per IRB policy.
- Maintain accurate and complete study records for evaluation by the HRPP Quality Improvement Program and, if applicable, inspection by regulatory agencies and/or the study sponsor.
- **Submit an annual status report to the IRB to provide the study/recruitment status and report all harms and deviations that may have occurred.**
- **Submit a final closure report at the completion of the project.**

If you have questions about this notification or using iRIS, contact the IRB @ 405-325-8110 or irb@ou.edu.

Cordially,

Lara Mayeux, Ph.D.
Chair, Institutional Review Board

Appendix B: IRB Approved Observation Protocol

Observation Protocol: Outdoor Learning Space (OLS)

I. Observation Introduction

Hello everyone! My name is Katie Ashton, and I'm a researcher studying how children learn in outdoor environments. Your teacher kindly agreed to allow me to observe your field trip today.

Participation is completely voluntary. I will never record any information that could identify you personally, like names or faces. Your privacy is very important to me. If you or anyone in your group does not want to be included in my observations, please raise your hand now. I will respect your decision and not include you in my notes.

During the field trip, I will be quietly observing your activities and interactions within the learning environment. I will maintain a respectful distance and avoid interfering with your fun or learning experiences.

II. Background:

- Date:
- Time:
- Curriculum Title:
- Grade Level:
- Number of Students:

III. Observation Focus:

- **Verbal Interactions:**
 - Content of student discussions (e.g., academic topics, jokes, social interactions)
 - Students engage in meaningful discussions about their experiences and discoveries, including the length of these conversations.
- **Non-Verbal Interactions:**
 - Body language (e.g., facial expressions, gestures, posture)
 - Engagement with the environment (e.g., touching plants, exploring structures, using materials)
 - Emotional expressions
- **Interactions with Teacher:**
 - Frequency and type of interactions (e.g., questions, instructions, feedback)
 - Teacher's role in facilitating learning and environmental engagement

IV. Higher-Order Interpretations:

- During each observation, record separate notes containing your interpretations and reflections on the data related to a priori codes.
- Use these notes to identify emerging themes and patterns across observations.



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- Be mindful of potential biases and ensure interpretations are grounded in factual observations.

V. Data Management:

- Store all observation notes and other data securely and confidentially.
- Anonymize any data containing potentially identifiable information.



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Appendix C: Coding Framework

Student Reactions Codes		
Deeper Learning Competencies	Definition	Illustrative Examples
Cognitive Competencies	Refers to the ability to understand, analyze, and apply knowledge across various subjects. It encompasses critical thinking, problem-solving, and the mastery of core academic content.	
Critical Thinking	Analyzing information and making reasoned judgments about environmental issues or observations.	PS3 says “Yes, and why do you think we would make them colorful?” Student 16 says “To look like flowers and attract bees”
Interpersonal Competencies	The ability to effectively communicate, collaborate, and engage with others in social contexts. It includes skills such as participation, collaboration and communication.	
Collaboration	Working together with peers to achieve a common goal or complete a task. This involves sharing ideas, resources, and responsibilities to enhance the group’s effectiveness.	Student 4 says to Student 5 next to them “Did you see my flowers, look how many I put on it!” Students discuss their bee hotel designs.
Communication	Sharing ideas, observations, and findings with others effectively.	Student 18 showed others how he fit all the tubes into the bee hotel to make them fit, offering help to those in the group.
Participation	Involvement in structured, planned activities within the OLS, contributing to discussions, hands-on experiences, and collaborative learning.	PS2 whispers to students and points “do you see that, there a rabbit” Students gather and point.

