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# Experiences and Practices of Environmental Adult Education Participants

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# Walden University

College of Education

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Cynthia J. Fitzwilliams-Heck

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Walden University

2018

Abstract

Experiences and Practices of Environmental Adult Education Participants

by

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MS, Central Michigan University, 2000

BS, Ferris State University, 1996

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Adult Education Leadership

Walden University

December 2018

## Abstract

Awareness of the sustainability of our natural resources is a continuing concern. Initiatives promoting environmental adult education (EAE) through professional development (PD) workshops ensure educators' have the knowledge and skills to inform their audience about environmental literacy and stewardship. However, these workshops have rarely been monitored. Specifically, it appears no researchers have focused on the reflective experiences of an EAE PD workshop on educator participants at least 5 years after participation. This basic qualitative study used telephone interviews of 8 past participants to explore whether and how they perceive their behavior changing in relation to natural resources conservation years after the EAE PD, and how they shared these changes with others. Through the contextual lens of EAE with a focus on outdoor experiential learning and transformative learning theories, five major themes emerged including: (a) becoming a more effective educator; (b) becoming more aware of the importance of conservation; (c) experiencing positive emotional effects; (d) changing behaviors that impact the environment; and (e) experiences of the EAE PD location. Implications for positive social change were found in the expressed experiences, content, and application of the EAE PD that ignited new means for approaching curriculum-specific content with a heightened focus on the importance of the conservation of natural resources.

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## Dedication

This dissertation and doctoral journey is dedicated to my children, Trey and Jace. I hope you remember all the conversations we have had and will have about life, the environment, and all the connections in between.

## Acknowledgments

Through all the highs and lows throughout my doctoral pursuit, my husband and children showed me their unwavering love, support, and encouragement. Without their understanding, this endeavor would have been more difficult to complete – if at all. My mentor, Dr. Seidman also provided me reassurance, but also the guidance I needed through the years to navigate and progress to complete the program. Dr. Eichholz, my methodologist, provided further invaluable insights to help me develop as a qualitative, scholar-practitioner. It was a seemingly endless process, but nonetheless worthwhile and I will never forget the family, friends, and mentors who helped me attain my goal.

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## Chapter 1: Introduction

The use and conservation of our natural resources should be of concern to everyone (Ardoin & Heimlich, 2013; Jacobson, McDuff, & Monroe, 2015). There is increased apprehension about the sustainability of natural resources, and thus a need to provide the public with environmental literacy (Jacobson et al., 2015). This can occur by ensuring environmental educators have the experiences and skills to teach about the environment effectively. Therefore, a top priority is to provide continuing professional development (PD) environmental adult education (EAE) workshops for environmental educators so they may teach others of these concerns (North American Association for Environmental Education [NAAEE], 2016).

The current literature lacks specific research on the lasting impact of environmental education PD workshops for educators and the effect the initial PD has going forward (Liddicoat & Krasny, 2013; Small, Larson, Green, & Shenk, 2012; Sondergeld, Milner, & Rop, 2014). Other studies have also shown that educators responsible for teaching environmental concepts either do not cover them or do so inadequately (Ardoin & Heimlich, 2013; Fleming, 2009; Small et al., 2012). Therefore, research is needed to explore, focus on, and reflect on the experiences of environmental educators 5 years or more after a PD. There is a need to understand what was salient in their learning experience and what the participants did with the knowledge and skills they gained from the PD.

PD for educators may help conserve our natural resources by helping others understand the scientific process or basic ecological concepts (Association of Public and

Land-grant Universities, 2014). The quality of the soil, forests, and water sources will not only determine ecosystem health and functionality, but can also affect people's health and community economics, thereby making it imperative to educate people of all ages about the issues and practical solutions (Jacobson et al., 2015). Land use can have a detrimental impact on aquatic ecosystems and cause long-term degradation of both systems if poor awareness persists (Leys & Vanclay, 2011). If the complexities of natural resource topics are not understood, action may not be taken to prevent or solve problems or information obtained from outreach attempts from environmentally focused sources may not be used (Leys & Vanclay, 2011). Therefore, providing PD opportunities with these messages could potentially have a positive social-ecological impact in the participants' community if the knowledge and skills from the PD are applied (Sondergeld et al., 2014). In turn, the awareness can also spread to other communities, which can ultimately contribute to making the planet a better and more sustainable place.

