Identifying Barriers to Field Based Environmental Education

in K-8 Public Elementary Schools in Arizona

by

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ABSTRACT

The purpose of this case study was to explore the barriers, or constraints, to the integration of field-based environmental education (EE) programs in K-8 public elementary schools in Phoenix, Arizona. Research continues to show that field based EE programs improve student outcomes (Bartosh, Tudor, Ferguson, & Taylor, 2006; Cole, 2007; James and Williams, 2017). Despite the empirical evidence, there appear to be obstacles to integrating field based EE into school curriculum. This study used Hierarchical Leisure Constraints Theory (HLCT) to identify and understand these constraints. There were 22 focus group participants and 13 interviewees from ten different schools and five school districts within the Phoenix area. Looking at the constraints identified by all participants, funding and the availability of transportation play a major role barring the use of field based EE programming. However, when applying HLCT, both of these barriers are structural in nature. This means these are constraints beyond the control of the individual but are negotiable. According to HLCT, you must first understand intrapersonal and interpersonal constraints and the effect they have on overcoming barriers. This study found that perception and prior knowledge emerged as the root of most constraints. In other words, while structural constraints are named as the primary issue in integrating field based EE in public schools, this study concludes from the findings that human nature and human values influence whether teachers and administrators participate in field based programming with their students.

DEDICATION

This work is dedicated to the loving memory of my father, Louis Pontillo, who always encouraged me to take the road less travelled.

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When I reflect on who I was at the start of this journey to who I am today, life just leaves me in awe. I have met incredible people doing incredible things. My personal growth socially, intellectually and professionally is astounding. I am so grateful to have had this opportunity and look forward to viewing the world with the eyes of a researcher.

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Finally, I thank God for giving me the calling, the courage, and the capacity to be a participant in this amazing race!

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YOU NEVER KNOW

You never know when someone

May catch a dream from you,

You never know when a little word

Or something you may do

May open up the windows

Of a mind that seeks the light,

The way you live may not matter at all

But you never know – it might.

And just in case it could be

That another's life, through you,

Might possibly change for the better,

With a broader and brighter view,

It seems it might be worth a try

At pointing the way to what's right,

The way you teach may not matter at all

But then again – it might.

~Author Unknown

CHAPTER 1

INTRODUCTION

Education is key to the strength and sustainability of our society (Potter & Roksa, 2013). This is especially true regarding environmental education (EE) and its role in our public education system (Bartosh, 2003; Clavijo, 2002; Cosgriff, 2014; Ernst and Monroe, 2004; Ham and Sewing, 1988; Leiberman, Hoody, & Leiberman, 2005). We, as educators, have been tasked with teaching our children to judiciously and knowledgeably address societal issues. However, our current education system typically does not provide students with all the knowledge, skills, and perspectives needed to develop a sense of place or to pursue our responsibility to shared natural resources (Barnes et al, 2017; Cosgriff, 2014; Goleman, Bennett and Barlow, 2012; Louv, 2008).

EE cultivates responsible and engaged citizens, preparing students to address the challenges, adjustments, and opportunities that will be present in their future (Barnes et al, 2017; Cosgriff, 2014; Goleman, Bennett and Barlow, 2012; Louv, 2008). In the past, education reform has been passed without thought to the effect it would have on field based environmental education and community environmental education resources (Andereck and Gramann, 1989). This has created generations who do not know the true value and necessity of protecting our natural environment (Cassell and Nelson, 2010; Hart, 2010; Louv, 2005). Despite a growing pool of scholarly literature proving the efficacy and necessity of field based EE programs in our public schools, educational leaders persist in developing outcome measures scaled to standardized tests that focus on language and math skills (D'Amato and Krasny, 2011; Lewallen, 2015; Louv, 2008). While language and math are foundational academic competencies necessary for

assimilation of knowledge, epistemology practiced in our public schools should be such that promotes an integrated and cross curricular methodology (Blank, 2013; Hawkman et al, 2015; James and Williams, 2017; Nadelson, et al., 2013).

The discourse between core academic competencies and environmental education (EE) is not a new concept in educational reform. The scholarly literature exemplifies the cyclical paradigm shift in acknowledgement of the importance of the inclusion of EE in public school curriculum (James and Williams, 2017; Nadelson, et al., 2013). For many children, an educational setting may be the only opportunity they will get to foster a relationship between themselves and the natural environment (Louv, 2008; Smith and Williams, 1999). For this reason, schools must take on the role of providing opportunities for students to learn about the environment. However, our current education system struggles to provide students with the knowledge and skills necessary to respecting and preserving our natural environment (Gibbs et al., 2000; Kaplan and Owings, 2014; Lewallen, 2015). Recent generations seem to have lost the understanding of the connection between nature and our place in the natural environment (Louv, 2008; Sobel, 1999). Our children no longer feel that they must work to preserve the resources that are the foundation of life itself (Barnes et al, 2017; Goleman, Bennett and Barlow, 2012; Louv, 2008; Sobel, 1999).

Field Based EE

Environmental education (EE) is defined as education that helps individuals to become more knowledgeable about their environment and to develop responsible environmental behavior and skills so that they can improve the quality of the environment. (Cole, 2007; Martinez de Moentin, 2011; UNESCO, 1977). When we talk

about *field based* EE, multiple designs and definitions come to mind (Cosgriff, 2014; Goleman, Bennett and Barlow, 2012; Ham and Sewing, 1988; Louv, 2008). To many educators, field based EE is the equivalent of taking a field trip (Cole, 2007; Eshach, 2007; Hart, 2010; Stevenson, 2007; Waite, 2011). This conceptualization of field based EE as being a field trip denigrates those programs that have worked diligently to integrate themselves within the structure of core standards and current curricular confines (Brown et al, 2011; Ham and Sewing, 1988; Hart, 2010; Rickinson et al, 2004) . With the intention of clarification for the purposes of this research, the definition of field based EE will be any environmental literacy, environmental science, or environmentally related instruction that takes place within the environment being studied. Most of the time this would necessitate being outside of the classroom or out in a nature setting on a continuing basis. Field based education is also experiential in nature and allows for in context study of a phenomenon or practice (Goleman, Bennett and Barlow, 2012; James and Williams, 2017; Louv, 2008). Field based refers to that which is studied *in situ* or participants are brought into the environment that is being studied. Learning takes place outside of the classroom but maintains rigor through clearly stated objectives, outcomes and assessments (Atchison & Feig, 2011; Lonergan & Andresen, 1988).

Background

Existing academic literature in social science has shown that EE helps develop the knowledge and skills necessary to encourage community development as it relates to the preservation of natural resources (Blair, 2009; D'Amato and Krasny, 2011; Lewallen, 2015; Louv, 2008). In addition, quantitative and qualitative studies highlight the immense benefits of an integrative EE framework in raising our children's awareness of

environmental issues (Cassell and Nelson, 2010; Sanders, 2001; Schensul, 2009; Tramonte, and Wilms, 2010).

Amy Shellman (2014), discusses how, "experiential education has an important role in not only individual but also community development" (p. 24). In her research, Shellman raises the question about the relationship between the individual and community regarding experiential learning and EE. In fact, it has been shown that experiential learning and EE both have a long-term effect on developing social character in K-8 students (Goleman, Bennett, and Barlow, 2012; Veletsianos & Kleanous, 2009). Social character instills a sense of civic responsibility to act as a good steward of natural resources (Goleman, Bennett and Barlow, 2012; Smith and Williams,1999; Veletsianos & Kleanous, 2009). Good stewardship, as defined by Merriam Webster (https://www.merriam-webster.com/dictionary/stewardship) is the "careful and responsible management" of something (like resources).

A review of scholarly literature also reveals that our current education system neglects to provide students with field based (out in the natural environment) instructional programming (Bartosh, Tudor, Ferguson, & Taylor, 2006; Engels & Jacobson, 2007; James and Williams, 2017; Stepath, 2005). Epistemological research continues to indicate how field based EE cultivates responsible and engaged citizens (Goleman, Bennett and Barlow, 2012, James and Williams, 2017). Through this engagement, students are better prepared to address the challenges, adjustments, and opportunities they may face in their lifetimes (Barnes et al, 2017; Goleman, Bennett and Barlow, 2012; Louv, 2008). While EE helps develop the knowledge and skills necessary to make decisions about complex contemporary social issues, like global warming and

water conservation, it also contributes to student academic achievement (Sanders, 2001; Schensul, 2009; Tramonte & Willms, 2010). Quantitative and qualitative studies highlight the immense benefits of an integrative environmental education framework. In one study, 92% of comparisons indicated that students who were taught using an environmental framework "academically outperform their peers in traditional programs" (Leiberman and Hoody, 1998, p.5).

While research continues to show that experiential and field based EE teaching models can improve student outcomes (Bartosh, Tudor, Ferguson, & Taylor, 2006; Cole, 2007; James and Williams, 2017), there appears to be obstacles to implementing more integrative teaching across curriculum in K-8 public elementary schools. Many curriculum developers are looking for creative ways of improving instruction. However, barriers to the adoption of field-based EE programs in K-8 public elementary schools will need to be negotiated for programs to be integrated. The current research seeks to identify those barriers, both real and perceived, that are preventing most K-8 public schools in the Phoenix metropolitan area of Arizona, from regular inclusion of field based EE curriculum. As it continues, this chapter will first examine the problem being created by neglecting EE in our K-8 public schools. Next recent measures taken in educational reform will be reviewed. The purpose of the research as well as the research questions being addressed are presented. And, finally, the significance of the research will be discussed.

Statement of Problem

The public education system was created to cultivate intelligent, broadminded, civically involved citizens (Kaplan and Owings, 2014). However, according to the

Arizona Department of Education, in 2015, 43% of students in high school tested below proficient in science on the AIMS Science test (a standardized achievement test for science knowledge and skill acquisition) and 18% were approaching proficient (Count, 2015). That means that 61% of high school students in Arizona did not pass the AIMS science test. In addition, the AZ Kids Count Databook (www.azchildren.org, 2019) reports that for the AZMerit Test (standardized reading and math knowledge and skill acquisition) :

- 44% of 3rd Graders test proficient on the AzMERIT English Language Arts (in 2018)
- 41% of 8th Graders test proficient on the AzMERIT Math Test (in 2018)
- 80% of Arizona students graduate high school (as of 2016)

These results suggest a failure to adequately provide an effective foundation in language arts and math, using the current paradigm. Researchers suggest educational reform should be focusing on evidence-based practices that will potentially even the playing field for all students (Cosgriff & Thevenard, 2011; James and Williams, 2017; Kolb, 2008).

However, since the implementation of No Child Left Behind (NCLB) public schools have narrowed their scope of curriculum to concentrate on language arts and math skills for which they will be held accountable through the use of standardized tests and school report cards (Blank, 2013; Hawkman et al, 2015; James and Williams, 2017). Research has shown that due to the increasing emphasis on achievement in language arts and math, the time spent teaching science in elementary classrooms has experienced a

steady decline (James and Williams, 2017; Nadelson, et al., 2013). Ferreira & Trudel, (2012) tells us that:

> Although environmental education is often ignored in schools, researchers have found a correlation between environmental education and student outcomes, including achievement, motivation, and environmental literacy (Bartosh, Tudor, Ferguson, & Taylor, 2006; Engels & Jacobson, 2007; Stepath, 2005). In a 2006 study examining the impact of environmental education programs on student achievement in math, reading, and writing, Bartosh and colleagues found that schools using environmental education programs performed better on standardized tests than did those using traditional curriculum (Bartosh et al., 2006). (p. 2)

Cassell and Nelson (2010) caution that, "Humanity is facing, and must deal with, enormous sociological and social problems and challenges. This situation has created an urgent and compelling need centered on how the future citizenry of the industrialized West will be prepared relative to addressing and dealing with these problems and challenges." (p.179). These authors along with Sanders (2001), Schensul (2009) and Tramonte, & Willms, (2010) see the implementation of field based EE opportunities in public schools as one piece of the solution to societal challenges.

When discussing the challenges of the existing educational system as it relates to EE, David Orr (2004) writes, “This not an argument against education but rather an argument for the kind of education that prepares people for lives and livelihoods suited to a planet with a biosphere that operates by the laws of ecology and thermodynamics.” (p. 27). He goes on to say, “The skills, aptitudes, and attitudes necessary to industrialize the

earth, however, are not necessarily the same as those that will be needed to heal the earth." (Orr, 2004, p. 27). Orr advocates for EE to be included in those skills deemed necessary for the 21st century as a means of increasing sustainable practices with natural resources.

Purpose Statement

The purpose of this case study is to explore the barriers, or *constraints*, to the adoption of field-based EE programs as perceived by teachers and administrators in K-8 public elementary schools in the Phoenix metropolitan area of Arizona. The study uses the theoretical lens of Hierarchical Theory of Leisure Constraints (HTLC) (Crawford and Godbey, 1991) to identify those constraints as they relate to interpersonal, intrapersonal and structural categories. When looking to identify and overcome constraints to participation, HTLC suggests intrapersonal *constraints* (individual background or beliefs) occur first; interpersonal *constraints* come next (social acceptability, etiquette, etc.); and, finally, there are structural *constraints* (lack of funding, lack of transportation, logistics, time, etc.). Using HTLC theory allows not only the identification of perceived constraints, but also an in depth look at the foundation of those constraints as they relate to human nature and social science.

Future research will be necessary to explore how to negotiate these constraints and, hopefully, improve K-8 public elementary educational practices. Additionally, by reviewing scholarly literature around the efficacy of field based EE pedagogy, I aspire to begin the journey of effecting a change in teacher training to increase teacher confidence (and consequently advocacy) of field based EE programs.

Research Questions

This study investigates the most often encountered constraints to using field based EE programs in K-8 public elementary schools. The research will address:

1. What are identified constraints (barriers) to the adoption of experiential EE programs in K-8 public schools in Phoenix, Arizona?
    a) Which constraints to using field-based EE programs are identified by K-8 public elementary school teachers in Phoenix, Arizona?
    b) Which constraints to using field-based EE programs are identified by K-8 public elementary school administrators in Phoenix, Arizona?
2. How does each type of constraint (intrapersonal, interpersonal, or structural) impact a teacher's ability to implement field based EE into their instructional practice?

Significance of the Study

Research exploring the importance of and commitment to EE in our educational system has pointed to existing constraints to field based EE (Ham & Sewing, 1988; Shuman, Kunz, & Ham, 1997). However, review of scholarly literature over the last two decades shows very few studies in which constraints are identified and explored.

In the meantime, the importance of EE and getting children connected to nature has become the driving force behind a growing initiative internationally. In 2005, Louv published his book *Last Child in the Woods* in which he called the growing trend of lives focused indoors as Nature Deficit Disorder (NDD) rekindling conversations on the role of EE in our public schools as evidenced by the passing of No Child Left Inside. Taking this to heart, researchers like Blair (2009), Cosgriff (2014), Doering and Veletsianos (2008), and Ferriera et al. (2012) support the use of experiential EE programs to enhance

elementary school curriculum, engage learners and increase positive learning outcomes. Ways of integrating EE into the curriculum must be found that can assist in the negotiation of the constraints to implementation of EE programming.

One avenue for the inclusion of field-based EE programs is the recent push for Science, Technology, Engineering and Math (STEM) instruction at the elementary school level. STEM is seen as an inroad to build career and college ready high school graduates. This new awareness of STEM in the curriculum has brought forth the need for clarification regarding the actual scope of STEM learning and the examination of the benefits of integrated field based STEM learning programs (STEM Education Coalition, 2016). Leaders in education reform are looking towards a changing paradigm as a catalyst for curriculum models that include an epistemology to fit our multicultural population and assist schools in forging collaborations with informal education programs in the community. This cannot happen, however, without an expansion of literature identifying and working to overcome perceived barriers to the use and the value of field based EE in public elementary schools.

This qualitative case study is intended to broaden the pool of knowledge on the constraints to field-based EE programs in public education. By basing the research in theory that helps understand human psychology, the goal is to uncover a deeper understanding of our existing paradigm in public education. There is currently only a small corpus of scholarly literature related to the study of constraints to field based EE at the elementary school level. There is a need for more in depth research before any solutions can be assessed. Ultimately, the purpose of this work is to serve as an agent of change to improve the quality of education to future generations.

Limitations

- Cultural and geographical considerations of public schools in the Phoenix, Arizona area could affect results.
- The number of years teaching, grade, and subject area taught by participants may affect perceptions.
- Regional upbringing and prior experience in the outdoors of participants will affect results in the scope of barriers being perceived.
- Qualitative results are not generalizable.

CHAPTER 2

LITERATURE REVIEW

"Human beings are unlikely to protect what we do not love, and we cannot love what we do not know." - Stephen Jay Gould

Without the inclusion of EE curriculum in our public schools, future generations will not know the crucial role our natural environment plays in the sustainability of our planet (Avraamidou, 2013; Blair, 2009; D'Amato and Krasny, 2011; Lewallen, 2015; Louv, 2008; Nadelson et al., 2012; Rickinson, et al., 2004; STEM Education Coalition, 2016). As Gould says in the quote above, if our children do not know about the environment they cannot love it, and therefore, they will not protect it. Researchers are finding that children are being conditioned to associate nature with environmental doom, a phenomenon known as: Ecophobia (Goleman, Bennett and Barlow, 2012; Louv, 2008; Sobel, 1999). Ecophobia contributes to the decline of outdoor play current generations are experiencing (Goleman, Bennett and Barlow, 2012; Louv, 2008; Sobel, 1999). A look at what we currently know about field based EE and barriers to its inclusion in our public schools will assist in moving forward with this research.

The purpose of this case study is to explore the barriers, or *constraints*, to the adoption of field-based EE programs perceived by teachers and administrators in K-8 public elementary schools in the Phoenix metropolitan area of Arizona. The study uses the theoretical lens of Hierarchical Theory of Leisure Constraints (HTLC) (Crawford and Godbey, 1991) to identify those constraints as they relate to interpersonal, intrapersonal and structural categories.

The following chapter will examine the existing corpus of academic literature surrounding constraints to the use of field based EE in our public elementary schools. While there appears to be very little published addressing barriers to field based EE, a systematic exploration of peer reviewed journal articles was performed to produce a review that spans internationally over the last 20 years. Each section will address inclusion/exclusion parameters in detail. Databases used will be identified as well as search terms utilized (Booth & Sutton, 2016). By adhering to the inclusion/exclusion criteria, selection bias has been minimized, and the multiple databases prevents publication bias (Booth & Sutton, 2016). Search terms were discussed, revised and reworked, as was the guiding question for the review, with the assistance of an academic librarian.

Search Parameters

All search parameters and terms were derived with the intention of uncovering existing scholarly literature related to field based EE and its absence in our public schools. In hopes of determining the scope of literature available, a preliminary search was performed using Google scholar. A librarian counseled that Google Scholar is a broad scholarly database and a good place to begin when looking for literature available on a subject. While it does not distinguish between peer reviewed articles, books and/or other types of publications, a researcher can get a good indication of the breadth of literature available.

Once exploration on the subject was completed in Google Scholar the search was expanded to peer reviewed articles available through Library One Search and EBSCO Host. Library One Search is a database search engine provided by the Arizona State

University Library to enable users to explore multiple databases at once. EBSCO Host makes available other databases that may have been missed by Library One Search. In addition, it is important to note that inquiries were performed on scholarly articles obtainable from Educational Resources Information Center (ERIC), PUBMED, and PSYCINFO yielding zero results for the search terms and keywords entered. The extensive multiple database search was performed in order for the researcher to feel certain that a diligent and exhaustive search for the largest corpus of literature was achieved.

Restrictions to the search of databases was accomplished using the following filters:

1. Results were limited to peer-reviewed articles in scholarly journals.
2. Included in the historical review were any peer reviewed articles published between 1800 and 2019.
3. Subsequently, scholarly articles pertaining to barriers to field based EE in K-8 public schools focused on publications from the year 2000 through 2019.
4. Articles must have been published in English.
5. International research was included.