Intrapersonal Competencies	Refers to self-awareness, emotional intelligence, and the ability to reflect on one's own thoughts, feelings, and experiences.	
Awe/ Wonder	Students experiencing feelings of amazement about the natural world.	Students gather to observe cattails and Student 7 says "That's so cool" while pointing at cattails.
Curiosity	Student demonstrates a desire to learn more about the natural world, characterized by asking questions, seeking explanations, and showing interest in various concepts.	Student 10 "woah, what's that!" Pointing at a bird in the pond
Exploration	Students actively seek out and engaging with new information, experiences, or environments within the outdoor learning space (OLS) through independent or self-directed activities.	PS3 instructs students to complete their observation sheet and to use their eyes and ears. Students start looking around and writing. Student 15 moves closer to a tree and investigates it with his magnifying glass.
Positive Reactions	Students show enthusiasm, enjoyment, and appreciation for the outdoor learning experience indicates a positive attitude towards environmental education.	Student 9 observed drawing a butterfly.
Sense of Place	An emotional connection and appreciation for a specific location, often demonstrated through personal expressions or reflections.	Student 12 say "This place is so beautiful; how do you get all the plants?" PS1 explains "some of the plants have been here for longer than 5 years. But some of them have been added by our horticulture staff."
Environmental Connection	Refers to the relationship that individuals, particularly children, develop with their surrounding environment. This includes their understanding, appreciation, engagement with nature, and their interactions with it.	PS3 says "Shhh. Do you see the hummingbirds?" while pointing out several hummingbirds collecting nectar. Student 8 says "woah" as hummingbirds fly past the group to their next flowers.

All other codes

WHO	WHERE	Teaching Methods	WHAT is happening
OLS Employees	Bat House	Modeling	Direct Instruction
Parent Chaperone	Boathouse	Positive Reinforcement	Interactive Learning
Program Staff	Koi Ponds	Proximity	Observing
Student	Lodge Bus Loop	Questioning	Walking
Teacher	Lodge Lawn	Visual Aids	
	Monarch Waystation		
	Sky Garden		
	Wetland Gardens		

Appendix D: IRB Approved Survey



The UNIVERSITY of OKLAHOMA

Default Question Block

From what you can recall, which parts of the park did your field trip involve (for example: Sky garden, boat house, lawns, play structures)?

Where did the learning activities take place in the park during the field trip?

What were the learning activities (for example: scavenger hunt, hands-on, information giving)?

How well do you think the design of the park supported the learning activities?

On a scale of 1-5; how would you rate your classes enjoyment of this field trip?

Strongly disagree - My class did not enjoy the field trip at all

Disagree: My class had mixed feelings about the field trip

Neutral - My class had an average experience on the field trip

Agree - My class enjoyed the field trip

Strongly agree - My class absolutely loved the field trip

Please explain your rating above:

How well did the field trip activities and content fit with what your class is already learning?

In what ways, if any, did this field trip provide longer lasting impacts on your students?

In what ways, if any, could the field trip learning activities be improved for the future.

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Appendix E: Sample Field Notes

Student 15 picked up a fruit and investigated it before putting it back on the ground.

Student 16 says "Look how nice their grass looks!"

Student 17 says to student 18 "Yeah, there was a snake back there!"

Student 18 touches a leaf from a plant.

Student 19 says "This place is so nice, see look!" while pointing out plants.

Parent 5 says "look at the leaves above us" while pointing and touching."

Students 20 says "I love being in nature, I am a nature girl!"

Students using magnifying glasses to observe the plants and animals. The group makes their way to Sky Garden and the monarch waystation.

Student 21 says "Taylor juniper" pointing out the trees surrounding the garden.

Students talk about to manicured grass.

SP3 says to students "Do you think it is real grass?"

Student 22 says "yes! But how do they get it to look so nice?"

PS3 explains that the park has specific people who go around and take care of the grass and the plants.

PS2 walks group around Sky Garden telling them to look for Juniper trees and rattlesnake master.

Student 23 says "there is some more" while point out rattlesnake master in another location.

Student 24 says to Parent 6 "Now all I am looking for is a hummingbird!"

PS3 has students gather around in a circle in the grass of Sky Garden, she also instructs them to turn over their sheets.

PS3 says "Who can tell me what a habitat is?"

Student 25 says "It is a place where pollinators live!"

PS3 says that she is going to give the group 3 minutes to draw or write what they observed.

Students begin to draw.

Student 25 say "I drew a cattail"

SP3 asked students "what did you see?"