In this chapter, I present the background information on EAE, the problem and purpose statements of this study, the research question, conceptual framework, nature of the study, definitions of key concepts used in the paper, assumptions, scope and delimitations, limitations, significance of the study, and a summary of the main points identified.

### **Background**

EAE is considered a developing discipline (Bell & Clover, 2017; Clover, Jayme, Hall, & Follen, 2013; Dentith et al., 2014; Garnett, 2016). In EAE PD workshops, educators are exposed to the concepts of conservation and provided with opportunities to

examine the environment and ways to learn about it while sharing, challenging, and creating new knowledge and meaning (Hill, 2006). With increased habitat fragmentation and pollution concerns in the mid-1990s, EAE workshops were formed with the intention of raising adults' environmental awareness and helping improve their self-efficacy in acting against social-ecological degradation, which became recognized as a priority in environmental education (Clover et al., 2010).

A number of methods have been used to deliver the message for the need for environmental protection and sustainability. These include: analytic practices, theoretical perspectives of adult education, feminist education, antiracism education, outdoor education, and even art-based education, discursive lenses, and epistemological technologies (Bell & Clover, 2017; Clover et al., 2013; Dentith et al., 2014; Garnett, 2016). In EAE, no one method is used because adult education is coupled with at least one other lens for conveying messages and analyzing results (Clover et al., 2013). Additionally, not all lenses are used depending on the audience. Ideally, incorporating EAE's aspects of teaching and learning would lead to knowledge retention and positive action for the environment (Bell & Clover, 2017; Clover et al., 2013; Dentith et al., 2014; Garnett, 2016). However, what workshop participants do with their training afterwards is rarely monitored (Clover et al., 2013).

While studies have been designed to examine what is EAE and what it is composed of, the learning experiences and their long-term effects on the workshop participants after their training are rarely monitored (Liddicoat & Krasny, 2013). No known studies have focused on understanding educator participants' experiences after



they participated in an EAE PD workshop at least 5 years ago, specifically, if they have used the knowledge and skills they gained from the experience in any way, whether in their occupation, in society, or on the environment. Exploring these experiences from their perspectives could show the value of an EAE PD concerning the promotion of natural resources conservation and illuminate effective strategies in teaching about the value of nature preservation.

### **Problem Statement**

Concerns about the sustainability of our natural resources continue to escalate (Ardoin & Heimlich, 2013). Education has been identified as an effective means to inform the public about environmental literacy and stewardship (Ardoin & Heimlich, 2013; Jacobson et al., 2015). Although initiatives to promote EAE PD workshops received top priority for environmental educators so they may teach others of these concerns (NAAEE, 2016), the long-term effects on the PD participants after their training are rarely monitored (Liddicoat & Krasny, 2013).

Few studies have examined educators' experiences with an EAE workshop (Liddicoat & Krasny, 2013; Sondergeld et. al., 2014; Williams & Chawla, 2015). Specifically, it appears that no researchers have focused on the reflective experiences of EAE PD workshop participants at least 5 years after participation. There is a need to understand whether and how they perceive their behaviors changing in relation to natural resource conservation years after the EAE PD and how they shared these changes with others (Liddicoat & Krasny, 2013; Williams & Chawla, 2015). Most of the studies on EAE workshops are quantitative and measure short-term effects. Therefore, a need exists

to better understand the experiences of educators in an EAE PD (Sondergeld et. al., 2014) years after taking an EAE workshop. Identifying what individuals remember years after an EAE PD may help stakeholders understand what remains salient in their learning experience and reveal what they did with the knowledge and skills they gained from the workshop.