History of EE

Not for the first time, environmental literacy has been placed in the forefront of public education reform in the United States (Carter and Simmons, 2010; Hart 2010; Louv, 2008). But what exactly does environmental literacy mean and how does it relate

to field based EE? This section will trace the roots of field based EE as chronicled through scholarly journals. A universal definition will be offered using contextual knowledge. In addition, the historical review will look at where the American public school system fits in the development of national and statewide environmental literacy framework. Finally, the need for additional EE research and its importance in sustainable education will be discussed.

The term environmental literacy was first used 45 years ago in an issue of the *Massachusetts Audubon* by Roth (1968) who inquired "How shall we know the environmentally literate citizen?" Gradually, it became clear that environmentally literate citizens were those who understood the natural environment and our natural resources. This includes a person's understanding that measures must be taken to protect the environment if we mean to survive (Carter and Simmons, 2010; Morrone et al. 2001; O'Brien, 2007; Rickinson, 2001; Roth, 1992; Simmons, 1995).

Building on the urgency of increasing environmental literacy, the National Environmental Policy Act of 1969 (NEPA) became effective January 1, 1970 (Carter and Simmons, 2010). The purpose of the NEPA is to promote efforts that will prevent the destruction of our natural environment while increasing the health and welfare of our species. It also seeks to enrich the knowledge base of Americans on the importance of natural resources and ecological systems in the environment. On April 22, 1970 Gaylord Nelson, a US Senator from Wisconsin, and Denis Hays, a Harvard law student, came together to stage an environmental teach-in that is now referred to as Earth Day (Carter and Simmons, 2010; Ham and Sewing, 1988; Rome, 2003). And finally, in October 1970, President Nixon signed into law the Environmental Education Act (EEA) (Carter and

Simmons, 2010). The EEA created the Office of Environmental Education which worked to allocate funding for EE in public education. The EEA was renewed in 1990 through the National Environmental Education ACT (NEEA) signed by President Bush, however, funding never seemed sufficient for the goals and initiatives of the NEEA (Carter and Simmons, 2010).

Meanwhile, global consciousness of the growing ignorance of the general population related to EE, became the focus of the United Nations Educational, Scientific and Cultural Organization (UNESCO). Founded in 1946, the mission of UNESCO is to "build peace through international cooperation in Education, the Sciences and Culture" (https://en.unesco.org; Martinez de Moentin, 2011). In the 1977 meeting, EE was made a universal priority for UNESCO, which set forth the definition of EE as follows:

> Environmental education is a learning process that increases people's knowledge and awareness about the environment and associated challenges, develops the necessary skills and expertise to address the challenges, and fosters attitudes, motivations, and commitments to make informed decisions and take responsible action (UNESCO, Tbilisi Declaration, 1977).

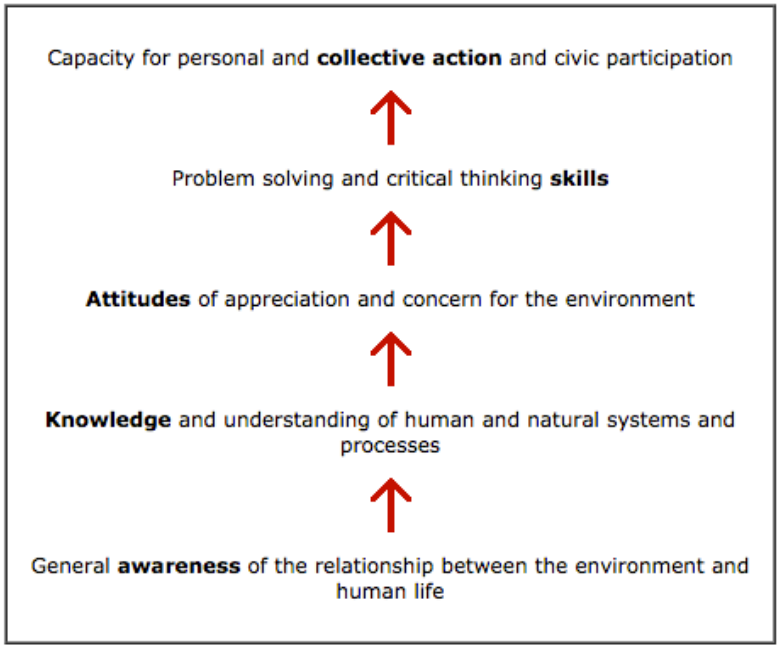
As a result of the conference, an international standard for EE was developed known as the Tbilisi Declaration (UNESCO, 1977), and it states five categories from which goals and objectives in EE should be aimed:

- **Awareness:** to help social groups and individuals acquire an awareness and sensitivity to the total environment and its allied problems.

- **Knowledge:** to help social groups and individuals gain a variety of experiences in and acquire a basic understanding of the environment and its associated problems.
- **Attitudes:** to help social groups and individuals acquire a set of values and feelings of concern for the environment and motivation for actively participating in environmental improvement and protection.
- **Skills:** to help social groups and individuals acquire the skills for identifying and solving environmental problems.
- **Action:** to help provide social groups and individuals with an opportunity to be actively involved at all levels in working toward resolution of environmental problems.

Collectively, these five categories compose what was named the **"AKASA model"** (Figure 1). The Tbilisi Conference also provided 12 statements known as the Guiding Principles of EE (Appendix A). According to the Tbilisi Declaration, these principles call for the development of a more far-reaching process than the formal system of K-12 education, and it aimed to reach a broader audience, including citizens, adults, and environmental professionals (Martinez de Moentin, 2011; UNESCO, 1978).

Figure 1: AKASA Model – adapted from https://en.unesco.org



In 1971, the National Association for Environmental Education (later named the North American Association for Environmental Education (NAAEE)) was formed by concerned educators who felt that cohesive and collaborative EE materials should be made available in the United States (Carter and Simmons, 2010). Through the NAAEE, we now have the National Project for Excellence in EE. This project provides educational leaders with standards and guidelines for the practice of integrated EE.

21st Century Education Reform and EE

In the past, education reform has been initiated without thought to the effect it would have on field-based environmental education and community environmental education resources (Andereck & Gramann, 1989). This has created generations who do not know the true value and necessity of protecting our natural environment (Louv, 2005). It is essential for teachers to be trained to practice pedagogical approaches that

understand every child will learn to the best of his/her ability. School/home connections would thrive, and children would once again see their school as a place where they can feel safe and supported. A place where they learn to be healthy, engaged, and are challenged to do their best (Elias, 2006; Gibbs et al, 2000; Giles et al, 2015; Lewallen et al, 2015).

Delving deep into the curriculum maps of urban public elementary schools, a resounding lack of the inclusion of EE is evident (Carrier et al., 2013; Cassell and Nelson, 2010). For this reason, legislation such as the United States' "No Child Left Inside Act" (2006, 2015, 2017), the UK's Manifesto on Learning Outside the Classroom which works hand in hand with the National Association for Environmental Education (NAEE) curriculum and the European Union's Environmental Education towards Sustainable Development Act (EESD) have been implemented (UNESCO, 2015).

With the help of the North American Association for Environmental Education (NAAEE), many states have adopted or are in the process of adopting EE frameworks that would standardize a curriculum. Even so, there is an ever-widening void in the education of upper elementary school students (4th to 6th grade) with respect to EE, contributing to the loss of connection and appreciation for those natural environments that we need to survive (Cole, 2007; Cosgriff & Thevenard, 2011; Louv, 2008; Rickinson, 2001). If we do not implement programs using evidence-based, best practice pedagogy in EE to reverse this trend immediately, then the future of world's lavish landscapes, extraordinary wildlife, and abundant natural resources will be left to generations to whom they hold no value, and, therefore, will be destroyed (Cosgriff & Thevenard, 2011; Louv, 2008; Lugg, 2007).

In the United States over the last two decades, awareness of the importance of experiential EE and getting children connected to nature seems to be gaining ground. This increased awareness culminated in the legislation for education reform signed into law on December 10, 2015, by President Obama. The Every Student Succeeds Act (ESSA), which replaces No Child Left Behind (NCLB), prioritizes Science, Technology, Engineering, and Math (STEM) activities including additional opportunities for environmental science education programs. Research shows that EE instills a love for the natural world while encouraging stewardship and conservation (Louv, 2005). If our society does not take measures to develop environmentally literate citizens, the sustainability of the environment remains at risk (Cosgriff & Thevenard, 2011; Louv, 2008; Lugg, 2007).

Accountability for the quality of education being provided was shaped by No Child Left Behind (Klein, 2015) and continues with Every Student Succeeds Act (ESSA, 2015). Implementation of the inclusive classroom in the mainstream schools began with the intention of equalizing the quality of education for all students. But without adapting pedagogy to bridge the gap in learning styles and differentiation for special needs populations, we may be effectively decreasing access to quality of education for all (Kurz, 2014). Building on the need to improve academic outcomes and protect our natural environment, identifying barriers to implementing evidence-based programs that support field-based EE in our public schools is one possible starting point.

STEM and E/STEM

Why is it important to understand STEM when discussing EE? EE is essentially environmental science. Environmental science is a large portion of STEM education

(Brown et al., 2011; Schmidt et al., 2014; Wals et al, 2014). As with EE, there are many interpretations of the term STEM (Science, Technology, Engineering, and Math). An interesting turn of phrasing, the original acronym used by the National Science Foundation (NSF) in the 1990s referred to SMET or Science, Mathematics, Engineering and Technology (Sanders, 2009). Eventually, the acronym was reworked in a more marketable manner transforming into STEM (Science, Technology, Engineering and Math). Regardless of the terminology, educational leaders have often misunderstood and misrepresented the meaning of STEM education and curriculum.

The term "STEM education" refers to teaching and learning in the fields of science, technology, engineering, and mathematics (Brown et al., 2011; Wals et al, 2014). It typically includes educational activities across all grade levels— from pre-school to post-doctoral—in both formal (e.g., classrooms) and non- formal (e.g., afterschool programs) settings. Federal policymakers have an active and enduring interest in STEM education and the topic is frequently raised in federal science, education, workforce, national security, and immigration policy debates. At its simplest, the term STEM stands for the four primary discipline families of Science, Technology, Engineering and Mathematics. However, many organizations, institutes, and researchers do not have a clear classification of the specific disciplines that comprise STEM. More problematic is differing definitions that include or exclude large fields like health sciences and agriculture.

Gonzalez and Quenzi (2012) attempt clarification in STEM education by looking at demographic considerations and how they will influence the interpretation of STEM education. Koonce, et al (2011) attempt to define STEM education by breaking it down

into degrees of complication and fields of expertise. What is interesting is that while life and earth sciences are included in the definition of STEM education, it is generally not considered EE from the formal education side. This is brought to light through research done by the NAAEE which received a grant in 2013 from Underwriters Laboratory to do research showing how environmental education can be integrated into STEM education initiatives. They referred to the program as E/STEM. E/STEM aligns with 4 key educational best practices that deeply engage students (NAAEE, 2013, p. 2):

1. Hands On: Project-based environmental learning is almost exclusively hands-on.
2. Tangible Themes: The environment is a tangible theme (and "passion area") that incorporates broader learning topics in science, technology, engineering, and mathematics.
3. Aligns with Interests: The environment is consistently rated one of children's top interest areas
4. Fosters Achievement/Empowerment: Projects result in a visible impact made by students which fuels inspiration and a sense of achievement.

Seeing a need for further guidance to educators, Fenichel and Schweingruber (2010) proposed a framework that pays special attention to gaining science conceptual knowledge through the performance of science as recommended by the National Research Council (2012) for classroom science learning. Engaging in scientific reasoning (Fenichel & Schweingruber, 2010) is primarily how students and teachers participating in STEM schools increase their understanding, interest, and confidence in learning and teaching science. This is achieved by incorporating a cross curricular

pedagogy that emphasizes reading and language arts skills aligned with ELA State Core Standards for each grade level while encouraging creative and critical thinking. Additionally, these outdoor STEM learning modules are packaged to maximize opportunities for maintaining situational interest and increasing student individual interest (Hidi & Renniger, 2006) in STEM disciplines.

Barriers to Field Based EE

While research exuding the benefits of field based EE abound, existing scholarly literature on barriers (or constraints) to the use of field based EE in public elementary schools in Phoenix, Arizona yielded zero results. The search was expanded to include any studies related to the subject that were published in the U.S. or abroad, within the 2000 to 2019 timeframe. There are a few researchers that are looking at this phenomenon, most outside of the U.S. Their work will be reviewed in this section. Interestingly, and an indicator of the need for the current study, is the lack of research seeking to understand why field based EE is not common practice in public elementary schools is addressed in more than a few articles (Cosgriff & Thevenard, 2011; Coughlin, 2010; Ernst, 2007, 2012; Eshach, 2007; Rickinson, 2001 and 2006; James and Williams, 2017; Rickinson et al., 2004; Stevenson, 2007; Schmidt et al., 2014; Waite, 2011).

It has been mentioned that many educators equate field based EE with taking a field trip (Anderson and Zhang, 2003; Cole, 2007; Coughlin, 2010; Eshach, 2007; Hart, 2010; Stevenson, 2007; Waite, 2011). Building on this aspect, a study was completed in 2003 to explore ways of increasing the collaboration between schools in Vancouver, Canada and various field trip venues (Anderson and Zhang, 2003). The study looked at barriers facing K-7 public school teachers in the Greater Vancouver regional school

districts with the integration of field trips to a local science center. Teachers from 10 schools over 3 districts completed a questionnaire and participated in focus groups. Anderson and Zhang (2003) found that 90% of the 93 educators who participated in the questionnaire felt field trips were an extremely valuable piece of a child's education. However, teachers felt that it was the shared responsibility of the venue and the school to integrate the experience into the curriculum. While materials do exist for teachers to introduce field trip related materials, there is a lack of knowledge of these resources (Anderson and Zhang, 2003; Coughlin, 2010). Teachers cited a lack of evidence of post field trip connections within classroom curriculum frameworks as one of the biggest constraints to repeat visits.

Anderson and Zhang (2003) found the top five barriers to planning a K-7 field trip were:

1. Curriculum Fit
2. Perceived value of the experience
3. Venue Entry Costs
4. Amount of enjoyment
5. Transportation Costs

In hopes of better understanding these issues, the authors call for additional research (Anderson and Zhang, 2003, p 8).

Over the next two decades, researchers have delved into the advocacy of field based EE programming in public schools worldwide (Atchison, & Feig, 2011; Barnes et al, 2017; Bartosh, 2003; Bartosh, Tudor, Ferguson, & Taylor, 2006; Blair, 2009; Brown et al, 2011; Cosgriff, 2014; Cole, 2007; Cassell and Nelson, 2010; D'Amato and Krasny,

2011; Engels & Jacobson, 2007; Ernst and Monroe, 2004; Eshach, 2007; Glackin and Jones, 2012; Goleman, Bennett and Barlow, 2012; Grunewald, 2003; Hart, 2010; James and Williams, 2017; Leiberman, Hoody, & Leiberman, 2005; Lewallen, 2015; Louv, 2008; Nadelson, et al., 2013; Nichol, 2014; Rickinson et al, 2004; Stepath, 2005; Schensul, 2009; Schmidt et al., 2014; Stevenson, 2007; Tramonte, and Wilms, 2010; Veletsianos, 2009; Waite, 2011). Each one presented empirical research on the efficacy of field based EE. There is a cursory mention of barriers or constraints that exist in elementary public education pertaining to the use of field based EE in these studies.

In 2003, Bartosh completed a longitudinal study on improving academic outcomes through field based EE. The research looked at 77 pairs of schools (K-12) over a 5 year period. In his work, Bartosh discusses contributing constraints to the efficacy and implementation of field based EE as proper teacher training; perceived value of the experience by teachers and administrators; and collaborative planning practices. Stevenson (2007) cites time on task and classroom control as two major barriers to field based EE. Hart (2010) discusses frustration from field based EE educators at the lack of progress in the inclusion of programs in the schools (Hart, 2010). Issues such as evidence based practice, measurable outcomes, lack of teacher training, and perceived instructional value of programming are glanced over as potential road bumps with K-8 public schools in moving forward with field based EE.

Susan Waite (2011) performed a mixed methods study on outdoor classroom pedagogies in the U.K. A survey was done including 439 (total n=1,764 with 1,325 participants from preschool and day care facilities) participating public elementary school educators. Waite was looking to understand how public school core standards and

educator values (related to experiences outdoors) affected the integration of outdoor (field based) learning in general. Her work talks about enjoyment and well-being (two tenets of leisure education) (Dattilo, 2015) as a motivator for the use of the outdoors. Included in the article is one paragraph discussing responses that mention barriers to developing outdoor programming with funding being most often sited, adult attitudes as next in line, available venues, and finally safety concerns (Waite, 2011).

The work of one scholar has stood out as having its focus on the constraints to field based EE in public schools. Julie Ernst's (2007, 2009, 2012) work is rooted in K-12 public schools using environment-based education (EBE). EBE is a method of instruction that integrates core subject matter (English, math, social studies, and science) in EE using place based practices (field-based). In 2007, Ernst did a study involving 287 K-12 teachers. She was looking for barriers to using EBE despite the large body of evidence that it had a significantly positive impact on student outcomes (Ernst, 2012). Ernst found that teacher attitude towards EE and lack of training were primary reasons that EBE was not being used. In 2009, a second study was done involving 190 5^{th} – 8^{th} grade US public school teachers. In reviewing the results of both studies, Ernst determined the following as the strongest barriers to implementing EE (Ernst, 2012, p.75):

1. Lack of funding
2. Lack of transportation
3. Standardized testing
4. Tying to state standards
5. Lack of planning time

In the 2009 study, the issue administrative support was added as a potential barrier and found to be noted as such in 67% of schools not using EBE. Ernst takes note that perception and attitude on the part of both teachers and administrators is an integral piece to understanding barriers to using EBE (field based EE). Ernst adds theoretical foundations to the 2009 research connecting to HLCT:

> The constraint negotiation literature in leisure research provides additional theoretical grounding. Participation in recreation (or in this case, teachers' implementation of EBE) is not dependent on the absence of constraints, but on the negotiation through them (Jackson, Crawford, & Godbey, 1993). Negotiation of constraints refers to overcoming obstacles to participation (Samdahl, Hutchinson, & Jacobson, 1999). Successful negotiation through the constraints depends on the strength of those constraints and the strength of one's motivation (Jackson, Crawford, & Godbey, 1993). (Ernst, 2009, p. 88)

This theoretical grounding of EBE to HLCT strengthens the interdisciplinary aspects of HLCT. It additionally adds weight to the use of HLCT as a grounding theory for the current research study.

Experiential Learning and Experiential Learning Theory

The consensus among researchers is that we need to increase exposure to nature and hands on education about environmental issues but maintain a deliberate environmental agenda so as not to confuse leisure activities with education (Avraamidou, 2013; Blair, 2009; Doering and Veletsianos, 2008; Ferreira & Trudel, 2012; Glackin and

James and Williams, 2017; Jones, 2012; Kimball et al, 2009; Louv, 2005, 2008; Nadelson et al., 2012; NAS, 2014; NRC, 2007 and 2012; Orr, 2004; Waite, 2011). Experts like David Orr (2004) have noted that merely having statistical information on the depletion of natural resources or harmful effects of pollution is not sufficient and will not cause a change in behaviors to favor the environment.

EE offered in formal (in the classroom), non-formal (field based) and informal (incidental or spontaneous) learning environments contributes to the development of environmental literacy. EE teaches children and adults how to learn about and investigate their environment and emphasizes direct interactions with nature and outdoor learning environments (Blair, 2009; Cosgriff & Thevenard, 2011; Clark 2014; D'Amato and Krasny, 2011; Doering and Veletsianos, 2008; Ferreira & Trudel, 2012; Lewallen, 2015; Smith and Williams, 1999). Students that have access to EE in all of these ways have seen many benefits including the ability to overcome Ecophobia (Louv, 2008; Goleman, Bennett and Barlow, 2012).