Understanding the perspectives of workshop participants over time may help to determine what characteristics of these workshops specifically made the most impact and in what capacity over time (Liddicoat & Krasny, 2013; Williams & Chawla, 2015). The satisfaction or effectiveness of an EAE workshop has rarely been studied beyond immediate evaluation responses following the workshop (Ardoin et al., 2013; Liddicoat & Krasny, 2013). This study contributes to EAE PD literature specifically by exploring salient memories of a past EAE PD experience. The research findings may also improve teachers' strategies in providing training about natural resources conservation. Exploring retrospective responses can provide insight for researchers and program developers to utilize as approaches or teaching/learning techniques to incorporate in improving or creating new EE programs.

### **Purpose of the Study**

The purpose of this basic qualitative study using interviews was to explore what was salient in the learning experiences from an EAE PD taken at least 5 years previously and to understand what the participants did with the knowledge and skills they gained from the workshop. It was important to understand what improvements to the PD, if any, are still necessary from the participants' perspectives to help with understanding the

information, applying the workshop material, or with the general experience or improving the PD in some other area. I expected that conducting a qualitative study on the reflective experiences over time of participating in an EAE PD would provide insight to help further EAE theory and practice (Fleming, 2009; Haugen, 2010; Liddicoat & Krasny, 2013). The results of this study could also contribute to the improvement of EAE programs and provide insight for EAE PD developers or future research in EAE.

### **Research Question**

RQ: What were the experiences and reflections of participants of an EAE PD workshop held at least 5 years prior as they continue to practice ecological and environmental education in the present?

### **Conceptual Framework**

The conceptual framework that guided this study was founded on the contextual lens of Clover et al.'s (2013) EAE, with a focus on outdoor experiential learning theory, and Mezirow's (2000, 2009, 2012) transformative learning theory. As a foundation of Clover et al.'s EAE framework, environmental education programming goals are designed to build upon a person's awareness, knowledge, skills, attitudes, and participation in order to understand the environment and take informed action towards protecting the environment (UNESCO, 1977). Clover et al. view all environmental education practices through a lens of adult education on a personal and socially transformative level.

Adult learning theories and an ecological and environmental orientation for teaching and learning served as the overarching context of EAE. Clover et al. (2013) referenced many principles to frame their studies and EAE. The principles of EAE

include adult education with an emphasis on liberal and critical adult education, gender difference and feminist adult education, arts-based adult education, antiracist adult education, and outdoor experiential learning. Outdoor experiential learning with the lens of adult education and transformation was the focus in this study. According to Clover et al., adults taking part in outdoor activities such as nature hiking, plant identification, bird watching, map reading, and other similar experiences can develop knowledge about the natural world and a deeper appreciation for it. Other uses of outdoor experiential learning can illustrate human impact on the environment that may lead to stewardship efforts in conservation of natural resources. EAE PD workshops have used this as a curriculum focus (Gagnon & Bumpus, 2016; Sondergeld et al., 2014; Warren, Roberts, Breunig, & Alvarez, 2014).

There are key principles or philosophies behind outdoor education that can guide EAE (Clover et al., 2013). The elements of outdoor education used by Clover et al. include (a) exposing students to nature with the intent of fostering an understanding and appreciation of its integrity, (b) teaching citizen responsibility toward environmental stewardship, and (c) learning about the social-ecological interconnections to natural resources. The premise to this approach for teaching about the environment and natural resources revolves around hands-on experiences in situ. An effective EAE PD will allow time for participants to apply knowledge, practice skills, and reflect on the presented environmental topic in its context or a mock natural setting. The role of teacher as knowledge expert transforms into a “facilitator of experiences” (Clover et al., 2013, p. 33). A change in participants’ attitude, behavior, and/ how they teach about natural

resources conservation could result after exposure to an EAE PD experience (Bush-Gibson & Rinfret, 2010; Sondergeld et al., 2014). Confidence in the knowledge and skills offered in the EAE PD can lead to empowerment and, ultimately, transformation.

The transformative learning theory by Mezirow (2009) supplies a component of this study's conceptual framework to further understanding of whether past EAE workshop participants have experienced transformation,. The elements of Mezirow's (2009) transformative learning theory include a disorienting dilemma, critical reflection, rational discourse, and frame of reference. Initially, a person is engaged in activities that trigger a disorienting dilemma, which would lead to changes or shifts in their meaning schemas, which are part of the person's frame of reference to understand the world (Mezirow, 1991). The dilemma or change in meaning schema can have a large impact on the individual. The changes or shifts that have taken place can occur either quickly or incrementally. The effect can also be described as unsteady, because the person can be prompted to make sense or find new meaning of their experiences (Mezirow, 2009). This process is improved when the person partakes in critical reflection as well as in rational discourse with others (Mezirow, 2012). To realize whether a transformation has occurred, the individual's frame of reference needs to be acknowledged. The frame of reference includes the adult's assumptions, beliefs, and expectations of the world (Mezirow, 2000). Thus, experiences are understood through this frame of reference. According to Mezirow (2009), transformative learning refers to the learning that transforms a learner's problematic frames of reference into becoming more inclusive, discriminating, reflective, open, and emotionally able to change. A more thorough

explanation of EAE as it pertains to outdoor experiential learning theory and transformative learning theory can be found in Chapter 2.

### **Nature of the Study**

I used a basic qualitative approach as described by Merriam (2009) to address the research question in this study. The research question focused on the experiences of environmental educators as they put into practice what they learned in an environmental education PD. By using a basic qualitative methodology, an understanding emerged of how participants of EAE PD workshops held at least 5 years prior have drawn upon the experiences from the workshop or have used what they learned about the state's natural resources, ecology, or teaching practices in environmental education.

### **Definitions**

To help clarify the terms used in this study, concise definitions of key concepts follow.

*Adult learner:* Someone 25 years or older engaged in postsecondary learning activities who shares some characteristics with nontraditional students, such as delayed enrollment into postsecondary education, attending part time, financial independence, working full time, having dependents, and having a GED or equivalent high school certificate (National Center for Education Statistics, 2013).

*Conservation education:* Instruction in the connection between natural resources and ecosystems and how to conserve and manage natural resources based on scientific research (Association of Fish and Wildlife Agencies, 2011).

*Environmental adult education (EAE)*: Environmental education that incorporates adult learning theories to help reach the goal of stewardship and sustainable behaviors (Clover et al., 2013).

### **Assumptions**

An aspect of the study that I believed but that could not be demonstrated as true was whether the participants shared an honest and accurate account of their experiences from at least 5 years prior. For this study I assumed that the past participants of an EAE PD could recollect, reflect, and construct meaning from the experience in question. Another assumption was that the PD experienced by the study's contributing participants had a similar format. These assumptions were necessary in the context of the study because information gleaned from the participants could help understand important characteristics of PD and EAE best practices.

### **Scope and Delimitations**

Aspects of the research problem addressed in this study include experiences of environmental educators as they put into practice what they learned in an EAE PD workshop that transpired 5 or more years prior. The boundaries of the study included only the experiences of educators who had previously attended a PD at least 5 years earlier with an emphasis on EE and the natural resources in the state, and excluded educators of EAE PD workshops experienced less than five years ago. The facets of the EAE conceptual framework investigated in this study included adult learning theory, outdoor experiential learning theory, and transformative learning theory. In regard to transferability, the data in this study cannot be generalized but could be used to

strengthen the EAE framework and best practices in EAE programs with similar parameters as those described in the study.

### **Limitations**

The study has several limitations. A limitation is related to the sample used. I only focused on educators with experiences of an EAE PD of at least 5 years prior to the interviews. This prevented educators with more recent knowledge and experiences from participating. Another limitation was that I relied on self-reported data. Self-reported data is limited by the fact that it cannot be verified independently. I took the responses of the educators at face value. Self-reported data is also affected by the issues of selective memory, telescoping, attribution, and exaggeration (Price & Murnan, 2004). The participants may (a) not have remembered the events accurately, (b) believed some events happened at a specific time and place when they took place at another, (c) attributed positive or negative experiences to potentially inaccurate accounts of events, and/or (e) exaggerated outcomes or impacts of the EAE PD workshop on them.