From an academic perspective, students that participate in EE have improved performance in reading, math, science, and social studies. They also have a decrease in classroom discipline problems (Clark 2014; Cosgriff & Thevenard, 2011; Doering and Blair, 2009; Ferreira & Trudel, 2012; Louv, 2008; Smith and Williams, 1999; Veletsianos, 2008;). Students are able to transfer knowledge to unfamiliar contexts and are able to "do science" rather than just learn about it (Avraamidou, 2013; Louv, 2008; Nadelson et al., 2012; NEETF, 2005; Rickinson, et al., 2004; STEM Education Coalition, 2016). By the time a student graduates high school, he or she will have spent almost 20,000 hours of his or her life in a school, and the environmental sustainability features

of these schools is as important as the curriculum being taught in the classrooms. Sustainable schools have been found to: enhance student learning, increase educational enrichment, increase student performance, use about 30% less energy and water, increase state competitiveness, and reduce social inequity (Cassell and Nelson, 2010; Frisk and Larson, 2011; Hart, 2010; Kats, 2006; Louv, 2008; Rickinson and Lundholm, 2010; Wiek, Withycombe, and Redman, 2011).

Gruenewald (2003) describes place-based education, (another way of referring to field based EE) in the following context:

> Place-based educators do not dismiss the importance of content and skills but argue that the study of places can help increase student engagement and understanding through multidisciplinary, experiential, and intergenerational learning that is not only relevant but potentially contributes to the well-being of community life. (p. 7)

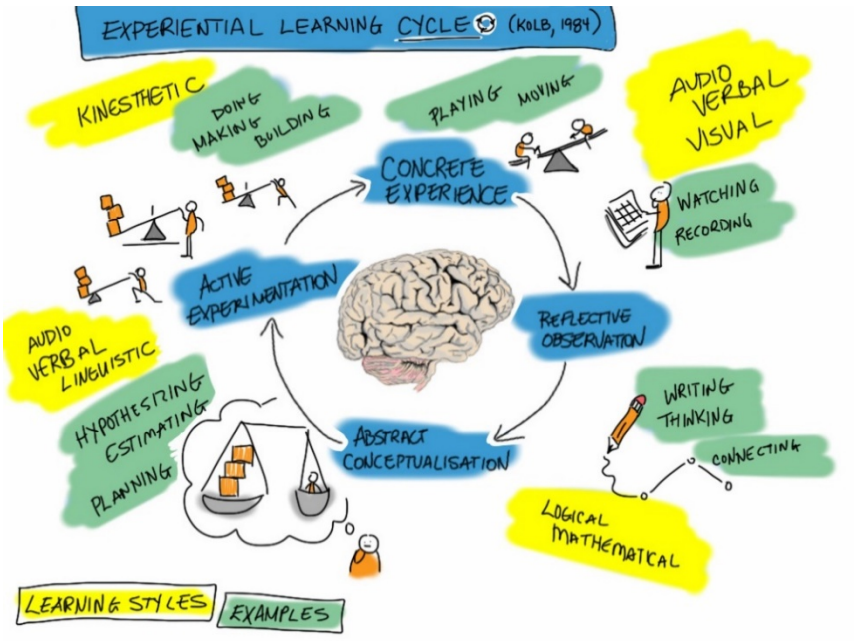
Allowing students to learn *in situ* also increases the ability of a more diverse student population to flourish in peer based inclusive education (Blair, 2009; Clark 2014, Cole, 2007; Cosgriff & Thevenard, 2011; Doering and Veletsianos, 2008; Ferreira & Trudel, 2012; Gruenewald, 2003; Louv, 2008). The contradiction between supporting research studies and the conceptualization of field based EE as being simply a field trip may be key to being able to advocate for changing the existing pedagogical paradigm (Brown et al, 2011; Cole, 2007; Ernst, 2012; Ham and Sewing, 1988; Hart, 2010; Neville, 2012; Rickinson et al, 2004; Waite, 2011) .

Experiential Learning (EL) is a process of 'constructing knowledge' by 'creating tensions' among four learning modes. The learner experiencing EL methods 'touches all

the bases – experiencing, reflecting, thinking and acting' in a learning cycle in a 'recursive process' giving response to the 'learning process' in accordance to 'learning situation and what is being learned' (Jose et al, 2017; Kolb 2005). This is illustrated in Figure 2.

Figure 2:

The Experiential Learning Cycle (Kolb, 1984)



Based on a meta-analytic review of 150 outdoor learning research studies, Rickinson et al, (2004) identified substantial research evidence to suggest that field based experiential learning programs are associated with positive outcomes for young students, including attitudes toward the environment, independence, confidence, self-esteem, locus of control, self-efficacy, personal effectiveness and coping strategies; and interpersonal and social skills, such as social effectiveness, communication skills, group cohesion and teamwork (Rickinson et al., 2004). Positive effects on academic performance have also

been documented with increased science test scores (American Institute for Research, 2005).

Blair (2009), Doering and Veletsianos (2008), and Ferriera et al (2012) support the use of experiential programs to enhance school curriculum, engage learners and increase positive learning outcomes. Blair (2009) says, "The results of qualitative, quantitative and survey research have supported the conclusion that school gardening can improve students' test scores and school behavior. Teachers believe that gardens promote academic instruction" (p.35). Additionally, it has been found that hands on experiences in learning followed by a focused reflection piece will empower learning (Shellman, 2014).

Understanding the need of making EL more accessible to classroom teachers at the K-8 elementary school level, Doering and Veletsianos (2008), worked with four integration models for EL through technology in the classroom: curriculum based; activities based; standards based; media based. They found that the use of these models, which fostered collaboration between teachers within the same school, enhanced teacher and student participation and experiences using adventure learning curriculum from "Go North", a program that follows teams exploring Antarctica. Similar results were reported by Li et al (2013), Moos and Honkomp (2011), and Veletsianos, & Kleanthous, (2009) with programs utilizing experiential learning hybrid or technologically blended models.

Building on the foundation of the principles in experiential education, Cordova and Lepper (1996) tell us that students for whom the abstract learning activities had been embedded in meaningful and appealing fantasy contexts generally showed substantially greater motivation, involvement, and learning than those for whom the activities had not

been so contextualized. In addition, connections are being made linking social and emotional learning to student success in school (Elias, 2006; Weissberg & Cascarino, 2013; Zins, 2007). A child who has a solid emotional/social foundation will be better able to navigate the public school system with promising results. What EE research also agrees on is that there is a lack of social learning and cultural involvement in our schools. Social learning and cultural involvement have been said to be necessary to the sustainability of society as a whole. (Clark, 2014; Diduck et al., 2012; Ferreira & Trudel, 2012; Giles et al., 2015; Gibbs et al., 2000; Kaplan and Owings, 2011; and Sterling, 2011).

In order to have an impact on the practices and paradigms in public education, the importance of an appropriate theoretical framework underpinning my work is acknowledged. The interdisciplinary nature of social science and the philosophy behind Community Resources and Development as a field of study, have brought the realization that there are many recognized theories that could be construed as appropriate to exploring the overarching focus to my research: How can community resources assist public elementary education in the implementation of field based experiential EE?

Theoretical Framework

With the goal in mind for this study to add to the existing pool of knowledge regarding barriers to field based EE in public elementary schools in the most transformative manner, the Hierarchical Leisure Constraints Theory (HLCT) (Crawford and Godbey, 1991) made sense as a theoretical basis for this research. EE is rooted in leisure studies in that outdoor recreation, outdoor education, and leisure education can

and do take place within the natural environment (Cosgriff & Thevenard, 2011; Dattilo, 2015; Goleman, Bennett and Barlow, 2012; Louv, 2008; Schatz, 1996).

Hierarchical Leisure Constraints Theory (HLCT)

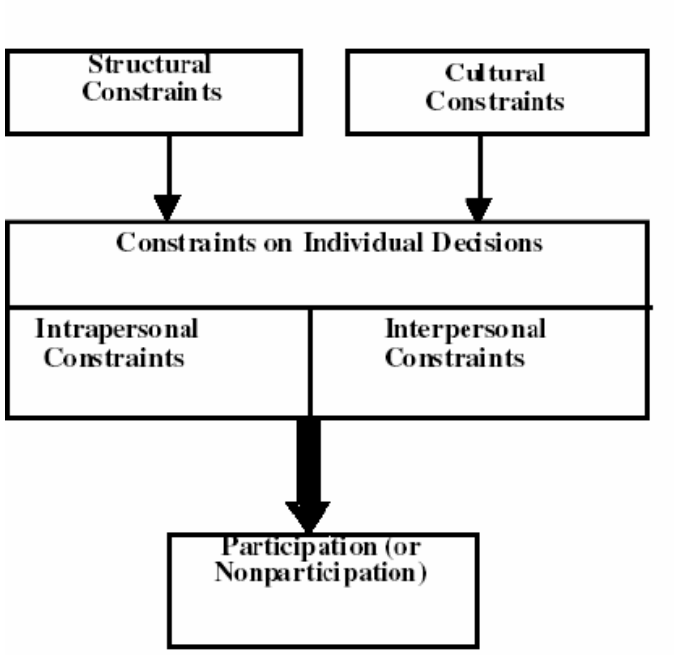
Crawford and Godbey's Hierarchical Leisure Constraints Theory blends human psychology and motivational theories while exploring the root cause of constraints to participation in leisure activities (Crawford & Godbey, 1987; Crawford et al, 1991; Godbey et al., 2010). HLCT posits a constraint is anything that limits one from achieving a goal or level of performance. Constraints can be both internal and external but often are something for which steps can be implemented, negotiated and overcome.

This theory will serve as a basis for data coding that will be used in interpretation of the findings. While there are several theories widely used to explore constraints, HLCT (Crawford and Godbey, 1991) appears to apply more succinctly to this study as it is interdisciplinary in nature (Godbey et al., 2010). The field of EE is very closely tied to leisure studies not only through leisure education but also through its roots in parks and recreation. In the quote by Stephen Gould at the start of this chapter he states that it is not common for people to protect something that they don't know and love. Most people are introduced and subsequently connected to the natural environment through recreation and leisure. Participation in leisure (or recreational) activities can be hindered by constraints as defined in HLCT. For this reason, HLCT can be directly connected to studies not only in leisure activities, but in EE as well (Crawford & Godbey, 1987; Crawford et al, 1991; Cosgriff & Thevenard, 2011; Dattilo, 2015; Godbey et al., 2010;

Goleman, Bennett and Barlow, 2012; Louv, 2008; Schatz, 1996). Figure 3 below shows how constraints are being defined within the model for HLCT:

Figure 3

Refined Hierarchical Model of leisure Constraints (Chick & Dong, 2003)



Initially presented in 1987, Crawford and Godbey contend that there are certain constraints that stop people from taking part in leisure activities. These are comprised of intrapersonal constraints, interpersonal constraints, and structural constraints. Intrapersonal constraints are those that develop from an individual background or beliefs about the activity. These can be part of a moral code or superstition learned from the culture and environment from which one came. Interpersonal constraints arise out of social interactions with family, and friends, and society. Social acceptability, etiquette and propriety play a large role in the development of interpersonal constraints (Hultsman, 1995). These could be a simple lack of

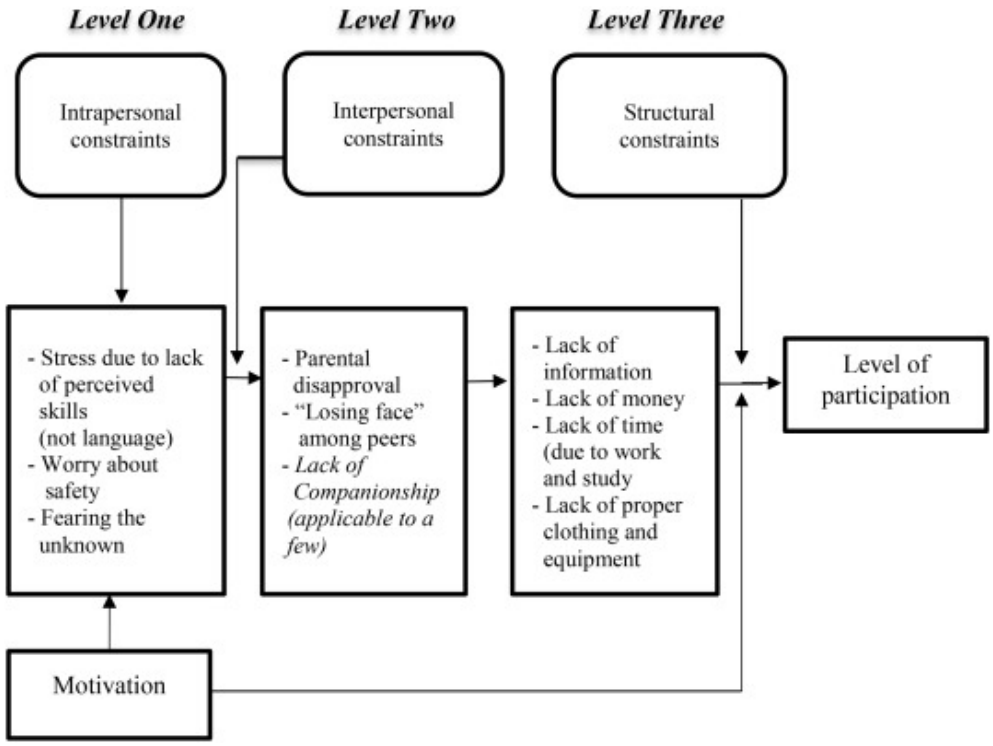
appropriate attire or knowledge of accepted conduct during an activity. It is important to note that both intrapersonal and interpersonal constraints are such that the power to negotiate the resolution of the constraint lies with the individual. The last set of constraints are those referred to as structural constraints. Structural constraints exist, for the most part, beyond the immediate control of the individual (Chick & Dong, 2003). Lack of funding, lack of transportation, logistics, time, and availability all contribute to structural constraints to participation. Once the most prominent constraints have been resolved, there is a potential for participation and enjoyment in the activity (Crawford and Godbey, 1987 and 1991; Godbey, et al., 2010).

Later, in Crawford, Jackson, and Godbey (1991), researchers expanded the leisure constraints model to include a hierarchy of constraints that could be negotiated in order to facilitate participation in an activity (Crawford, Jackson, and Godbey, 1991; Jackson, Crawford, and Godbey, 1993). Figure 4 illustrates the Hierarchical structure of constraints to participation. The first level of constraints that must be overcome are *intrapersonal*, or intrinsic barriers. Without first allaying concerns that a person has due to internal preexisting prejudices, there is no hope of them participating in an activity. Next, Crawford et al., contend that level *interpersonal*, or extrinsic barriers involving other people or society must be addressed. Both intrapersonal and interpersonal constraints can be deeply rooted in psychology (Crawford, Jackson, and Godbey, 1991; Hultsman, 1995; Chick & Dong, 2003; Godbey et al., 2010). Finally, the last level of constraints to be negotiated are structural constraints or those beyond the control of the potential participant. Regardless of the transparency to the existence of each level of

constraints, the hierarchy must be followed to assure successful negotiation (Crawford, Jackson, and Godbey, 1991; Chick & Dong, 2003; Godbey et al., 2010).

Figure 4

The Hierarchy Model Of Leisure Constraints



Source: Adapted from Crawford, Jackson, and Godbey (1991); Jackson, Crawford, and Godbey (1993, p.9)

Figure 4 explains the order in which constraints will need to be negotiated according to HLCT. Intrapersonal constraints are always the first to be looked at as these are under the most control of the individual. Intrapersonal constraints are also a major motivational factor to consider when negotiating all other constraints. If a person does not feel comfortable or capable doing something, no matter how hard outside influences

may try to change participation levels, motivation will not be there. Likewise, if the individual does not choose to change their perspective on both intrapersonal and interpersonal constraints, they will never be motivated to participate. Without motivation, there is no incentive to overcome any barriers or constraints to participation. Structural constraints are negotiated last as they will tend to be easier to overcome once the individual has dealt with the first two levels of constraints. This is key to the impact of the current study as no one has ever looked at motivation and psychology associated with constraints to integrating field based EE programs at the elementary school level.

Chapter Summary

Presented in this chapter was a history of EE as seen in scholarly literature which shows a lack of progress in the inclusion of field based EE in our public schools (Carter and Simmons, 2010; Hart 2010; Ham and Sewing, 1988; Louv, 2008; Martinez de Moentin, 2011; Morrone et al. 2001; O'Brien, 2007; Rome, 2003; Roth, 1992; Simmons, 1995; UNESCO, Tbilisi Declaration, 1977). Literature was then explored regarding 21st Century Education Reform and EE which illustrated a long road to EE's inclusion in public elementary curriculum now supported by the ESSA of 2015 (Andereck & Gramann, 1989; Carrier et al., 2013; Cassell and Nelson, 2010; Cole, 2007; Cosgriff & Thevenard, 2011; Elias, 2006; Gibbs et al., 2000; Giles et al, 2015; Klein, 2015; Kurz, 2014; Lewallen et al, 2015; Louv 2005; Louv, 2008; Lugg, 2007; UNESCO, 2015).

From educational reform, the literature review then examined the relationship between EE and STEM (E/STEM). The reason for this connection was to understand that opportunity to integrate field based EE already exists within current initiatives in

curriculum advancement. From the articles there is a direct link between EE and STEM (E/STEM) from an academic and 21st century skills standpoint (Brown et al., 2011; Fenichel & Schweingruber, 2010; Gonzalez and Quenzi, 2012; Hidi & Renniger, 2006; Koonce, et al 2011; NAAEE, 2013; Sanders, 2009; Schmidt et al., 2014; Wals et al, 2014).

Moving on, theoretical foundations to advocate for field based EE are investigated by just touching the surface of the volumes of research that have been published in support of field based experiential learning models (Blair, 2009; Clark 2014; Cosgriff & Thevenard, 2011; Ferreira & Trudel, 2012; Smith and Williams, 1999; Veletsianos, 2008). Congruently, very little research has been published that explores the barriers, both real and perceived, to the adoption of field based environmental education programs in K-8 public schools. With the recent push in department of education policy for EE and STEM instruction as an initiative to build career and college ready high school graduates, clarification is needed regarding the actual scope of STEM learning. The benefits of integration and the rigor of an experiential learning platform in integrated field based STEM learning programs needs to be brought to the forefront (Avraamidou, 2013; Louv, 2008; Nadelson et al., 2012; Rickinson, et al., 2004; STEM Education Coalition, 2016).

Finally, scholarly literature exploring the foundations of HLCT were presented. Looking at constraints from a leisure standpoint was supported by several researchers (Cosgriff & Thevenard, 2011; Dattilo, 2015; Ernst, 2007; Goleman, Bennett and Barlow, 2012; Louv, 2008; Schatz, 1996). The development of HLCT brought with it a better understanding of how to increase the likelihood of participation by looking at constraints first from the values and background knowledge of the person (intrapersonal), then

addressing those barriers that exist due to societal attitudes and peer pressure (interpersonal), and finally looking at logistical practicalities (structural) that need to be overcome (Chick & Dong, 2003; Crawford, Jackson, and Godbey, 1991; Godbey et al., 2010).

By summarizing the current corpus of scholarly literature, it is apparent that research looking at the barriers to field based EE in elementary public schools in Arizona is all but non-existent. Expanding the search parameters, the works of Bartosh, (2003); Grunewald, (2003); Ernst and Monroe, (2004); Rickinson et al, (2004); Leiberman, Hoody, & Leiberman, (2005); Stepath, (2005); Bartosh, Tudor, Ferguson, & Taylor, (2006); Engels & Jacobson, (2007); Ernst, (2007); Stevenson, (2007); Eshach, (2007); Cole, (2007); Stevenson, (2007); Louv, (2008); Blair, (2009); Schensul, (2009); Veletsianos, (2009); Cassell and Nelson, (2010); Hart, (2010); Tramonte, and Wilms, (2010); Atchison, & Feig, (2011); Brown et al, (2011); D'Amato and Krasny, (2011); Waite, (2011); Glackin and Jones, (2012); Goleman, Bennett and Barlow, (2012); Nadelson, et al., (2013); Cosgriff, (2014); Nichol, (2014); Schmidt et al., (2014); Lewallen, (2015); Barnes et al, 2017); and James and Williams, (2017) (chronologically) offered insight into constraints, both perceived and real, to field based EE in elementary public school curriculum. What all of these studies had in common was the call for additional research pertaining to not only identifying barriers to field based EE but finding a theoretical foundation that would lead to the negotiation of these barriers.