Additionally, the results cannot be applied or generalized nationally because the setting is only in one Midwestern state. The results from this study may be skewed because the workshops conducted in this state might not be similar to those in other states. Lastly, I have been involved in EAE since 1999 and have networked and partnered with many people and organizations in the field through the years. These types of associations could lead to bias in the research. I minimized bias by explaining my stance as a researcher trying to understand the EAE PD experience and its potential impact on the participants.



## **Significance**

The findings of the study may advance knowledge in the discipline of environmental education. Providing a detailed description of the setting in which the research took place, and reviewing multiple EAE participants' demographics and their perspectives from interviews to identify themes could help EAE program directors improve their workshops and address shortcomings based on the details conveyed in the study. The findings of the study may aid policymakers in advancing practices and policies with regard to environmental awareness. The research results may also improve similar EAE programs and could provide insight for some EAE PD developers or future research in EAE. Practical contributions of the study could help develop PD experiences with an EAE framework to maximize the likelihood of participants' applying the knowledge and skills to a field-based scenario and educational setting. The abundance of relevant data resulting from this study may allow others a variety of ways to analyze how EAE program material is applied, how it can be improved, and future applications of EAE. Improvement could involve ways to encourage increased EAE program participation, material implementation, and program commitment. Prospective uses will be based on existing EAE program applications in stewardship or citizen science projects and visions from natural resource managers of how to work with the citizenry in a cooperative social-ecological approach.

The findings of the study may also lead to significant social changes. The study could be important to EAE program developers and facilitators, natural resource management organizations, formal and nonformal educators, and citizens. First, more

EAE programs with a social-ecological goal can be formed. Programs with a specific outlook on, and consideration of, the interconnectedness between humans and the landscape can also be developed. Lastly, the findings can lead to a more informed and involved citizenry, who can grow and help natural resource managers accomplish their mission and evoke positive social-ecological change.

### **Summary**

The purpose of this study was to explore how the experiences from an EAE PD taken five plus years ago influenced the educators. Evaluating available literature revealed that a need to have a better understanding of adults' perception of natural resource conservation and education (Ardoin & Heimlich, 2013), especially concerning the experiences of educators in an EAE PD (Sondergeld et al., 2014). The aim for EAE is to transform students' meaning and complex understanding of their personal and collective roles and duties within ecosystems and increase their readiness to carry out environmental action (Ardoin & Heimlich, 2013; Roczen, Kaiser, Bogner, & Wilson, 2014; Saylan & Blumstein, 2011; Sondergeld et al., 2014); it can be difficult to determine if these objectives are truly being met. The programs have multiple and complex educational goals beyond just spreading knowledge. As a result, it can be problematic to evaluate the programs' success without a study that looks at the effects or impacts of the programs over the long term (Liddicoat & Krasny, 2013). Therefore, this study was designed to examine educators' experiences in a long-term period that may contribute positively to the literature and close this gap. In Chapter 2, I present a further discussion

of the EAE conceptual framework and an in-depth review and synthesis of the literature pertaining to this study.

## Chapter 2: Literature Review

Few studies have examined educators' experiences with an EAE workshop (Liddicoat & Krasny, 2013). Specifically, it appears that no researchers have focused on the reflections of EAE PD workshop participants 5 or more years after their participation. Most of the studies on EAE workshops were quantitative and measured its short-term effects. A need exists in the literature to have a better understanding of adults' perception of natural resource conservation and education (Ardoin & Heimlich, 2013), especially concerning the experiences of educators in an EAE PD (Sondergeld et. al., 2014).