CHAPTER 3

METHOD

Qualitative Research

The current study uses qualitative methods to explore the research questions. A qualitative study is one that is conducted from the perspective of a constructivist and/or transformative paradigm and may be based in theory (Creswell, 2003, 2007). Unlike a quantitative study, a qualitative study includes characteristics that build a holistic view of the issue. This means that research is conducted in the participant's natural settings. The researcher actively collects data through multiple methods that can include observations, open-ended questions delivered in interviews and questionnaires, review of documents, and more. In addition, data are analyzed using inductive (searching for themes in the data) processes and then deductive processes (drawing conclusions from the themes found in the data) to learn more about the meaning given to responses by the participants. It is then up to the researcher to reflect on the emergent themes from the data collected to provide a holistic account of findings in answer to the research question (Anfara and Mertz, 2015; Creswell, 2014).

The qualitative approach tends to sit on a constructivist paradigm. Constructivists look at a "situated activity that locates the observer in the world" (Denzin & Lincoln, 2008, p. 3) and ontologically believe "reality is context and socially relative…therefore many realities can exist simultaneously" (Spencer, Pryce & Walsh, 2015, p. 85). Mack et al. (2005) offers, "the strength of (both) qualitative research (paradigms) is its ability to provide complex textual descriptions of how people experience a given research issue"

(p. 1). The use of rich narrative words/phrases to describe participants' viewpoints (Stake, 2005) while reflexively interpreting informant information is one of many features of qualitative research. The concept of reflexivity may be described as the attention qualitative researchers give to "how power and bias come to bear during all phases of (their) research…(and) acknowledging our power, privileges, and biases throughout the research process" (Leavy, 2014, p. 5).

Additional features of qualitative research include, but are not limited to, the propensity to focus on inductive reasoning (Woo, O'Boyle & Spector, 2017), theory generation (not theory testing) (Bricker, DonoHoe, Becerra, & Nickerson, 2015), and production of emic knowledge (Hancock & Algozzine, 2011). Emic knowledge may be defined as unique individual or cultural concepts obtained through an "insider's perspective" (Hancock & Algozzine, 2011, p. 9). Unlike retrieval of etic knowledge through questionnaires for the purposes of producing universal and generalizable information (Creswell, 2013), gaining insider perspectives may be accomplished through in depth interviews (Kayrooz & Trevitt, 2006a) and other methods used in a variety of qualitative research designs.

The five most common research designs used in qualitative research are phenomenology (Brinkmann, Jacobsen & Kristiansen, 2015; Cho & Trent, 2015; Creswell, 2014); narrative inquiry (Brinkmann, Jacobsen & Kristiansen, 2015); ethnography (Kawulich, 2005); grounded theory (Creswell, 2013); and case study (Creswell, 2013; Hancock & Algozzine, 2011; Stake, 1995, Yin, 2014).

The Case Study Design

This research explores constraints to the integration of field based EE programs in K-8 public schools in Phoenix, Arizona. In order to provide a rich and in-depth study of this issue, a case study approach is used as a design for this research (Creswell, 2013). The qualitative approach of case study research seems the most appropriate method to study relatively unexplored phenomena (Ragin, Nagel, and White, 2004). The case study design enables understanding of a phenomenon in context as an integrated whole, allowing researchers to offer a "holistic description and explanation" (Merriam, 1998, p. 29) of each case (Creswell, 2013; Yin, 2003). The strength of the case study approach is in its ability to examine a "full variety of evidence – documents, artifacts, interview, and observations" (Yin, 2003, p. 8).

For the purpose of this dissertation, research was performed using definitions offered by case study methodologists Merriam (1988), Stake (1995), Yin, 2009, and Creswell (2013). Yin (2009) named five components of effective case study research design: (1) research questions; (2) propositions or purpose of study; (3) unit analysis; (4) logic that links data to propositions; and (5) criteria for interpreting findings. The first component of an effective case study calls for appropriate research questions. The most appropriate questions for this type of research were "what" and "how" forms of questions. Thus, the first research question being explored in this study was: What are identified constraints (barriers) to the adoption of experiential EE programs in K-8 public schools in Phoenix, Arizona.? And the second was: How does each type of constraint (intrapersonal, interpersonal, or structural) impact a teacher's ability to implement field based EE into their instructional practice?

The second component of case study research design is to present a clearly defined purpose. As mentioned on page eight, the purpose of this case study was to explore the barriers, or *constraints*, to the adoption of field-based EE programs as seen by teachers and administrators in K-8 public elementary schools in the Phoenix metropolitan area of Arizona. The study used the theoretical lens of Hierarchical Theory of Leisure Constraints (HTLC) (Crawford and Godbey, 1991) to identify those constraints as they relate to interpersonal, intrapersonal and structural categories.

The third component in using the case study research design is a clear unit of analysis. Determining the unit of analysis is a key consideration in choosing participants for a study (Hancock & Algozzine, 2011; Stake, 1995). It is quite common for the unit of analysis for qualitative research designs to be the individual people in the study (Creswell, 2013; 2017). The unit of analysis is directly tied to the research questions developed by the researcher. For the purposes of this research, the unit of analysis was the individual educator.

Once the unit of analysis has been determined, the fourth component to the case study is to decide what methods of data collection will be chosen. In qualitative research, quite often a researcher will choose multiple methods from which to gather data in a study. Three of these methods used in the completion of this research were: focus groups; interviews; and document analysis.

Finally, the fifth component of case study design is the criteria for interpreting findings. It is common practice when using the case study method for a researcher to code the data collected (Creswell, 2013). This is achieved by first reviewing the data and extracting possible themes or commonalities in data sets (Booth et al., 2016; Braun &

Clarke, 2017). This is then funneled into specific codes to use in the interpretation of the findings and for recommending future research (Creswell, 2013; Booth et al., 2016; Braun & Clarke, 2017).

This design is most suitable to the current study due to the constructivist roots of the approach (Stake 1995; Yin, 2009). As a researcher, I recognize my propensity to agree with a constructivist viewpoint. This means I agree that the truth depends greatly on the perspective of the individual. The constructivist paradigm recognizes the importance of the subjective human creation of meaning but doesn't reject outright some notion of objectivity (Baxter and Jack, 2008). Baxter and Jack state, "One of the advantages of this approach is the close collaboration between the researcher and the participant, while enabling participants to tell their stories (Crabtree & Miller, 1999). Through these stories the participants are able to describe their views of reality and this enables the researcher to better understand the participants' actions (Lather, 1992; Robottom & Hart, 1993)" (Baxter and Jack, 2008, p. 10).

The Researcher's Role

My role as researcher for this study was to ensure that ethical research practices were maintained throughout the implementation of all phases. According to Glesne (1999), there are two roles that a researcher plays in a qualitative study. The first is role is researcher as researcher. This includes data gathering through interviews, reading, observation, and data analysis. Merriam (1988) points out that "the importance of the researcher in qualitative case study cannot be overemphasized. The researcher is the primary instrument for data collection and analysis. Data are mediated through this human instrument, the researcher, rather than through some inanimate inventory,

questionnaire, or machines" (p. 19). The second role is researcher as learner. The researcher as learner role includes self-reflection and an awareness of ones' role from the beginning of the study. By acknowledging the researcher's bias and considering this throughout the study, there is a transformation into the "curious student who comes to learn from and with research participants" (Glesne, 1999, p. 41). In qualitative research, bias is accepted as a natural part of the researcher's involvement in the study, but as Glesne (1999) states:

> When you monitor your subjectivity, you increase your awareness of the ways it might distort, but you also increase your awareness of its virtuous capacity. You learn more about your own values, attitudes, beliefs, interests, and needs. You learn that your subjectivity is the basis for the story that you are able to tell. It is the strength on which you build. … (p. 109).

By enlisting the assistance of at least one other scholar in the analysis and interpretation of the data, I expect to limit the influence of my own biases. The monitoring and use of my subjectivity allows findings to be reported in meaningful, verifiable ways (Glesne, 1999).

Researchers Ontology and Epistemology

Reflecting on my own beliefs, I know that my academic career has enabled me to draw on several different disciplines including but not limited to psychology, education and sociology. My training as an elementary and special education teacher has given me insight into many theories of education and psychology including Bandura's (1977) learning theory, Gardener's multiple intelligences (1983), and Kolb's experiential

learning theory (1984) all of which color my perspective on using many different pedagogical methods.

I feel that the Social Constructivist paradigm best fits my beliefs and the perspective from which I view my research. Denzin and Lincoln (2008) state that research approached from a social constructivist position is naturalistic. That is to say that the study will focus on participants doing things in the environment in which they are normally done. By studying phenomenon *in situ*, a researcher can get a clearer picture of the internal and external influences that exist. It also means that sometimes findings may not be generalizable or indisputable but unique to the research study being presented.

By employing other scholars to review and interpret data, the potential for my own bias in this research has been reduced. In addition, transcriptions of the interviews were sent to the interviewee for clarification. Studying the culture and demographics of the area in which the schools and teacher reside will help to dispel some of my own beliefs and allow for empathy. However, we should remember that qualitative research does recognize that the researcher's own perspective will play a part in the construction of the research findings.

As a teacher, I wanted to have an arsenal available from which to mold my practice. This led me to obtain a Masters in Elementary Education (K-6) and Special Education (K-12). A teacher must constantly think of ways to engage the minds of students to motivate them to learn. In looking at society today, in my experience, it appears that we have lost our vision as to the purpose of education. A child's education should be that part of life that provides him or her with the tools or foundation that he or she will need to face anything that life throws at them with confidence. A child's

education should serve as an inspiration to be the best person he or she can be while contributing positively to society.

Over the last five years I had the opportunity to develop a field based EE program to compliment STEM learning in the classroom, through a community resource that works with school districts. The program provided experiential field based STEM (EE) classes in a residential camp setting for elementary aged children in grades 4 through 8. The model offered areas of learning that aligned with what was being taught in the classroom as well as academic core standards necessary to Arizona Public Schools. What I noticed was that many of the teachers and administrators did not understand how they could fit the camp into their curriculum map. These educators also voiced their belief that the program, regardless of its curriculum alignment, was depleting needed instructional time. They did not appear to see a way to integrate cross curricular programming. In fact, during training classes and outreach sessions with the school districts, it became clear that there were several constraints that would need to be identified and eventually negotiated if programs like this (offering evidence based and core standard aligned field based EE) were going to be a sustainable avenue for our students.

Environmental Literacy (EL) and field based EE are both necessary pieces of public education at the elementary school level education (Avraamidou, 2013; Blair, 2009; Doering and Veletsianos, 2008; Ferreira & Trudel, 2012; Glackin and Jones, 2012; James and Williams, 2017; Kimball et al, 2009; Louv, 2005, 2008; Nadelson et al., 2012; NAS, 2014; NRC, 2007 and 2012; Orr, 2004; Waite, 2011). Field based EE has been proven to expose students to elements of their world that they will need to evaluate for a sustainable, productive society (Cole, 2007; Cosgriff & Thevenard, 2011; Louv, 2008;

Rickinson, 2001). In 1943, Abraham Maslow introduced the Hierarchy of Needs to the world. Researchers have found that meeting the basic needs of the individual as defined in Maslow's hierarchy of needs can be crucial to one's ability to learn and thrive in any environment (Frietas and Leonard, 2011; Jensen, 1998; Taylor, 2005). If more levels of the Hierarchy of Needs are satisfied, parents and educators can then be sure that students come to school better prepared to learn (Frietas and Leonard, 2011; Jensen, 1998; Taylor, 2005).

DATA COLLECTION

Participant Selection

John Creswell defines qualitative research as "a means for exploring and understanding the meaning individuals or groups ascribe to a social or human problem." (Creswell, 2014, p. 246). This means that research is conducted in natural settings with the researcher actively collecting data through multiple methods. Qualitative research inherently seeks to provide an in-depth view of the phenomenon being explored. This is achieved by gathering data from various sources and using methods that will be able to give a snapshot of the time, place and question being studied. As such, a researcher must be sure that the participants in the study will provide the best sampling of experience and expertise related to the research question(s) (Creswell, 2014).

When choosing participants for a qualitative research study it is crucial for the researcher to consider carefully who to include (or exclude), how many to include, why they should be included, and what will need to be done in order insure participant safety and confidentiality within the research. Unlike quantitative research which uses random sampling methods to choose participants in large numbers to provide a statistically

representative sample, qualitative research uses purposeful sampling that can consist of as few as one participant. The researcher aims to provide the reader with a perspective and a deeper understanding of the phenomenon by using qualitative methods (Creswell, 2014; Wilmott, 2005). Participants for a qualitative study should be chosen for their expertise and/or involvement in the phenomenon being studied. They should have a story to tell and be willing to tell that story. There needs to be a specific criteria developed that will unveil the target population for study participants (Creswell, 2014; Wilmott, 2005).

Using purposeful (purposive) sampling (Babbie, 2008; Merriam, 1998; Yin, 2003), a sample of both teachers and administrators from public elementary school districts as well as a charter public school districts in the Phoenix, AZ area were asked to participate in this study. "Purposive sampling is based on the assumption that one wants to discover, understand, gain insight; therefore, one needs to select a sample from which one can learn the most" (Merriam, 1988, p. 48). To broaden the participant pool, it is also acceptable to use snowball sampling. Snowball sampling allows a researcher to obtain target participants through other target participants (Creswell, 2013). For example, educators who were contacted as possible participants for the current study were then asked to refer other educators they knew who fit the inclusion criteria. Snowball sampling is also a good way of reaching potential participants that may have been missed using purposive sampling methods only.

Inclusion and Exclusion Criteria

Participants for this study were contacted via email, LinkedIn, and social media groups targeting K-8 public elementary school teachers in the Phoenix, AZ area. Inclusion criteria for participants included:

Classroom Teachers:

1) At least 5 years of teaching experience in public elementary schools in the Phoenix, AZ area.
2) Public Charter school teachers were included.
3) Currently teaching in K-8 setting.
4) Must teach in a mainstream classroom (not in special education).

Administrators:

1) At least 5 years of teaching experience in public elementary schools in the Phoenix, AZ area.
2) Public Charter school teachers were included.
3) Currently teaching in K-8 setting.
4) Must serve as Vice Principal, Principal or Curriculum Director

IRB Safe Guards

It should be the goal of every researcher to do no harm to participants of a study. Any time there are people involved in a research study the propensity to offend or cause harm in some way exists (Leavy, 2014). Qualitative researchers should always consider the ethics involved when asking questions, especially if those questions would reveal any personal information of the participant. There is also the possibility that a researcher could ask a question that would trigger an emotional or traumatic reaction from a participant (Leavy, 2014), especially if they belong to certain vulnerable populations (i.e., children) (Hart, 2013).

For this reason, approval from an Institutional Review Board (IRB) was sought prior to any data collection for this case study. Protocols were developed and approved

for not only the questions asked, but for methods of recruitment and consent to participate. These IRB approvals can be found in Appendix A.

Data Collection Instruments

Yin (2009) stated that a carefully conducted case study benefits from having multiple sources of evidence. This can ensure that the study is as full-bodied as possible. In a case study, it is important to bring together different sources of data to be sure the picture being developed by the case study is accurate. This bringing together of multiple sources of data is known as triangulation. It is through triangulation that a researcher can ensure comprehensive results that reflect the participants' understandings as fully as possible. Yin (2009) and Stake (2005) agree that triangulation is necessary when performing a reliable case study.

So as to facilitate the collection of multiple data sources, focus groups and semi-structured interviews were conducted consisting of five open-ended questions. These were recorded and transcribed. Focus groups were conducted, recorded, transcribed and analyzed to better inform the development of the interview questions. Semi-structured interviews then asked participants a set of similar questions and responses led to deeper conversations on the subject matter following a protocol of question topics and probes (Bernard, Wutich and Ryan, 2017; Creswell, 2007). While the three methods discussed, focus groups, interviews, and document analysis, may be very time consuming and subject to researcher bias, putting safeguards in place such as the use of triangulation of data collection methods and the use of multiple coders, allowed a rigorous interpretation of the data during analysis.

Document Analysis

Document analysis is a procedure in which documents, both printed and electronic, are reviewed and evaluated for the purposes of interpreting meaning and developing empirical knowledge as it relates to the issue being studied. By looking at written artifacts a researcher can again extrapolate information that inform on the perceptions and experiences of the participants. As with all other forms of data collection, document analysis can be highly subjective, and interpretation can be skewed by the bias of the evaluator. On the other hand, document analysis can be invaluable to a researcher in understanding background (historical) perspectives on a subject as well as gaining insight into policy to practice, especially in organizations.

Focus Groups

Focus groups are a method of qualitative data collection that can be used in order to generate understanding of group think and views of groups as a whole. By having participants answer questions in a group of their peers, interactive conversations can spark candid responses that would not have been obtained in a one on one interview (Gill et al., 2008). A skillful facilitator can finesse discussion without interjecting suggested direction or leading a conversation into any particular direction. This is crucial to the validity of the data gathered through a focus group. Group size and connectivity are also important considerations when using focus groups (Gill et al., 2008). Ideally, focus groups should consist of six to eight participants in addition to the researcher and/or facilitator (Gill et al., 2008, p 3). The size of the group can also be influenced by a pre-existing group, one that is already establish in some form, or a group or strangers. By gathering groups of people who have a commonality or prior knowledge (pre-existing) in

common, one can circumvent having to sift through issues of not wanting to reveal potentially stigmatizing information.

Interviews

An interview is a dialog between two or more individuals that can result in a better understanding of the answers to the questions being asked that can include observations, open-ended questions delivered in interviews and questionnaires, review of documents, and more. In addition, data are analyzed using inductive (searching for themes in the data) processes and then deductive processes (drawing conclusions from the themes found in the data) to learn more about the meaning given to responses by the participants. It is then up to the researcher to reflect on the emergent themes from the data collected to provide a holistic account of findings in answer to the research question (Anafara and Mertz, 2015; Creswell, 2014).

When conducting qualitative interviews, a researcher can use a structured interview or and semi-structured interview that include open-ended questions. Open ended questions require more than a single word answer and prompt a conversation or discussion. In structured interviews, questions and responses are restricted to specific, predetermined protocol. The exact same question is asked in the exact same way each time an interview is conducted. This type of interview can guarantee that the data collected will contain consistent information. This works well when it is not necessary to delve deep into individual perspectives. However, a semi-structured interview is such that there are several base questions or question stems used to open the dialog. Then, depending on the response of the participant, the interviewer has the option of asking

additional questions that will deepen the richness of the response and give a more holistic data set (Creswell, 2014) .

Interviews can be very useful in data collecting enabling the interviewer to obtain responses and perspectives directly from the interviewee. They also assist the researcher in developing a rapport with the participant, however, interviews can be very time consuming. With evolving technology, it has become easier to conduct interviews over the internet thus making proximity and other logistical considerations non-existent. However, it can still be challenging to resolve scheduling conflicts when trying to get interview participants. In addition, caution must be taken when developing questions for the interview and a researcher must be sure that they are getting answers that respond to the research question. A good interviewer allows the participant to answer the question without leading or prompting that potentially color the response. One must let the participant say what they have to say and not tell them what you want to hear.

Procedure

Focus Groups

Preliminary data were gathered for this case study through two focus group sessions which were used to develop interview questions. Invitations were sent to leaders in three major elementary public school districts in Phoenix asking for access to a grade level between K and eighth grades that can be used district wide to participate in a focus group. Permission was granted in one large Phoenix elementary school district with 13 elementary schools. The pool of participants consisted of 234 in-service teachers and approximately 52 administrators from which to obtain participants. Once potential participant groups were identified, contact was made asking educators to participate in a

focus group. Two focus groups were held, which were recorded, and notes were taken during the focus group.