The purpose of this basic qualitative study using interviews was to explore what was salient in the participants' learning experiences from an EAE PD taken at least 5 years previously and understand what they did with the knowledge and skills gained from the workshop. Additionally, I tried to determine from the participants' reflections of their experiences if the PD they participated in conformed to what makes workshops effective according to adult learning theory. If not, it is important to understand what improvements are still necessary from the participants' perspectives. I expected that conducting a qualitative study on the long-term reflections of EAE PD workshops would provide insight to help further EAE theory and practice (Fleming, 2009; Haugen, 2010; Liddicoat & Krasny, 2013). The results of this study could also contribute to the improvement of EAE programs and provide insight for EE PD developers or future research in EAE.

This chapter starts with a discussion of my literature search strategy followed by the conceptual framework, which includes aspects of Clover et al.'s (2013) contextual

lens of EAE, the principles of environmental education, and Mezirow's transformative learning theory (Mezirow 2009; 2000; 2012). I then review relevant literature to serve as the basis for the study. The review of literature consists of four topics: (a) empirical studies conducted on the value of EE, (b) research about how EAE can be experiential and transformative, (c) the best EAE workshop practices, and (d) research on the effects of EAE workshops. I conclude the chapter with a summary and the conclusions that justify the need for the study.

### **Literature Search Strategy**

The EBSCOhost Research Databases accessed through the Walden University library provided a multitude of resources for this study. The specific databases used for this study included Education Research Complete, ERIC, SAGE Premier, ScienceDirect, Taylor and Francis Online, and Teacher Reference Center. Additionally, the ProQuest database provided Dissertations and Theses at Walden University and ProQuest Dissertations and Theses Global was also a resource. Google Scholar was also used as a search engine. Lastly, NAAEE's (2016) documents within the Guidelines for Excellence in EE were used to glean background information, research, and potential additional resources. Key search terms included: *environmental adult education*, *adult environmental education*, *conservation education*, *natural resources education*, *adult ecological or environmental literacy*, and *guidelines for excellence in environmental education*. A combination of these terms along with the following phrases or a combination of these phrases narrowed the results pertaining to this study: *educator experiences in*, *best practices of*, *professional development of*, *adult learning theory and*

*outdoor experiential education, adult learning theory and outdoor experiential and conservation education.* The same search terms were utilized in all databases and search engines. In cases where few search results ensued, I used a different combination of search terms or sought a different database.

While searching the literature, all applicable topics to my research, publication dates, document types, and languages were reviewed to gain a full understanding of the subject. The dates were narrowed to the last 5 years after I conducted a complete review of the literature. With Google Scholar, if an abstract seemed relevant to the study, searching the results' "cited by" and "related articles" options offered additional potential papers. If current research, dissertations, or conference proceedings were scant or nonexistent, documentation often indicated a need for further research in my area of interest. Often, resources expressed adult teaching and/ learning in EE as a necessity for the advancement of the discipline and to promote the conservation of natural resources. From all the sources referenced, I identified the EAE conceptual framework for this study, and I reviewed and synthesized literature on key concepts as they related to the problem and purpose.

### **Conceptual Framework**

The conceptual framework that guided this study was founded on the contextual lens of Clover et al.'s (2013) EAE with a focus on outdoor experiential learning theory and Mezirow's transformative learning theory (Mezirow 2009; 2000; 2012). As a foundation of Clover et al.'s EAE framework, environmental education programming goals are to build upon a person's awareness, knowledge, skills, attitudes, and

participation in order to help understand the environment and take informed action towards protecting the environment (UNESCO, 1977). Clover et al. views all environmental education practices through a lens of adult education on a personal and socially transformative level.

### **Outdoor Experiential Learning Theory**

Outdoor experiential learning theory can be used for studying EAE PD workshops (Clover et al., 2013; Gagnon & Bumpus, 2016; Warren et al., 2014). According to this theory, adults who participate in outdoor activities such as nature hiking, plant identification, bird watching, and map reading, among others, can develop knowledge about the natural world and may discover a deeper appreciation for it. There are key principles or philosophies involved in outdoor education that can guide EAE (Clover et al., 2013). The elements of outdoor education used by Clover et al. include exposing students to nature with the intent of fostering an understanding and appreciation of its integrity, teaching citizen responsibility toward environmental stewardship, and learning about the social-ecological interconnections to our natural resources.