The first group consisted of ten diverse teachers in a single elementary school in Phoenix, Arizona. The focus group was held in a classroom of one of the elementary schools on May 18, 2017 lasting 30 minutes. The teachers represented language arts, math, special education and science teachers, from grades two through seven. All had at least five years of teaching experience. There were seven women and three men in the group. Each participant was given consent form and provided verbal consent for participation. The researcher, who was facilitating the focus group, recorded the session and took notes throughout the focus group. Once everyone introduced themselves, the purpose of the focus group was explained. Participants were told that the focus group was being used as a first step in developing interview questions for the case study. They understood that the group would be discussing issues related to barriers to field based EE in public education for my dissertation research study. Participants were asked to share responses and openly discuss several open-ended questions. These questions can be found in Appendix B. While the original protocol asked two questions that were specific to one barrier, the conversation included questions on other barriers that could prevent the integration of field based EE into the teachers' practice. The discussion yielded good information about the attitudes of both teachers and administrators on the subject matter. The recording and notes from the focus group was reviewed by a second researcher to establish agreement of the focus group findings.

The second focus group was comprised of 12 fourth grade teachers from eight different schools within the same Phoenix public school district who were participating

in a pilot program to assist in integrating field based EE into their classroom practice. All of the teachers had at least five years teaching experience. There were ten women and two men in the group. As with the first focus group, the 30 minute session was recorded, and notes were taken. The focus group was held at a residential camp facility on September 7th, 2017, at which the 4th grade teachers were being trained on integration of field based EE. The same open-ended questions were discussed (Appendix B). The recording and notes were also reviewed by a second researcher to establish agreement of the focus group findings.

Interviews

Upon review of the data collected from focus groups, a semi-structured interview protocol was created consisting of five open ended questions informed by the focus group results. These questions can be found in Appendix C. Once the protocol for the interviews was finalized, a snowball method (described above) commenced to find interview participants. Interviews were conducted between April 8th and May 27th, 2019.

At first, emails were sent to 25 teachers from six school districts in the Phoenix area. Emails were also sent to professors and colleagues known to have contacts in the public elementary schools. These emails yielded contact information for Facebook groups specifically for elementary educators in the area. A total of 150 educators were invited to participate. Of these, 13 agreed and semi-structured interviews were held. Eight K-8 classroom teachers and five K-8 administrators participated. Interviews were held at the participants home school for the most part with only one being completed at a nearby restaurant. A summary of participant information can be seen in Table 1.

Interviews were conducted by this researcher until saturation was achieved. Saturation refers to a point in data collection at which no new themes are being discovered. According to Mason (2010):

> If a researcher remains faithful to the principles of qualitative research, sample size in the majority of qualitative studies should generally follow the concept of saturation (e.g. Glaser & Strauss, 1967)—when the collection of new data does not shed any further light on the issue under investigation (retrieved from http://www.qualitative-research.net/index.php/fqs/article/view/1428/3027).

After conducting 13 interviews, it was clear that no new constraints were going to be revealed.

Table 1

Participant Characteristics

	#'s	Gender	Average Years in Education	K-3	4-5	6-8	Vice Principal	Principal	Curriculum
CT*									
Total	8								
Male		5	11	1	1	3			
Female		3	11		2	1			
ADM*									
Total	5								
Male		3	20					2	1
Female		2	14				1		1

* CT = Classroom Teacher; ADM = Administrator

DATA ANALYSIS

Review of Data

At the onset, this study follows a strategic analysis of data using methods most closely resembling Huberman and Miles (1994), who very thoroughly reviewed and patterned the data they collected (Creswell, 2013). By writing margin notes and reflecting on data as it is being reviewed, reflective thinking was promoted as it pertains to the data. Reflective thinking then enhances a reviewer's ability to see metaphors and connecting themes within the data that may have been missed. This method assisted in funneling bias out of the interpretation of the data, pinpointing more detailed themes.

To assure thoroughness and to adhere to standards related to the nature of this case study, a thematic analysis (TA) was performed as a perfunctory review of the data collected, beginning with the recordings and notes of the focus groups. Recordings were reviewed multiple times and notes reflected on by two researchers. The researchers then accumulated key terms and phrases that emerged from the data in order to write semi-structured interview questions that would enable participants to give more meaningful responses. These responses should allow for a rich and holistic investigation of the research questions for the study.

Subsequently, the same process was followed for the interview data. Recordings were transcribed and then reviewed multiple times. By first listing all themes related to responses to the interview questions broad categories were derived to begin the coding process (Booth et al., 2016; Braun & Clarke, 2017). According to Braun & Clarke, (2017), "TA provides accessible and systematic procedures for generating codes and themes from qualitative data" (Braun & Clarke, p 1). The

execution of a TA allows a researcher to note observations being made through a qualitative lens (Braun & Clarke, 2017). Next, a comparison of themes was performed to find intersecting key elements emerging from the data.

Data Coding

Once data collection was completed and data reviewed, transcriptions of interviews, documents for evaluation, and observation notes were entered into MAXQDA for analysis. The same two colleagues who assisted in the review also aided in the creation of a code book related to HLCT and based on common themes emerging from the data. Comparing the reviewers coding to my own, the code book was finalized using both inductive (data-driven) and deductive (theory driven) methods of theme identification. First, using the theoretical framework discussed, predetermined or *priori* codes were derived as a starting point to analysis. Basing the coding on HLCT, coding was structured so as to separate interpersonal, intrapersonal and structural constraints as identified in the data.

Codes are themes, words, or phrases that are found repetitively within the data. For example, all participants may perceive time as a barrier to using field-based EE or there may be safety concerns apparent within the data. These are found by reviewing the data and highlighting items that the researcher feels are important for answering the research question. Using the *priori codes* as a guide then prompts the recognition of other emergent codes that can be found within the data itself. These emergent codes consist of ideas, concepts, words or phrases, actions, relationship, and so forth, that were found upon reviewing the data.

The qualitative computer software MAXQDA was used throughout the coding process. Qualitative computer software facilitates the coding process and is more efficient than coding by hand (Creswell, 2009). Utilizing the functions for categorizing and coding data within the software saved time and produced more accurate results than using manual analysis. While the possibility for finding infinite codes and categories existed, guidance from Lincoln and Guba (1985) facilitated grouping categories based on similarities and refining these categories according to relationships (Lincoln & Guba, 1985). Finally, after repeated reflection and summarization of the data, conclusions were drawn, and discussion made on the findings of the study as seen in the next chapter.

Validation and Triangulation

The use of computer software helped assure validity of findings through the triangulation (or comparison) not only of the different data collection methods used, but also by allowing for ease of using at least three coders to review the data and determine the pertinent codes to the research question at hand. In addition, transcriptions of the interviews were sent to the interviewee for verification.

Interviews were transcribed by an outside source and reviewed by participants for accuracy. Data were also reviewed by two colleagues and the researcher to establish intercoder reliability. Each reviewer used reflective thematic analysis methods to determine data coding for each interview. The results were then compared, and Cohen's Kappa calculated for accuracy. This method also assisted in funneling bias out of the interpretation of the data, pinpointing more detailed codes. Cohen's Kappa is used to measure the extent to which researchers reviewing data collected agree that coded findings correctly represent the variables being measured in the study (McHugh, 2012).

The Cohen's Kappa coefficient gives a percentage of agreement between coders reviewing data sets. The data coding for this study has a Cohen's Kappa score of: 80%**.** The closer to 100% agreement a research team can get, the more reliability the findings hold in that they came from the data and not the researcher. A Cohen's Kappa of above 70% is considered acceptable (Landis & Koch, 1977; McHugh, 2012).

CHAPTER SUMMARY

This chapter discusses the methods used in the design of the study being presented. First the basis of qualitative methodology in the pursuit of answers to research questions was explained. As stated, a qualitative study is one that is conducted from the perspective of a constructivist and/or transformative paradigm and may be based in theory (Creswell, 2003, 2007). Unlike a quantitative study, a qualitative study includes characteristics that build a holistic view of the issue. While there is a theoretical foundation in place, data are analyzed using inductive (searching for themes in the data) processes and then deductive processes (drawing conclusions from the themes found in the data) to learn more about the meaning given to responses by the participants. The researcher then reflects on the emergent themes from the data collected to provide a holistic account of findings in answer to the research question (Anfara and Mertz, 2015; Creswell, 2014).

Then, the case study approach to qualitative research design was presented. The case study design enables understanding of a phenomenon in context as an integrated whole, allowing researchers to offer a "holistic description and explanation" (Merriam, 1998, p. 29) of each case (Creswell, 2013; Yin, 2003). The strength of the case study approach is in its ability to examine a "full variety of evidence – documents, artifacts, interview, and

observations" (Yin, 2003, p. 8). It was stated that the unit of analysis drives data collection and analysis in a case study. For the purposes of this research the individual educator is the unit of analysis.

The role of the researcher was explained as being two fold. The first role, researcher as researcher, being to ensure that ethical research practices are maintained throughout the implementation of all phases of the research. The safety of all involved is the primary concern of the researcher, protecting both participants and assistants. The second role, researcher as learner allows then for the analysis and interpretation of the data collected. Data was analyzed using inductive processes and then deductive processes to learn more about the meaning given to responses by the participants.

Processes and procedures for the selection of participants, collection of data, interpretation and analysis were put forth. This study used both purposive and snowball sampling to get a broad base of participants. As there were people involved in the study, IRB approval was obtained prior to any data collection. Approval documents can be found in Appendix A. Two focus groups were held which informed interview questions for semi-structured interviews. The first group consisted of 10 teachers and the second 12 teachers from a large elementary public school district. Inclusion criteria for the focus groups consisted of active teaching status in K-8 public schools. Focus group questions can be found in Appendix B.

A total of 13 participants were chosen for interviews, at which time saturation was reached. Inclusion criteria for the interviews consisted of at least five years teaching experience in a main stream K-8 public school in the Phoenix, Arizona area. Teachers and administrators had to be actively teaching or administering in a school district. Both teachers

and administrators were interviewed until saturation was reached on each question. There were eight teachers and five administrators who participated in interviews. Interview questions can be found in Appendix C.

All interviews were recorded, transcribed and reviewed by participants as well as two other research team members. Themes (codes) were extricated and used to draw conclusions to address the research questions. The researcher then reflected on the emergent themes to provide a holistic account of findings in answer to the research questions (Anfara and Mertz, 2015; Creswell, 2014). From here conclusions are drawn to be added to a field of study. Qualitative research recognizes that researcher bias will play a role in the interpretation of data and resulting conclusions. Safeguards such as triangulation and intercoder agreement are used in order to curtail the effects of bias. A Cohen's Kappa coefficient was calculated to show an inter-coder agreement of 80%, which increases the validity of the analysis.

The first three chapters of this dissertation looked at the driving force behind the research. The research questions and purpose of the research was explained. Existing literature related to the phenomena being viewed in the study were examined and summarized to show where knowledge gaps exist. These gaps are the reason for this and future research. In the next chapter, the analysis of the data collected will be presented in detail. Emerging themes and codes will be identified, and theory applied to enable interpretation of the data. In the end, the findings from the study will be put forth as a foundation for discussion, conclusions, and recommendations for future research.

CHAPTER 4

FINDINGS AND DISCUSSION

The purpose of this case study was stated in Chapter 1 as an exploration of the barriers, or constraints, to the adoption of field-based EE programs as seen by teachers and administrators in K-8 public elementary schools in the Phoenix metropolitan area of Arizona. As a means of better understanding these constraints, the study used the theoretical lens of Hierarchical Theory of Leisure Constraints (HTLC) (Crawford and Godbey, 1991) to identify constraints as they relate to interpersonal, intrapersonal and structural categories. The use of HTLC is meaningful when looking to identify and overcome constraints due to the Hierarchical order in which constraints must be negotiated.

In this chapter, results of data collected from the current study are presented and discussed. Common themes have been inductively extracted from the data collected through focus groups, interviews and document analysis. A summary of findings from each instrument is displayed according to both research questions being addressed.

Research Question #1: What are identified constraints (barriers) to the adoption of field based EE programs in K-8 public schools in Phoenix, Arizona?

a) Which constraints to using field-based EE programs are identified by K-8 public elementary school teachers in Phoenix, Arizona?

b) Which constraints to using field-based EE programs are identified by K-8 public elementary school administrators in Phoenix, Arizona?

Research Question #2: How does each type of constraint (intrapersonal, interpersonal, or structural) impact a teacher's ability to implement field based EE into their instructional practice?

DOCUMENT ANALYSIS FINDINGS:

The literature review presented in chapter 2 was used to analyze existing documentation of the integration of field based EE into public elementary schools in the Phoenix, Arizona area. Reviewing existing academic literature revealed no peer reviewed research specifically connected to the research question. However, a systematic exploration of peer reviewed journal articles spanning the last 20 years of international research did uncover a few studies addressing integrated experiential EE in public elementary schools in the United States.

One significant finding coming from the document analysis is that educators equate field based EE as a field trip (Anderson and Zhang, 2003; Cole, 2007; Coughlin, 2010; Eshach, 2007; Hart, 2010; Stevenson, 2007; Waite, 2011). The perception of field based EE as a field trip seemed to reduce the educational value of these programs in the eyes of the educators and families. Also found in the document analysis was teachers' noting lack of evidence of post field trip connections within classroom curriculum as one of the biggest constraints to continuing to use the venue.

In Table 2, the top five barriers to field based education as found in the document analysis are shown. The studies chosen for the table were those most closely related to the research question. It is important to again mention that there is a paucity of research on barriers to field based EE in K-8 public schools. The majority of the research found curriculum fit to be the number one constraint to field based EE in public schools.

Curriculum fit includes tying the program to the school curriculum map as well as tying to the common core standards. The second most common barrier found was the perceived value of the experience by all stakeholders. Stakeholders include teachers, administrators, students, and parents. Funding (or lack thereof) came in as the third most common barrier to field based EE. This included covering costs related to fees, transportation, coverage for students not able to attend, and meals. The fourth most commonly found barrier to integrating field based EE in public schools was lack of teacher training. Teachers will not integrate methods, programs or pedagogy they do not feel comfortable or qualified including. EE is not a subject that is widely included as in-service teacher training. Even more scarce is preservice teacher training in EE. In addition, with the narrowing of curriculum maps as previously discussed, it appears teachers are no longer comfortable with cross curricular instruction. Finally, two additional barriers are evident in the literature. These are transportation (logistics) and lack of planning time.

Table 2

Top five barriers to field based EE found in Document Analysis

Constraint	Anderson and Zhang (2003)	Ernst (2009)	Bartosh et al., (2006)	Stevenson (2007)	Hart (2010)
Curriculum fit	√	√	√	√	√
Interference with Standardized		√			
Perceived value of the experience	√		√	√	√
Funding	√	√	√		√
Amount of enjoyment	√				
Transportation *	√	√			
Lack of planning time *		√	√		
Lack of measureable outcomes				√	√
Lack of Teacher training			√	√	√
Behavior Management				√	

(Anderson and Zhang, 2003; Bartosh et al., 2006; Stevenson, 2007; Ernst, 2009; Hart, 2010)

* indicates tie for 5th constraint in common

The studies mentioned above all included a call for additional research pertaining to not only identifying barriers to field based EE, but to finding a theoretical foundation that would lead to the negotiation of these barriers.

Discussion

Performing a document analysis allowed a foundation for the current research. By understanding the corpus of literature that already exists pertaining to what has been identified as barriers to the inclusion of field based EE in K-8 public schools, better connections could be seen in the existing educational paradigm.

Interesting points to come from the analysis included need to enhance teacher training in field based EE both for pedogeological and increased self-confidence in the teacher's ability to sufficiently understand the subject matter. In addition, teachers cited the lack of connection between classroom lessons and field based EE. As the teacher is the one who is capable of making these connections, teacher education and training becomes more prominent in looking at barriers to integration of field based EE.

Applying HLCT

The current research uses HLCT to assist in identifying constraints to using field based EE in K-8 public schools in Phoenix, AZ. Table 3 shows findings from the document analysis as interpreted by HLCT. Analysis of available documents revealed that the value of the experience as perceived by the stakeholder is a significant constraint to using field based EE in public schools. Furthermore, the remaining constraints fall into the structural category. With both intrapersonal and interpersonal constraints, the power to negotiate and resolve the constraint lies with the individual. To the contrary, structural

constraints tend to exist beyond the immediate control of the individual (Chapter 2).

Table 3

HLCT applied to barriers to field based EE found in document analysis

Constraint Category	
Intrapersonal Constraints	
	Perceived value of the experience (individual teacher)
Interpersonal Constraints	
	Perceived value of the experience (colleagues, administrators, students, and family)
Structural Constraints	
	Curriculum fit
	Funding
	Transportation
	Lack of planning time
	Lack of Teacher training

Connecting the dots, the findings from the document analysis show that the way stakeholders perceive field based EE programs plays a major role in how the programs are valued. If field based EE is thought to be just a field trip, its value diminishes significantly to something unrelated to classroom curriculum. Generally, it was found that this perception is a result of the lack of teacher training and planning time that would be necessary to fit field based EE into the curriculum and make connections to what is being taught in the classroom. Perceiving field based EE as a field trip also provides a low priority to the allocation of transportation, making an additional barrier. The diminished value also causes a lack of allocated funding by school districts to the integration of field based EE.

FOCUS GROUP FINDINGS

Two focus groups were held to gather preliminary data that would inform interview questions. In all, 22 in-service teachers from a metropolitan Phoenix school district participated. The first focus group, held at the school building, presented five open ended questions for discussion. The first half of the session was spent trying to bridge a communication gap between the researcher and the participants. Once the semantics were worked out and meanings clarified, it was found that these teachers felt the instructional value of field based EE (considered low) and curriculum requirements were the main barriers to integrating field based EE. Unanimously, the group looked at field based EE as a field trip devoid of instructional value.

The second focus group was asked a set of revised open ended questions. This session was held at a camp during a training for integrating EE into classroom practice. The discussion that ensued was rich with brainstorming about just what the barriers to field based EE are and what teachers felt about what they were learning at the camp. While instructional value of field based EE and curriculum requirements were definitely part of the discussion, more intrinsic constraints such as lack of knowledge of available programming and teacher confidence were brought to light. Finding ways of increasing the value of field based EE programming went hand in hand with the need for outcome measures and valid assessment tools. This discussion was very informative and confirmed that the right questions would be asked at the interviews. The interview questions can be found in Appendix C.

Discussion

Analysis of data collected from focus group participants provided the phraseology for interview questions. Understanding the need to ask questions that elicit responses that could provide insight to the research questions being asked served as the catalyst for conducting the focus groups. The initial difficulty in communication experienced by the participants of focus group one confirmed the method as an indispensable step in this research.

Once the proper question phraseology was determined, it was interesting to find that the focus group participants bore out findings similar to what was found in the literature. Participants agreed that funding and transportation were among the top barriers to implementing field based EE. They also discussed administrative support as being an influential factor in the integration of field based EE. Teachers in the second focus group were at a training on how to integrate field based EE into their practice. The participants agreed that prior knowledge and experience in field based EE was a deciding factor in their interest in including EE in their classroom practice. Those teachers who had a good working knowledge of the environment, regardless if it was leisure or educationally based, were more apt to be open to implementation of a program in their own classroom. Those to whom environmental studies were new saw this as a big barrier in their ability to adapt field based EE in practice.

Applying HLCT

Building on the results found in the document analysis, HLCT was applied to the findings in the two focus groups shown in Table 4 below. While the participants touched on the same constraints found in the document analysis, the nature of the focus group

method being discussed allowed for a broader look at the perceived constraints and how they fit into the structure of HLCT. Intrapersonal constraints revealed the lack of teacher confidence in teaching a subject they are not familiar with. During the focus group, participants likened field based EE with STEM. As a whole, many teachers were unclear as to the actual scope of STEM programs. In the same way they found the ambiguity in field based EE programs and the inconsistency in the application of programs a huge deterrent. One participant said, "It's just too much work to find which programs are reputable. I just don't have the time to look at everything."

Table 4

HLCT applied to barriers to field based EE found in focus group data analysis

Constraint category
Intrapersonal Constraints
Perceived value of the experience (individual teacher)
Lack of confidence in teaching EE
Interpersonal Constraints
Perceived value of the experience (colleagues, administrators, students, and family)
Administrative support
Structural Constraints
Curriculum fit
Funding
Transportation
Outcome measures
Lack of planning time
Lack of Teacher training

INTERVIEW FINDINGS:

The findings of 13 interviews completed over the course of several months were analyzed and the results synthesized in this section. Please note that in the interest of protecting all study participants, interviewees are identified as follows: *RCT = Respondent Classroom Teacher; RADM = Respondent Administrator. To assure thoroughness and to adhere to standards related to the nature of this case study, a thematic analysis (TA) was performed as a review of the data collected. Themes related to responses to the interview questions in broad categories were derived to begin the coding process (Booth et al., 2016; Braun & Clarke, 2017). The execution of a thematic analysis allows a researcher to explore coding categories through a qualitative lens (Braun & Clarke, 2017). Subsequently, comparing and consolidating themes to find intersecting key elements emerged from the data. Once the interviews were completed, transcribed, and reflected upon, common themes were extracted and classified according to HLCT.

Value of Field Based EE Programming

Prior to asking about barriers to field based EE in public schools, each interviewee was asked about the educational value of these programs. It was found that all 13 participants felt that field based EE programs had proven educational value. Many saw EE programs as a way of giving their students an opportunity to experience something in person that they would not have a chance to experience otherwise. Reviewing the responses to this question exposed a general attitude that field based learning was fun based. In fact, one participant even said that "We all know that you remember what you learn better when you had fun doing it" (RCT6). Thinking of field

based EE programs as fun based actually served as a barrier as well as an enabling feature. The majority of participants also saw the value in giving children who have never been out of their neighborhood a chance to experience the breadth of our world.

Participants were directed to consider EE as a part of STEM curriculum and reflect on how field based EE might enhance learning for their students. All of the respondents indicated that field based EE and EE programs held great value in reinforcing what students might be learning in the classroom. As quoted, RCT2 voiced concerns that children are now growing up in a technological age and do not have the real life experiences that we had as children. This puts children at a disadvantage when trying to grasp concepts like the natural environment provides us with air and water necessary to life. Whether speaking with a classroom teacher or a school administrator, one thing they can all agree on is that many of their students do not have the background knowledge to understand EE.

Another attribute to field based EE programs giving them value is the fact that many of the students in these schools do not have the chance to travel outside their neighborhood or experience anything in nature without being provided the opportunity by the school. The analysis found that all of the participants had a story or example similar to the one shown by RADM2:

> "I think it is really important because they have learned things in class and, say for example, they are going to the zoo. They are learning about different animals or animal habitats or what animals eat and then all they have seen are these pictures or maybe video clips and in a community like ours where so many students do not have the opportunity to have these

> outings with their family, they may never get to go see a Bengal tiger. So for them to be able to go out and actually be able to see what it is they have been learning about, that reality of really concretes in their minds that hey, what I am learning is not just learning for learning sake. I am not just sitting in this class and memorizing things because that is what I do at school. This is real and it also takes that curriculum that they have learned and puts it in their brain and ties it to an experience that they then will remember forever. You know, they may not remember what grade they went to the zoo or what they did there, but they are going to always remember, hey, I have seen a Bengal tiger before and then have a general idea of what they eat, where they live, that type of thing because they learned it beforehand in the classroom. So it reinforces learning in a way that nothing else really can." (RADM2)

In addition, teachers were concerned with the lack of background knowledge many of the students have regarding the environment. Teachers felt that integrating programs such as field based EE could help in expanding the baseline of knowledge children related to science in general. Without a general knowledge of the environment and connections from ecosystems to textbook learning, students are at a disadvantage that may never be breached on their own. RCT7 lays out this finding:

> "I would rate them pretty high. The kids especially in this neighborhood do not have a lot of outside-this-neighborhood experience so it is like anytime you are going somewhere else I think their background knowledge is way more expanded, not just like 4th grade but future years." (RCT7)

Others viewed field based learning as a means of building life skills not taught when working in the classroom. Teachers felt that students had more freedom to interact with each other and build relationships through shared experiences. Social and critical thinking skills were highlighted as key elements to benefits of field based programming. RCT4 discussed this at length in the interview.

> "You are getting into the whole socialization part of it and being able to interact in a way that you have to interact once you are out of school and learning how to do those kinds of things and I think that is just as important if not more important than the things that you are actually learning in the classroom from the standards point of view. I think the social aspect of it is way more important because once you are able to learn how to be a person, then it is a little bit easier to learn how to learn things as well. It would be very beneficial to the social aspect of learning when you get outside the classroom." (RCT4)

Discussion

Interview participants represented ten different schools and five school districts within the Phoenix area. In talking to these educators, It was telling that all of the schools represented were Title 1 schools. In order to be considered a Title 1 school, 75% of the student body must be eligible for free and reduced lunch. If a school is served under Title 1, it receives additional funding in order to enhance the educational opportunities of low income children. Many of these children do not play outside after school or go on family vacations. In the quote from RADM3, we see the give and take in the measured value of field based EE programming.

> "You can look at a picture of the riparian area in the river bottom, but it's only a picture, so it really brings the whole child, the whole brain, into play if you can actually go to the riparian area and clean it up or observe it or, you know, be there. I think it makes the connection more realistic and real and especially if there is a problem base like erosion or litter control or, you know, habitat restoration…it makes it more meaningful and purposeful to what you learn in the formal (classroom)... If you're just going out there to play in the river bottom and you never read anything, various literature about it first, and you're not down there discussing what you read about in the research and you don't write about it, then it's just a waste of the day in my opinion." (RADM3)

While considered to be a valuable piece of educational resources, the program must have credibility. Found within many responses from interviewees was the same sentiment. The program must be connected to the curriculum. There must be a clear objective and valid outcome measures. The learning must be kept alive throughout the year in what is subsequently taught in the classroom.

A large part of the concern expressed by administrators over the value of this programming had to do with accountability and the perception that being out of the classroom meant that it was fun time and chaos-not learning time. Disparately, teachers expressed the ability to better engage students in learning, with less frequent behavioral issues when they were out of the classroom and experiencing new places.

Constraints to Field Based EE

Further into the interview, participants were asked to identify constraints or barriers that they have and/or are facing in regards to implementing field based EE practices in their teaching. The findings were analyzed and organized according to where they fit in the constraint categories defined by HLCT. Preliminary themes (codes) found in the interviews are shown in table 5. As transcripts were reviewed, more refined codes were developed, and related themes interpreted. There were a total of three researchers reviewing data and interpreting findings. For example, some teachers cited the need for teaching language arts and math in defined blocks of time as being a barrier to a field based program. Others stated that they did not see connections being made to what was learned on the field trip and what was being taught in the classroom. Both of these constraints relate to Curriculum Fit as a barrier to field based EE. This type of funneling of themes allowed the researcher to ultimately cull down connected themes to reveal the five most encountered constraints experienced by both teachers and administrators to using field based EE in K-8 public schools in the Phoenix, AZ area.

Preliminary codes coming from the data are shown in Table 5. One interesting finding was that funding, while definitely in the top five constraints mentioned by all, was not the first constraint to be mentioned by most of the interviewees. Past experience suggests that funding is often considered the number one barrier to utilizing field based programming. Something else that came out of the interviews was the confusion that both teachers and administrators had regarding not only what exactly field based EE programs were, but also confusion as to the scope of STEM programming. The question remains

for future research to define the scope of STEM and if field based EE is inherently a STEM program.

Discussion

Table 5

Coding Themes and Sub-Themes

CODES	CODE SUB-THEMES		
	Intrapersonal Constraints	***Interpersonal Constraints***	***Structural Constraints***
Constraints	□Lack of knowledge of programs and resources □Safety Risks □Teacher Confidence .	□Administrative reluctance □Attitude/support of colleagues □Inconveniencing colleagues □Family/cultural □Student Attitude	□Lack of training opportunities □Time Planning □Cost □Transportation □Class size/management □Location □Curriculum development □Supervision □Outcome measures □Student/family socio-economic status □Substitute teachers

Initial analysis uncovered many different codes related to constraints. Once these codes were evaluated, relationships and correlations were made in order to streamline like codes into one. For example, *teacher confidence* included original responses such as lack of knowledge of subject matter, lack of confidence teaching the subject, feelings of inadequacy on the part of the teacher, not understanding the program fit. Instructional

time constraints; test preparation interference; and tying to standards were all put into the *curriculum requirements* code. Once the codes were combined, the analysis turned to HLCT to understand the implications of the constraint.

Reviewing the findings from an HLCT perspective, it is notable that the codes and related sub-codes could at times be considered in more than one HLCT category. For example, teacher training is very closely connected to teacher confidence, however, in order to reach intercoder agreement it was necessary to place teacher confidence in Intrapersonal Constraints and teacher training in Structural Constraints. Confidence was decidedly something a person had immediate control over while training could be considered out of the immediate control of the individual. Likewise, the lack of knowledge of programs available could be argued to be a Structural Constraint. However, when reviewing the interview transcripts, it was clear that the lack of knowledge in this instance was considered a matter of the teacher and/or administrator not taking the time to look for programming. The fact that the information is available with some personal effort to find it made the constraint Intrapersonal rather than Structural.

The ranking of safety (or the risk involved) for students, faculty, and chaperones was another surprise in the findings. Much of the discussion with interviewees revealed a certain level of fear of student and participant safety when going out of the classrooms. Some interviewees talked about how many of the diverse cultures that make up the families who send their children to the school are fearful of not only what their child could encounter in nature but also of the fact that their child might be far away for more than a 24 hour period. A point made by RCT8 is that one constraint (family attitude) leads to another (the need for an additional teacher).

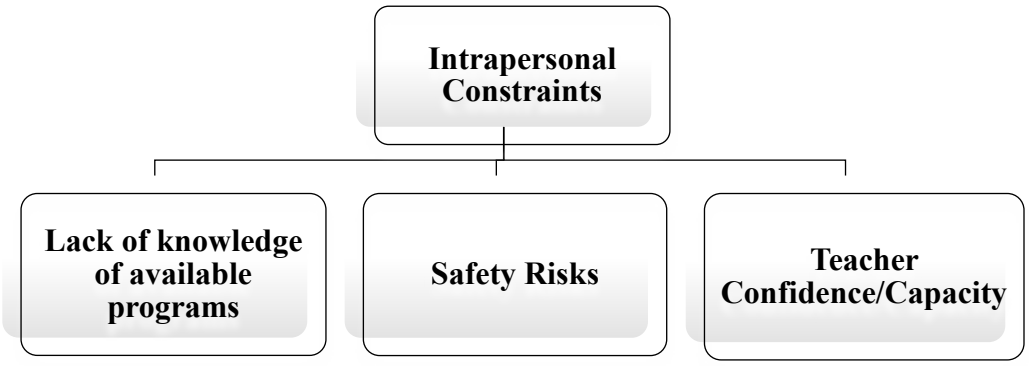
> "Even though every child is invited, so many of the families, because they have never gone camping, they have never gone hiking and so it is like, oh no my baby will get eaten by a bear or whatever they think is going to happen so then we are like okay, my principal, we are leaving 25-30 kids behind because all their families said no and he is like, well one of you has to stay behind. Well, oh okay, now we cannot be their teacher in both places, so it is still a funding issue there because they do not want to hire a substitute." (RCT8)

Unique to this study is the application of HLCT in understanding the impact of each level of constraint. Looking at the data, it is apparent that there are three major constraints to the integration of field based EE in K-8 public schools having to do with intrapersonal issues, three major constraints related to interpersonal constraints and six major constraints falling into the structural constraint category. That means half of the constraints found in this research are such that individuals can garner some control in their negotiation. This will become more significant in future research as tools for overcoming constraints are explored.

While beyond the scope of this research, it should be mentioned that HLCT not only provides for a more in depth understanding of the actual constraints being faced, but it also provides a road map for negotiating these constraints and working to eliminate the effect they have on participation. That said, the psychological nature of both intrapersonal and interpersonal constraints have an enormous bearing on the ease at which structural constraints can be overcome once intrapersonal and interpersonal constraints have been negotiated.

Figure 5

Findings Intrapersonal Constraints



As summarized in Figure 5, the Intrapersonal Constraints most frequently discussed by interviewees were Lack of Knowledge of Available Programs; Safety Risks; and Teacher Confidence/Capacity. The significance of these intrapersonal constraints is that, as mentioned, the individual or group has control over his/her ability to negotiate the constraint. Discussing the Lack of Knowledge of Available Programs, many teachers and administrators acknowledged that it simply took determination and time to get the information they needed. Safety Risks could arguably be considered structural in nature considering that safety is a relative term. Depending on the background and expertise of each individual something that would be unsafe to one person, is safe to another. The role of the stakeholder is another consideration when looking at safety. RCT2 stated,

> "As far as barriers, from a parent's point of view, there could be safety concerns depending on where you are and where everybody is going to be." - RCT2

The research team for this study felt Safety was most appropriately represented as an intrapersonal constraint for that reason. Finally, Teacher Confidence/Capacity is related to discussions on teacher training and background. While it was determined that Teacher Training is a structural constraint (beyond the immediate control of the individual) there was a strong consensus that if a teacher is confident in associated subject matter, he/she is more apt to be open to diversifying pedagogies. This was expressed by many teachers, including RCT4 who said: “A lot of the time, elementary teachers are more hesitant to dive into something because they do not know what they are doing." That is something felt to be within the control of the teacher or administrator.

Figure 6

Findings Interpersonal Constraints

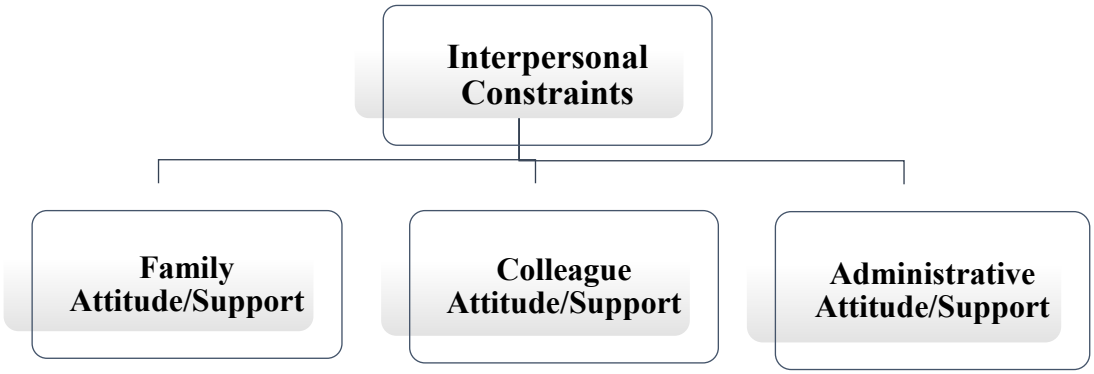
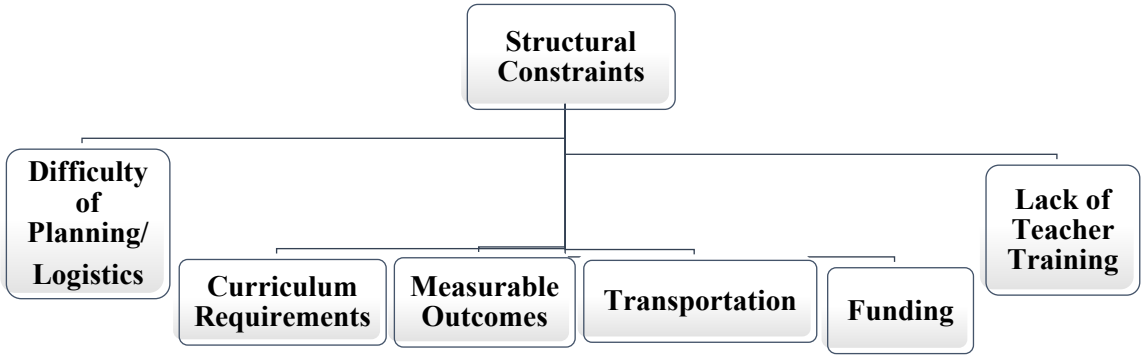


Figure 6 shows that Interpersonal Constraints consisted mainly of attitude. RCT3 discussed this in the interview saying, “ I think the most difficult is probably just to overcome the teacher’s mentality of just thinking it is valuable...”. Many participants used the same verbiage when describing how colleagues, parents, students, and/or families either saw the value in field based programming or they did not. Background

culture, familiarity with the natural environment, and ecophobia (Goleman, Bennett and Barlow, 2012; Louv, 2008; Sobel, 1999) were all named to play a role in the attitude or willingness to embrace field based EE programs as both valuable and necessary.

Figure 7

Findings Structural Constraints



The last category of constraints found in HLCT is Structural Constraints. These are said to be beyond the immediate control of the individual. As seen in Figure 7 analysis of the current data found that there are six structural constraints that are attributed to the use of field based EE by both teachers and administrators more often than not. Just as a lack of knowledge about available programs was a major intrapersonal constraints, Difficulty of Planning and Logistics is the first structural constraint most often agreed on. Again, it could be said that this constraint encompasses the lack of knowledge of available programs, however, while a teacher or administrator could just Google available programs, he/she cannot control parent consent given on a permission slip or bus schedules for the school district. These types of logistical considerations do cement Difficulty of Planning into the Structural category.

Curriculum Requirements wore many hats within the interview discussion. Some participants called it alignment with standards. Others called it outside of instructional guidelines. RADM5 points this out, explaining that it's not as simple as a connection to the curriculum, but there needs to be an assessment as well. Yet others discussed the fact

> "It would have to connect or tie into some piece of our curriculum, and there would have to be some way of assessing how, what we got out of it, whether that's just through perception and discussion or whether that's through something more formal." RADM5

that the standardized testing that was used to measure achievement did not include questions on EE, so it was not necessary.

Once refining of the codes was completed and agreement reached by all three coders, it was found that participants felt that the top five constraints to integrating field based EE in their schools were 1) lack of teacher training (in both experiential pedagogies and EE); 2) curriculum requirements; 3) lack of funding; 4) difficulty in planning/logistics; and 5) lack of knowledge of available programs. These findings can be seen in Table 6. Further analysis led to an examination of responses from teachers verses administrators to see if there were major differences in perspectives. As illustrated in Tables 7 and 8, the order of importance for the top five barriers does vary. Teachers ranked curriculum requirements as a more impactful constraint than funding while administrators felt funding to have a larger influence than curriculum requirements.

Table 6

Top 5 barriers to field based EE found in current study

Barrier (Constraint)	**All Participants**
Lack of Teacher Training	1
Curriculum Requirements	2
Lack of Funding	3
Difficulty Planning/Logistics	4
Lack of Knowledge of Available Programs	5

Table 7

Top 5 barriers to field based EE identified by classroom teachers

Barrier (Constraint)	**Teachers**
Lack of Teacher Training	1
Lack of Funding	2
Curriculum Requirements	3
Difficulty Planning/Logistics	4
Lack of Knowledge of Available Programs	5

Table 8

Top 5 barriers to field based EE identified by administrators

Barrier (Constraint)	**Admin**
Lack of Teacher Training	1
Curriculum Requirements	2
Lack of Funding	3
Difficulty Planning/Logistics	4
Lack of Knowledge of Available Programs	5

However, this is not a large difference in perspective. It has been found in this case study that both teachers and administrators agree on the top five constraints to integrating field based EE in their schools.

Discussion

Findings from data collected using semi-structured interviews revealed a unanimous agreement between teachers and administrators as to what they perceive to be constraints to using field based EE in their schools. While there was a slight difference in the importance given to each constraint, all agree that lack of teacher training in using field based pedagogies and in EE is crucial to moving forward on integrating these practices. Preservice teachers rarely receive training in cross curricular instructional methods. Experiential education practices, while proven to be effective, are not understood as an effective teaching method.