Clover et al. (2013) identified outdoor experiential learning in EAE as critical for the understanding of the “fundamental transformation of human/earth relations” (p. 28). Regardless of an EAE program’s focus or intent, the EAE framework in this lens consists of a holistic and experiential approach to help learners examine their place in society as it relates to the ecosystem. EAE encompasses humans’ relationship with earth’s physical and biological dimensions in a relevant, hands-on approach. With this lens, the goal is to

increase environmental awareness, knowledge, and skills and change attitudes and behavior.

As part of their framework for outdoor experiential learning, Clover et al. (2013) used Kolb's (1984) experiential learning cycle as a guide. A later study also used this approach to identify transformation. Using Kolb's model of experiential education as a lens for outdoor education begins with an outdoor experience, followed by the learners' reflection, conclusions derived based on experiences, and planning new outdoor learning experiences to help with the transfer of learning (Gagnon & Bumpus, 2016). The transfer of learning or application or continued use of outdoor experiential education in a person's life after exposure to it can be considered a transformation (Brown, 1989). A transformation from outdoor experiences can be difficult to achieve, and the transformation can be short-lived or last a lifetime (Brown, 1989). Outdoor experiential education teaches about the value of commitment to environmental stewardship (Gagnon & Bumpus, 2016; Warren et al., 2014). Learners are taught specific facts and concepts such as the interlinking of natural resources to each other and the relationship of humans to these natural resources. Environmental adult educators can highlight the integral relationship between the survival of the planet with that of the world (Gagnon & Bumpus, 2016; Warren et al., 2014). Through this perspective, the incorporation of transformative learning theory helped broaden the lens for the study.

### **Transformative Learning Theory**

EAE has a goal of leading adults toward transformation involving understanding and improving social-ecological relationships (Clover et al., 2013). Mezirow's (2000)



transformative learning theory has provided a lens for natural resource scholars to examine instrumental learning, communicative learning, and critical self-reflection to lead to change in views and behaviors (Kerton & Sinclair, 2010). Sterling (2010) linked transformative learning to environmental education and natural resource management. In Sterling's study, changes in individuals' lives paralleled personal transformations leading to changes in social-ecological systems. Environmental education provided the knowledge and skills to help adult citizens understand their changed environment and helped empower them to make positive changes.

In EAE workshops, the process of an individual changing his or her perceptions is part of transformation. The transformative learning theory has the root element of a disorienting dilemma triggering a person's shift in their frame of reference (Mezirow, 2009; 2000; 2012). Critical reflection or rational discourse is often necessary to realize a transformation has occurred (Mezirow, 2009).

After a transformation has taken place in the learners' frame of reference, they will come to perceive themselves and the world in a seemingly superior manner than previously, because their initial assumptions and expectations have been challenged and changed to fit reality or a particular context. A person's frame of reference also includes meaning schemas as well as meaning perspectives (Mezirow, 1991). Meaning schemas refer to a set of constructed beliefs of how things work, how things should be done, and how things should be understood. A meaning perspective is a more fundamental belief compared to the meaning schema (Mezirow, 2009). The meaning perspective is composed of assumptions within which a person's experience assimilates and transforms

new experiences. Meaning perspectives encompass learners' notions of their roles in the world, the value of family, as well as their identities.

Mezirow (2009) also provided the concept of domains of learning, which can be the instrumental domain or the communicative domain. Instrumental domain refers to understanding how things work, with meaning created or formed through hypothetical or deductive reasoning as well as experimental engagement with the person's environment (Mezirow, 2009). Alternatively, the communicative domain refers to how people communicate and form relationships with other people. Meaning here is created through inductive reasoning. In this kind of reasoning, learners use their own experience to understand that of another's. The theory also puts forward that transformative learning can be either epochal or incremental. Epochal is when transformation of a learner's meaning happens quickly, while incremental means that transformation takes place in small shifts.