Depending on their role, lack of funding and curriculum requirements came in second and third as most hindering barriers to field based EE. The funding aspect, while a structural constraint, is also value laden when prioritizing the use of Title 1 funds. Interestingly, all of the schools represented were eligible to receive funding under Title 1. The allocation of these funds is up to each school. Curriculum requirements could as well be connected to the value put on field based EE programs. Curriculum maps are adjusted according to the needs of the students. A higher value would need to be placed on field based curriculum that meets standard requirements and includes measurable outcomes before moving forward with inclusion.

Difficulty in planning and logistics was next. Participants felt teachers were already overburdened with paperwork and curriculum requirements. Adding to that the need for proposing a program, permission slips, and planning of field based programs was more than they were willing to do. Directly related to difficulty in planning is the fifth constraint, the lack of knowledge of available programs. Participants explained that there is a need for a sort of clearing house of information or someplace where they could go to see what community programs are available, what they do, and the costs involved. By having this resource educators would be more apt to explore programming partners. All participants voiced their dismay at the amount of time needed to find a reputable program to meet their needs.

Chapter Summary

The current chapter has laid out the findings from the document analysis, focus groups and interviews performed as part of this case study. It also included a bit of discussion regarding these findings and their relationship to existing research, the research questions being explored and the application of HLCT to the findings. Table 9 compares the findings from existing literature as reviewed in the document analysis to the findings from this research.

The next chapter will expand on these findings to draw conclusions with the goal of broadening our understanding of constraints, both real and perceived, to the integration

CHAPTER 5

CONCLUSION

As stated, the purpose of this case study is to explore the barriers, or *constraints*, to the adoption of field-based EE programs as perceived by teachers and administrators in K-8 public elementary schools in the Phoenix metropolitan area of Arizona. The intention of this qualitative case study is to broaden the pool of knowledge on constraints to field-based EE programs in public K-8 elementary education. By using HLCT as a theoretical foundation to this research, cross disciplinary relationships were exposed enabling a perspective on the research questions that has not been used before. This final chapter will discuss, 1) key research findings as they relate to existing scholarly literature, 2) significance and implications of study findings, and, 3) future research recommendations.

Key Research Findings As They Relate To Existing Scholarly Literature

During the course of the study, we looked at existing academic works related to the research questions. It was discovered that studies focused on barriers or constraints to the use of field based EE in public schools in Arizona was non-existent, and worldwide, over the last two decades, a scarce commodity. It is important to understand what is impeding the implementation of evidence based practices to successful student outcomes before we can work towards increasing the use of field based EE. This chapter will discuss the findings of the case study so as to answer the research questions.

Research Question #1: What are identified constraints (barriers) to the adoption of field based EE programs in K-8 public schools in Phoenix, Arizona?

a) Which constraints to using field-based EE programs are identified by K-8 public elementary school teachers in Phoenix, Arizona?

b) Which constraints to using field-based EE programs are identified by K-8 public elementary school administrators in Phoenix, Arizona?

The purpose of this case study was to explore the barriers, or *constraints*, to the utilization of field-based EE programs in K-8 public elementary schools in the Phoenix metropolitan area. While research continues to show that field based EE teaching models can improve student outcomes (Bartosh, Tudor, Ferguson, & Taylor, 2006; Cole, 2007; James and Williams, 2017), there appear to be constraints to the implementation of these programs in the curriculum maps of public elementary schools. As noted, many educators equate field based EE with taking a field trip (Anderson and Zhang, 2003; Stevenson, 2007; Eshach, 2007; Cole, 2007; Coughlin, 2010; Hart, 2010; Waite, 2011). The same was found to be true when analyzing the data collected for the current case study. When discussing field based EE, many participants mentioned that the only reference they have to visualize field based EE is as a field trip. Anderson and Zhang (2003) found teachers felt that it was the shared responsibility of the venue and the school to integrate the experience into the curriculum. One constant between the literature and the current research is the finding that a major constraint is a lack of knowledge of resources both of available programs and integration techniques (Anderson and Zhang, 2003; Coughlin, 2010).

Looking back at Table 2, some similarities in findings from the literature and the current study were apparent and expected. While terminology may not have been exact, the interpretation was the same. For example, curriculum fit was a constraint found in the literature (Anderson and Zhang, 2003; Bartosh et al., 2006; Stevenson, 2007; Ernst, 2009; Hart, 2010) while curriculum requirements were noted in the current study. Planning time

needed was a top five constraint in the literature (Bartosh et al., 2006; Ernst, 2009) while difficulty planning was cited in this study. The synthesis of terminology allowed for the conclusion that there are four out of five top constraints in common between existing research and the current case study. These are 1) curriculum fit (requirements) (Anderson and Zhang, 2003; Bartosh et al., 2006; Stevenson, 2007; Ernst, 2009; Hart, 2010); 2) funding (lack of) (Anderson and Zhang, 2003; Bartosh et al., 2006; Ernst, 2009; Hart, 2010); 3) planning time (difficulty planning) (Bartosh et al., 2006; Ernst, 2009); and 4) lack of teacher training Bartosh et al., 2006; Stevenson, 2007; Ernst, 2009; Hart, 2010). This is illustrated in Table 9.

Table 9

Top five barriers to field based EE (literature v. study)

	Existing Literature	Current Study
Curriculum fit (curriculum requirements)	√	√
Perceived value of the experience	√	
Funding (lack of)	√	√
Lack of planning time (difficulty planning)	√	√
Lack of Teacher training	√	√
Lack of Knowledge of Available Programs		√

One feature that sets the current case study apart from existing literature is the inquiry as to which constraints to using field-based EE programs are identified by K-8 public elementary school teachers and which are identified by public elementary school administrators. From the data collected, reviewed and analyzed by this researcher, there was no notable difference between identified constraints between school administrators

and school teachers. The difference was in the magnitude of importance placed on the constraint. Lack of funding was rated of greater concern to administrators than it was by teachers. Curriculum requirements were of more importance to classroom teachers than administrators. The conclusion is that structural constraints are more of a hinderance than interpersonal or intrapersonal constraints.

Significance And Implications Of Study Findings

Research Question #2: How does each type of constraint (intrapersonal, interpersonal, or structural) impact a teacher's ability to implement field based EE into their instructional practice?

Returning to the core of HLCT, Crawford and Godbey's Hierarchical Leisure Constraints Theory blends human psychology and motivational theories while exploring the root cause of constraints to participation in leisure activities (Crawford & Godbey, 1987; Crawford et al, 1991; Godbey et al., 2010). HLCT posits a constraint is anything that limits one from achieving a goal or level of performance. Constraints can be both internal and external but often are something for which steps can be implemented to negotiate and overcome.

The significance of the constraints identified in this research is found when HLCT is applied. When looking at the nature of intrapersonal and interpersonal constraints, the power to negotiate the constraint lies with the individual. However, with structural constraints, negotiation appears beyond the immediate control of the individual (Chick & Dong, 2003). This said, a key factor in the identified constraints in the literature is that only one (perceived value of the experience) is an intrapersonal constraint. The remaining four are all structural constraints implying that most of the

barriers are beyond the control of the individual. Comparing this to the current research, the same phenomenon is seen. However, the intrapersonal constraint found here is lack of knowledge of available resources.

Looking at the constraints identified by all participants in the current study, it is undeniable that funding and the availability of transportation play a major role in hindering the use of field based EE programming. However, it is important to understand that both of these barriers are structural in nature when applying HLCT and can be overcome. The difficulty lies in understanding how perception and prior knowledge have emerged as the root of realized constraints. In other words, while structural constraints are named as the primary issue in integrating field based EE in public schools, we can conclude from the findings of the current study that human nature and human values not only influences choices of teachers and administrators to participate in field based programming with their students, but in most cases remains the number one barrier to its inclusion.

For example, lack of teacher training was identified as the number one constraint by both administrators and teachers. Reviewing the document analysis, and focus group and interview data analysis, it is reasonable to conclude lack of teacher training leads to lack of teacher confidence and lack of support from both administrators and colleagues, which are intra- and interpersonal constraints respectively. Remembering that structural constraints exist beyond the immediate control of the individual (Chick & Dong, 2003) is crucial to understanding the significance of this constraint. By identifying a structural constraint as number one, responsibility for negotiating the constraint falls from the teacher/administrator to someone else thereby rendering it out of their control.

Where the current study ventures beyond the existing corpus of scholarly literature is the application of HLCT as a theoretical foundation to the study. As discussed in chapter 2, Crawford and Godbey's Hierarchical Leisure Constraints Theory blends human psychology and motivational theories to understand the root cause of constraints to participation in leisure activities (Crawford & Godbey, 1987; Crawford et al, 1991; Godbey et al., 2010) or in this case, field based EE programs in public schools. Constraints can be both internal and external but often are something for which steps can be implemented to negotiate and overcome.

Applying HLCT to the findings, it is apparent that there are three major constraints within the intrapersonal constraint category, three major constraints related to interpersonal constraints and six major constraints falling into the structural constraint category. That means the half of the constraints found in this research directly tie to attitude, perception and prior knowledge. In addition, the majority of constraints hindering the inclusion of field based EE in K-8 public schools in Phoenix, Arizona are such that individuals garner some control in their negotiation. The psychological implications of intrapersonal and interpersonal constraints points to a value laden underpinning in identified constraints. This means that a teacher's or administrator's experience with field based EE, their understanding of field based EE, and the value they place on these experiences will be a key determining factor in their willingness and/or ability to eventually negotiate these constraints. While beyond the scope of this research, finding pathways to negotiating constraints is the next step on this journey.

The use of HLCT adds a unique dimension to the existing literature. Not only does HLCT give an interdisciplinary perspective to looking at constraints but it also

provides a starting point for the next step in research. Once constraints have been identified and then categorized according to HLCT, the hierarchical model provides a guide for negotiating these constraints. First by identifying and overcoming those constraints most personal to the individual (intrapersonal). Next, to overcome are those issues having to do with peer pressure and the attitudes of others (interpersonal). Once the intrapersonal and interpersonal constraints have been negotiated satisfactorily, the HLCT model shows that motivation to overcome structural (practical and logistical) constraints will be much higher, making these much easier to negotiate. No other study has provided a theoretical foundation to further understanding of the issue in such a way as to not only provide for a deeper understanding of what is standing in the way, but also then allows for insights on future research in overcoming those constraints.

Future Research Recommendations.

As seen in the literature review, researchers are advocating for field based EE programming in public schools worldwide (Atchinson, & Feig, 2011; Barnes, 2017; Bartosh, 2003; Bartosh, Tudor, Ferguson, & Taylor, 2006; Blair, 2009; Brown et al, 2011; Cassell and Nelson, 2010; Cole, 2007; Cosgriff, 2014; D'Amato and Krasny, 2011; Engels & Jacobson, 2007; Ernst and Monroe, 2004; Eshach, 2007; Glackin and Jones, 2012; Goleman, Bennett and Barlow, 2012; Grunewald, 2003; Hart, 2010; James and Williams, 2017; Leiberman, Hoody, & Leiberman, 2005; Lewallen, 2015; Louv, 2008; Nadelson, et al., 2013; Nichol, 2014; Rickinson et al, 2004; Schensul, 2009; Schmidt et al., 2014; Stepath, 2005; Stevenson, 2007; Tramonte, and Wilms, 2010; Veletsianos, 2009; Waite, 2011). But without knowing the basis of what is hindering something from

happening, one cannot reasonably move forward and find ways of overcoming those obstacles.

This case study sought to explore and identify barriers, or *constraints*, to the utilization of field-based EE programs in K-8 public elementary schools in the Phoenix metropolitan area. It has succeeded, through the use of HLCT as a foundation, to identify that a substantial portion of the constraints identified by teachers and administrators alike are of an intrapersonal and/or interpersonal nature, further identifying these as value based perceptions rather than structural and logistical issues. Future research needs to be completed to find effective interventions that will begin breaking down some of the barriers and negotiating these constraints so that our children will know the benefits of field based EE.

Research showing connections between field based EE and existing curriculum standards also needs to be performed so as to open doors in initiatives like STEM to integrate field based EE year round. Field base EE is much more than a simple field trip. Without the inclusion of field based EE curriculum in our public schools, our children may never know the role our natural environment plays in the sustainability of our planet (Avraamidou, 2013; Blair, 2009; D'Amato and Krasny, 2011; Lewallen, 2015; Louv, 2008; Rickinson, et al., 2004; Nadelson et al., 2012; STEM Education Coalition, 2016). Current education legislation has been put in place to assist public schools in removing many structural barriers. It is up to researchers to provide proven best practices to lead to student success.

Finally, as research supports the use of field based EE in improving student outcomes at the elementary school level (Bartosh, Tudor, Ferguson, & Taylor, 2006; Cole, 2007;

Ernst, 2012; James and Williams, 2017), teacher preparation programs should be examined for pathways to including more experiential and teacher training in cross curricular and integrated EE methods (Carter, R. L., & Simmons, B. (2010); Ernst, 2012; Hart, 2010).

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APPENDIX A

IRB APPLICATION AND APPROVAL

Instructions and Notes:

- Depending on the nature of what you are doing, some sections may not be applicable to your research. If so, mark as "NA".
- When you write a protocol, keep an electronic copy. You will need a copy if it is necessary to make changes.

1 Protocol Title

Include the full protocol title: IDENTIFYING BARRIERS TO FIELD BASED ENVIRONMENTAL EDUCATION (EE) PROGRAMS AS PERCEIVED BY EDUCATORS IN K8 PUBLIC ELEMENTARY SCHOOLS

2 Background and Objectives

Provide the scientific or scholarly background for, rationale for, and significance of the research based on the existing literature and how will it add to existing knowledge.

- Describe the purpose of the study.
- Describe any relevant preliminary data or case studies.
- Describe any past studies that are in conjunction to this study.

While studies show that experiential and field based teaching models can improve student outcomes, there appears to be obstacles to implementing more integrated teaching across curriculum in elementary public schools. Many curriculum developers are looking for creative ways of improving instruction. However, until barriers to the adoption of experiential, field-based, EE programs in K-8 public elementary schools, we may not be able to bridge the gap to applying learning in later grades. Research has shown that due to the increasing emphasis on achievement in math and language arts, the time spent teaching STEM in elementary classrooms has experienced a steady decline (Nadelson, et al., 2013). Ferreira et al., (2012) tells us that:

> "Although environmental education is often ignored in schools, researchers have found a correlation between environmental education and student outcomes, including achievement, motivation, and environmental literacy (Bartosh, Tudor, Ferguson, & Taylor, 2006; Engels & Jacobson, 2007; Stepath, 2005). In a 2006 study examining the impact of environmental education programs on student achievement in math, reading, and writing, Bartosh and colleagues found that schools using environmental education programs per formed better on standardized tests than did those using traditional curriculum (Bartosh et al., 2006)" (Ferreira et al., 2012, p. 2).

Cassell and Nelson (2010) caution that, "Humanity is facing, and must deal with, enormous sociological and social problems and challenges. This situation has created an urgent and compelling need centered on how the future citizenry of the industrialized West will be prepared relative to addressing and dealing with these problems and challenges." (Cassell and Nelson, p.179). These authors along with Sanders (2001), Schensul (2009) and Tramonte, & Willms, (2010) see the implementation of field based educational opportunities in public schools as one piece of the solution to societal challenges.

The purpose of this case study is to explore the perceived barriers to the adoption of field-based experiential EE programs as seen by teachers and administrators in K8public elementary school districts in Phoenix, AZ.

Preliminary data was collected in May of 2017 related to STUDY00005977 in which instructional time was explored as a possible barrier to field based EE in public elementary schools. Focus groups and interviews were conducted, recorded and transcribed which will be used to inform the interview questions for the current study.

3 Data Use

Describe how the data will be used. Examples include:

- Dissertation, Thesis, Undergraduate honors project
- Publication/journal article, conferences/presentations
- Results released to agency or organization
- Results released to participants/parents
- Results released to employer or school
- Other (describe)

The data gathered during this study will be used to in a doctoral dissertation as well as an article for journal publication.

4 Inclusion and Exclusion Criteria

Describe the criteria that define who will be included or excluded in your final study sample. If you are conducting data analysis only describe what is included in the dataset you propose to use.

Indicate specifically whether you will target or exclude each of the following special populations:

- Minors (individuals who are under the age of 18)
- Adults who are unable to consent
- Pregnant women
- Prisoners
- Native Americans
- Undocumented individuals

The final study sample will be comprised of in service teachers in K-8 public schools as well as principals and administrators in the same schools. This group would exclude Minors (individuals who are under the age of 18); Adults who are unable to consent; Prisoners; and Undocumented individuals; But may include pregnant women and Native Americans.

5 Number of Participants

Indicate the total number of participants to be recruited and enrolled: 30

6 Recruitment Methods

- Describe who will be doing the recruitment of participants.
- Describe when, where, and how potential participants will be identified and recruited.
- Describe and attach materials that will be used to recruit participants (attach documents or recruitment script with the application).

Virginia Coco, a 4th year PhD Candidate in the School of Community Resources and Development will be recruiting all participants. After IRB approval is received, a letter of invitation will be sent to the teachers and administrators of several K-8 public schools in the Phoenix metropolitan area of Arizona. Contact information will be obtained from the Department of Education data sources as well as school district websites.
A sample of the recruitment letter is attached.

7 Procedures Involved

Describe all research procedures being performed, who will facilitate the procedures, and when they will be performed. Describe procedures including:

- The duration of time participants will spend in each research activity.
- The period or span of time for the collection of data, and any long term follow up.
- Surveys or questionnaires that will be administered (Attach all surveys, interview questions, scripts, data collection forms, and instructions for participants to the online application).
- Interventions and sessions (Attach supplemental materials to the online application).
- Lab procedures and tests and related instructions to participants.
- Video or audio recordings of participants.
- Previously collected data sets that that will be analyzed and identify the data source (Attach data use agreement(s) to the online application).

Approximately 30 teachers will participate in interviews using a semi-structured format. Protocol for the interviews is attached.
Data will be gathered from the date of IRB approval through July of 2019.
An audio tape of the interviews will be produced for review purposes only and will be transcribed. These tapes will be destroyed after data analysis has been completed.

8 Compensation or Credit

- Describe the amount and timing of any compensation or credit to participants.
- Identify the source of the funds to compensate participants
- Justify that the amount given to participants is reasonable.
- If participants are receiving course credit for participating in research, alternative assignments need to be put in place to avoid coercion.

There will be no compensation or credit given to participants.

9 Risk to Participants

List the reasonably foreseeable risks, discomforts, or inconveniences related to participation in the research. Consider physical, psychological, social, legal, and economic risks.

The research team does not anticipate that the study participants will incur physical, psychological, social, legal, or economic harm during their participation in this study. We will, however, be sensitive to and will promptly reply to any concerns raised by participants.

In order to reduce any risks of the study, participants may decide to skip any of the questions or leave/withdraw from the study at any time. Participation in the study is absolutely voluntary.

10 Potential Benefits to Participants

Realistically describe the potential benefits that individual participants may experience from taking part in the research. Indicate if there is no direct benefit. Do **not** include benefits to society or others.

There is no direct benefit.

11 Privacy and Confidentiality

Describe the steps that will be taken to protect subjects' privacy interests. "Privacy interest" refers to a person's desire to place limits on with whom they interact or to whom they provide personal information. Click here for additional guidance on ASU Data Storage Guidelines.

Describe the following measures to ensure the confidentiality of data:

- Who will have access to the data?
- Where and how data will be stored (e.g. ASU secure server, ASU cloud storage, filing cabinets, etc.)?
- How long the data will be stored?
- Describe the steps that will be taken to secure the data during storage, use, and transmission. (e.g., training, authorization of access, password protection, encryption, physical controls, certificates of confidentiality, and separation of identifiers and data, etc.).
- If applicable, how will audio or video recordings will be managed and secured. Add the duration of time these recordings will be kept.
- If applicable, how will the consent, assent, and/or parental permission forms be secured. These forms should separate from the rest of the study data. Add the duration of time these forms will be kept.
- If applicable, describe how data will be linked or tracked (e.g. masterlist, contact list, reproducible participant ID, randomized ID, etc.).

If your study has previously collected data sets, describe who will be responsible for data security and monitoring.

- Data, including audio recording files and transcriptions, will be stored on ASU servers using ASURITE password-protection.
- Audio recordings will simply be used as a supplemental reference to the interview notes and will be destroyed once the data analysis is complete. They will not be transcribed.
- Audio recordings and transcriptions will be deleted 30 days after data analysis has been completed.
- The data will be stored for 2 years.
- In order to reduce risks of the study, participants may decide to skip any of the questions or leave/withdraw from the study at any time.
- In order to protect privacy interests of research participants, we will not be requesting participants to provide personal identifiers in their answers.
- Signed consent will not be obtained and consent forms will not be stored.

12 Consent Process

Describe the process and procedures process you will use to obtain consent. Include a description of:

- Who will be responsible for consenting participants?
- Where will the consent process take place?
- How will consent be obtained?
- If participants who do not speak English will be enrolled, describe the process to ensure that the oral and/or written information provided to those participants will be in that language. Indicate the language that will be used by those obtaining consent. Translated consent forms should be submitted after the English is approved.

- The consent process will take place at the time of the interview. Before proceeding, participants will be asked to read the consent form. The participant will signify their wish to participate in the study after reading the form by proceeding with the interview (see file "Informed Consent Form").
- Non-English speakers will not be part of the study sample. Translation services are not available for the study.
- All participants will be 21 years of age or older.
- Permission will be sought from each participant to use a digital recording device to record the interview to be used as a supplemental reference to the interview notes.

13 Training

Provide the date(s) the members of the research team have completed the CITI training for human participants. This training must be taken within the last 4 years. Additional information can be found at: Training.

Name	Date of Training Completion
Kathleen Andereck	
Virginia Coco	9/29/2018

Instructions and Notes:

- Depending on the nature of what you are doing, some sections may not be applicable to your research. If so, mark as "NA".
- When you write a protocol, keep an electronic copy. You will need a copy if it is necessary to make changes.

1 Protocol Title

Include the full protocol title: Instructional Time in K-12 Public Schools: Perceptions v. DOE Definition.

2 Background and Objectives

Provide the scientific or scholarly background for, rationale for, and significance of the research based on the existing literature and how will it add to existing knowledge.

- Describe the purpose of the study.
- Describe any relevant preliminary data or case studies.
- Describe any past studies that are in conjunction to this study.

On December 10, 2015, President Obama signed into law the Every Student Succeeds Act, which reauthorizes the Elementary and Secondary Education Act—the comprehensive federal legislation governing preK-12 education in the United States. The new bill includes, for the first time, language making environmental education and environmental literacy programs explicitly eligible for federal funds. However, they exists a disparity between pedagogy and practice due to a misconception by teachers and school administrators as to what constitutes instructional time and where instructional time can take place. The purpose of this study is to begin a conversation around the requirements of the Department of Education (DOE) for instructional time and how it is being applied.

In working with Tonto Creek Camp in over 50 school districts in Arizona, it has come to light that although the curriculum follows the state standards for STEM and life skills and clearly meets the characteristics of instructional time by the DOE, the schools themselves do not value time in these programs as instructional due to the setting. In addition, a cross curricular experiential learning program that was intended as a component of the curriculum map, while valued as an enrichment program, will not be adopted by schools due to the "loss of instructional time". It is our intent to investigate this in order to work towards a more open perception of instructional time.

Researchers like Begeny et al (2011), Belinger (1990), and Long (2014) have looked into perceptions of instructional time and how it effects learning. In the study on Equitable learning outcomes: Supporting economically and culturally disadvantaged students in 'formative learning environments' Clark (2014), the author looks at how Formative Learning Environments (FOELs) establish and sustain legitimate (community and family) partnerships for the purpose of supporting learning and minimizing the outcome inequities experienced by students from conditions of social adversity. Before we can move forward with educational reform, a consensus must be reached on the value of non-formal learning environments. This can only be done if we understand the barriers that currently exist and the root of the misconceptions.

3 Data Use

Describe how the data will be used. Examples include:

- Dissertation, Thesis, Undergraduate honors project
- Publication/journal article, conferences/presentations
- Results released to agency or organization
- Results released to participants/parents
- Results released to employer or school
- Other (describe)

The data gathered during this study will be used to in a doctoral dissertation as well as an article for journal publication.

4 Inclusion and Exclusion Criteria

Describe the criteria that define who will be included or excluded in your final study sample. If you are conducting data analysis only describe what is included in the dataset you propose to use.

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- Minors (individuals who are under the age of 18)
- Adults who are unable to consent
- Pregnant women
- Prisoners
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The final study sample will be comprised of in service teachers in K-12 public schools as well as principals and administrators in the same schools. This group would exclude Minors (individuals who are under the age of 18); Adults who are unable to consent; Prisoners; and Undocumented individuals; But may include pregnant women and Native Americans.

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6 Recruitment Methods

- Describe who will be doing the recruitment of participants.
- Describe when, where, and how potential participants will be identified and recruited.
- Describe and attach materials that will be used to recruit participants (attach documents or recruitment script with the application).

Virginia Coco, a 2nd year PhD Student in the School of Community Resources and Development will be recruiting all participants. After IRB approval is received, a letter of invitation will be sent to the teachers and administrators of several K-12 public schools in the South Phoenix area of Arizona. Contact information will be obtained from the Department of Education data sources as well as school district websites.
A sample of the recruitment letter is attached.

7 Procedures Involved

Describe all research procedures being performed, who will facilitate the procedures, and when they will be performed. Describe procedures including:

- The duration of time participants will spend in each research activity.
- The period or span of time for the collection of data, and any long term follow up.
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- Interventions and sessions (Attach supplemental materials to the online application).
- Lab procedures and tests and related instructions to participants.
- Video or audio recordings of participants.
- Previously collected data sets that that will be analyzed and identify the data source (Attach data use agreement(s) to the online application).

Two to three focus groups will be convened during afterschool hours. Approximately 25 teachers will participate in the focus groups that will last approximately one hour per group. In addition, approximately five principals/administrators from the district will be interviewed using the same questions as used in the focus group. A protocol for both the focus groups and interviews is attached.
Data will be gathered from the date of IRB approval through April 20th 2017.
An audio tape of the focus groups and interviews will be produced for review purposes only and will not be transcribed. These tapes will be destroyed after data analysis has been completed.

8 Compensation or Credit

- Describe the amount and timing of any compensation or credit to participants.
- Identify the source of the funds to compensate participants
- Justify that the amount given to participants is reasonable.
- If participants are receiving course credit for participating in research, alternative assignments need to be put in place to avoid coercion.

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The research team does not anticipate that the study participants will incur physical, psychological, social, legal, or economic harm during their participation in this study. We will, however, be sensitive to and will promptly reply to any concerns raised by participants.

In order to reduce any risks of the study, participants may decide to skip any of the questions or leave/withdraw from the study at any time. Participation in the study is absolutely voluntary.

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Realistically describe the potential benefits that individual participants may experience from taking part in the research. Indicate if there is no direct benefit. Do **not** include benefits to society or others.

There is no direct benefit.

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Describe the steps that will be taken to protect subjects' privacy interests. "Privacy interest" refers to a person's desire to place limits on with whom they interact or to whom they provide personal information. Click here for additional guidance on ASU Data Storage Guidelines.

Describe the following measures to ensure the confidentiality of data:

- Who will have access to the data?
- Where and how data will be stored (e.g. ASU secure server, ASU cloud storage, filing cabinets, etc.)?
- How long the data will be stored?
- Describe the steps that will be taken to secure the data during storage, use, and transmission. (e.g., training, authorization of access, password protection, encryption, physical controls, certificates of confidentiality, and separation of identifiers and data, etc.).
- If applicable, how will audio or video recordings will be managed and secured. Add the duration of time these recordings will be kept.
- If applicable, how will the consent, assent, and/or parental permission forms be secured. These forms should separate from the rest of the study data. Add the duration of time these forms will be kept.
- If applicable, describe how data will be linked or tracked (e.g. masterlist, contact list, reproducible participant ID, randomized ID, etc.).

If your study has previously collected data sets, describe who will be responsible for data security and monitoring.

- Data, including audio recording files, will be stored on ASU servers using ASURITE password-protection.
- Audio recordings will simply be used as a supplemental reference to the interview notes and will be destroyed once the data analysis is complete. They will not be transcribed.
- Audio recordings will be deleted 30 days after data analysis has been completed.
- The data will be stored for 2 years.
- In order to reduce risks of the study, participants may decide to skip any of the questions or leave/withdraw from the study at any time.
- In order to protect privacy interests of research participants, we will not be requesting participants to provide personal identifiers in their answers.
- Signed consent will not be obtained and consent forms will not be stored.

12 Consent Process

Describe the process and procedures process you will use to obtain consent. Include a description of:

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- Where will the consent process take place?
- How will consent be obtained?
- If participants who do not speak English will be enrolled, describe the process to ensure that the oral and/or written information provided to those participants will be in that language. Indicate the language that will be used by those obtaining consent. Translated consent forms should be submitted after the English is approved.

- The consent process will take place at the time of the focus group/interview. Before proceeding, participants will be asked to read the consent form. The participant will signify their wish to participate in the study after reading the form by proceeding with the focus group/interview (see file "Informed Consent Form").
- Non-English speakers will not be part of the study sample. Translation services are not available for the study.
- All participants will be 18 years of age or older.
- Permission will be sought from each participant to use a digital recording device to record the interview to be used as a supplemental reference to the interview notes.

13 Training

Provide the date(s) the members of the research team have completed the CITI training for human participants. This training must be taken within the last 4 years. Additional information can be found at: Training.

Name	Date of Training Completion
Kathleen Andereck	
Virginia Coco	09/18/2014

ASU Knowledge Enterprise Development

EXEMPTION GRANTED

Kathleen Andereck
Community Resources and Development, School of
602/496-1056
kandereck@asu.edu

Dear Kathleen Andereck:

On 4/3/2017 the ASU IRB reviewed the following protocol:

Type of Review:	Initial Study
Title:	Instructional Time in K-12 Public Schools: Perceptions v. DOE Definition.
Investigator:	Kathleen Andereck
IRB ID:	STUDY00005977
Funding:	None
Grant Title:	None
Grant ID:	None
Documents Reviewed:	• Instructional Time Study Focus Group Protocol, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • VCoco Instructional Time Interview Consent, Category: Consent Form; • Instructional Time Study Recruitment Script Focus Group, Category: Recruitment Materials; • VCoco Social Behavioral Potocol Template, Category: IRB Protocol; • Instructional Time Study Interview Protocol, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • Instructional Time Study Recruitment Script Interview, Category: Recruitment Materials; • Instructional Time Study Consent Form Focus Group, Category: Consent Form;

The IRB determined that the protocol is considered exempt pursuant to Federal Regulations 45CFR46 (2) Tests, surveys, interviews, or observation on 4/3/2017.

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

Sincerely,

IRB Administrator

cc: Virginia Coco
Virginia Coco

ASU Knowledge Enterprise Development

EXEMPTION GRANTED

Kathleen Andereck
Community Resources and Development, School of
602/496-1056
kandereck@asu.edu

Dear Kathleen Andereck:

On 3/18/2019 the ASU IRB reviewed the following protocol:

Type of Review:	Initial Study
Title:	IDENTIFYING BARRIERS TO FIELD BASED ENVIRONMENTAL EDUCATION (EE) PROGRAMS AS PERCEIVED BY EDUCATORS IN K8 PUBLIC ELEMENTARY SCHOOLS
Investigator:	Kathleen Andereck
IRB ID:	STUDY00009837
Funding:	None
Grant Title:	None
Grant ID:	None
Documents Reviewed:	• VCoco Barriers Interview Protocol, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • Virginia Coco Dissertation HRP 503a, Category: IRB Protocol; • VCOCO Barriers Recruitment , Category: Recruitment Materials; • VCOCO Barriers Consent Form (HRP 502a), Category: Consent Form;

The IRB determined that the protocol is considered exempt pursuant to Federal Regulations 45CFR46 (2) Tests, surveys, interviews, or observation on 3/18/2019.

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

Sincerely,

IRB Administrator

cc: Virginia Coco
Virginia Coco

APPENDIX B

FOCUS GROUP PROTOCOL

Virginia Coco
CRD 792 Instructional Time Project
Focus Group Protocol
March 16, 2017

Introduction *(1-2 minutes)*	Hello! Welcome to our focus group. Thanks for taking the time to join us to talk about instructional time in your school. My name is Virginia Coco and assisting me is _____. We're both students at Arizona State University in the School of Community Resources and Development. I am a 2nd year doctoral student researching the use of non-formal community programs as a way to bridge the learning gap in public K-12 schools. _____ is currently studying _____. The purpose of this focus group is to uncover differences and similarities in K-12 public school teacher and administrator perceptions and application of *instructional time* as compared with the definition and characteristics provided by the Department of Education (DOE). The discussion will probably take about 60 minutes to complete. This is a `'no holds barred" discussion. We want to know what you're seeing, even if it looks bad. That is the only way we are going to learn. The information from this discussion will then be used to help understand the difference in the practical application of *instructional time* from the DOE and actual practice. It will also be used in my doctoral dissertation. The information you share today will be used for this purpose only. You will not be identified by name or be recognizable in any way within the completed report. However, although I encourage it, I cannot guarantee such confidentiality from the other participants. If, for any reason, you don't feel comfortable sharing something with the whole group, please feel free to contact me outside of the group setting and we will arrange for an individual interview. We are both taking notes and taping this session so that we can study what you have said, but it goes no farther than this group. Again, anything you say here will be held in strict confidence; we won't be telling people outside this room who said what. Please note that we are not trying to achieve any kind of consensus within this group, but rather, want to hear all different points of view. You are different people with different experiences; therefore you will likely have different points of view to share. Please be respectful of your colleagues during this discussion, avoiding side conversations and dominating the discussion.

Ground Rules *(1-2 minutes)*	I am passing around a sign in sheet as well as a consent form that includes a and a non-disclosure agreement that I need you to sign. Be aware that due to the nature of focus groups, complete confidentiality cannot be guaranteed. If you feel uncomfortable for any reason signing these documents, you are free to leave at any time. Please take a moment to read it over. Before we begin, I would like to go over a few ground rules for the focus group. These are in place to ensure that all of you feel comfortable sharing your experiences and opinions. **Ground Rules:** 1. *Confidentiality* – As per the non-disclosure agreement, please respect the confidentiality of your peers. The moderator will only be sharing the information anonymously. 2. *One Speaker at a Time* – Only one person should speak at a time in order to make sure that we can all hear what everyone is saying. 3. *Use Respectful Language* – In order to facilitate an open discussion, please avoid any statements or words that may be offensive to other members of the group. 4. *Open Discussion* – This is a time for everyone to feel free to express their opinions and viewpoints. You will not be asked to reach consensus on the topics discussed. There will be no right or wrong answers. 5. *Participation is Important* – It is important that everyone's voice is shared and heard in order to make this the most productive focus group possible. Please speak up if you have something to add to the conversation! 6. There are *no wrong answers* but rather differing points of view. Please feel free to share your point of view even if it differs from what others have said. Keep in mind that we're just as interested in negative comments as positive comments, and at times the negative comments are the most helpful.
Introduction of participants *(3 minutes)*	Let's go around and introduce ourselves. Please be sure to include your name, education level, number of years you have been teaching, and one fun fact about yourself.

Discussion Questions *(40 minutes)*	Now we can begin our discussion. As soon as I ask the question, feel free to begin the discussion. I'll be here primarily as a listener, taking notes. I may jump in from time to time to lead you in another direction or to bring you back on topic should you stray. According to the AZ Department of Education policies and procedures manual, instructional hours (time) are described as the time during which "students are engaged in regularly scheduled instruction, learning activities or learning assessments within the curriculum of study." The manual further describes instructional time as having the following characteristics: a. A plan of study developed by the teacher b. Lesson plans developed by the teacher c. Scope and sequence d. Curriculum e. Student objectives for learning f. A description of how the instructional time links to a students' course of study completion or grade level advancement. g. Proof that credit was earned for successful completion of the course assessed; and h. Actual assessment of individual student performance against the instructional period's objectives. **Question 1:** Tell me your definition, with examples of what is and is not considered instructional time at your school. • How did you arrive at your definition? • How did your principal and/or school district influence your definition? I know there has been some controversy over how we define formal learning, non-formal learning, and informal learning. Let's agree that *formal learning* takes place in a classroom, is structured and intentional; *non-formal learning* takes place outside of the classroom, is structured and intentional; and *informal learning* takes place everywhere and has no structure or intent. **Question 2:** How does this clarification change your definition of instructional time (or not)?

	Question 3: According to the DOE definition of *instructional time*, in what settings can it take place? • What environments have been described? • What specifically needs to be present in order for time to count as instructional? **Question 4:** What types of community resources do you use as learning environments for your school? Museums? Parks? The Zoo? • How would you define the time spent at these places? • What would be necessary for time spent in these out of classroom settings to be considered as part of your instructional time? • What about STEM camp? What needs to be present for time spent at camp to be considered instructional time? **Question 5:** Expeditionary and experiential learning models take place primarily in non-formal educational settings. In what ways do you feel these educational models have value as instructional time? When would they not have value as instructional time? **Question 6:** What would you say is a key element for a non formal setting to be able to include a program that would be a valuable addition to your curriculum map and be included as instructional time?
Closing *(5 minutes)*	I would like to thank you for your participation. I also want to restate that what you have shared with me is confidential. No part of our discussion that includes names or other identifying information will be used in any reports, displays, or other publicly accessible media coming from this research. Finally, I want to provide you with a chance to ask any questions that you might have about this research. Do you have any questions for me?

APPENDIX C

INTERVIEW PROTOCOL

Virginia Coco
Barriers to Field Based EE – Dissertation Research
Interview Protocol
March 27, 2019

Introduction *(1-2 minutes)*	Hello! Thanks for taking the time to talk about field based EE in your school. My name is Virginia Coco. I am a 4th year doctoral candidate at Arizona State University in the School of Community Resources and Development. My research explores the use of non-formal community programs as a way to bridge the learning gap in public K-8 schools. The purpose of this interview is to uncover perceived barriers, in K-8 public elementary schools, that hamper the use of field based environmental education (EE) programs. It will also be used in my doctoral dissertation. The information you share today will be used for this purpose only. You will not be identified by name or be recognizable in any way within the completed report. The interview will probably take about 30-45 minutes to complete. I will be taking notes and taping this session so that I can study what you have said, but it goes no farther than me. Again, anything you say here will be held in strict confidence; I won't be telling people outside this room what was said.
Questions *(30-40 minutes)*	**Question 1:** What types of community resources do you use as learning environments for your school? Museums? Parks? The Zoo? • How would you define the time spent at these places? • Is the focus of the trip tied to curriculum being used in the classroom? **Question 2:** Expeditionary and experiential learning models take place primarily in non-formal educational settings. In what ways do you feel these educational models have value to elementary school students? **Question 3:** EE is fraught with controversy regarding its goals and value in public elementary education. a) How do you feel about environmental education programs? b) What value to do feel they hold in STEM or science curriculum? c) How does field based EE enhance learning? **Question 4:** What would you identify as issues (constraints) that need to be addressed when planning to use field based programs? What do you consider a barrier? (i.e. funding, transportation, etc) **Question 5:** Out of the barriers that you have mentioned, which are the three most cumbersome to transcend?

Closing *(5 minutes)*	I would like to thank you for your participation. I also want to restate that what you have shared with me is confidential. No part of our discussion that includes names or other identifying information will be used in any reports, displays, or other publicly accessible media coming from this research. Finally, I want to provide you with a chance to ask any questions that you might have about this research. Do you have any questions for me?