The experiences of disorienting dilemmas, critical reflection, and rational discourse can cause transformation. The disorienting dilemma refers to the dilemma that heavily disrupts and disturbs a person, making them realize their initial frame of reference or their frame of reference prior to a learning experience is adequate and should be changed. Critical reflection is when the person creates new meanings after deeply examining their beliefs following a learning experience. Lastly, rational discourse refers to the discussions and interactions with other people that lead to the highlighting of incongruences and biases held that should be addressed (Mezirow, 2009).

Transformative learning theory is also described as a form of adult learning (Mezirow, 1991). From this perspective, it can help reveal “how adults learn to make meaning of their experience” (Mezirow, 1991, p. 198). Having an understanding of adult learning and transformation can influence what types of educational approaches would influence adult learning and how to best teach adults. This lens can be used to examine the experiences of educators in the EAE PD workshop, what makes it successful, and what needs to be improved according to its effects on the participants’ views or actions taken toward nature conversation in the long term. Based on these adult learning theories, programs can be viewed as tools for learners to achieve critical discovery, challenge problematic normative values as well as assumptions, and heed the call to action and stewardship. Essential strategies of critical adult teaching practices encompass the methods of dialogue, critique, and the analysis of power (English & Mayo, 2012). For adult education to be more critical, educators must consider the perceptions and beliefs held by citizens about themselves, their communities, and societies. The power structures and relations within these modes of perceptions must also be analyzed. In a more socially responsive type of adult education, the educator is called to set up learning environments conducive for reflection. Learners must become adept at reflecting on their own realities as well as the realities of their larger society and culture (Knowles, Holton, & Swanson, 2014; McLaren, 2015).

According to adult learning theories, adults have accumulated a multitude of experiences over time (Knowles et al., 2014). Adults have various responsibilities and roles, and their social, geographical, economic, and political contexts can change over

time (Knowles et al., 2014; McLaren, 2015). Given any adult education setting, the learning situation, issue, or activity should be engaging, applicable, and builds on the prior experience of the adults (Knowles et al., 2012). Thus, adult learning should highlight the relevance to one's daily life and in the long term.

Every learning situation presents new and varied adult learners whose cultures and personalities influence the dynamics of the learning atmosphere (Caffarella & Daffron, 2013). Learning can be dependent on the learners' varied backgrounds and learning conditions (Boone, Safarat, & Jones, 2002; Brookfield, 1986; Caffarella & Daffron, 2013). What works with some individuals or groups may not work with another audience attending the same program offered at a different time. Adult learners may learn differently or more effectively than at other stages in adulthood. Backgrounds, experiences, and the readiness to learn vary with every individual and changes as one ages (Knowles et al., 2012). If an adult audience consists of various ages, the educator must consider the individuals' differences.

Transformative learning theory, as a lens for adult education and learning, also needs to consider other conditions conducive to creating meaningful perspectives of experiences (Mezirow, 1991). Under ideal conditions, according to Mezirow, participants in critical discourse would have accurate and thorough information, not coerced to participate in any way, has opportunity to evaluate arguments, able to critically reflect on the experience, open to all perspectives, have equal opportunities, and will accept informed and objective consensus as valid. Furthermore, the learner's dependency on the educator will progressively decrease as the learner identifies his or her

needs, and utilizes learning resources effectively that also includes social learning groups and the facilitator. The facilitator will emphasize these ideal conditions to accommodate the adult learner. Mezirow identified experiential and participative as the instructional methods primarily used to foster learning.

Adult learning and experiential education principles can help understand best practices for program or lesson implementation. Gravani (2012) concluded this from a case study of a teacher development course. Gravani used the qualitative data from the adult educators' and adult learners' experiences and insights prior to the program through reflective questioning, and current thoughts and experiences seemingly shaped from the teacher development course. These results did not insinuate the learners' experiences were always accurate, but by allowing the sharing and building on that knowledge offered motivation to the learners to continue and uphold interest in learning. This approach could prove meaningful for the adult educator and adult learner in reaching understanding, goals, and transformative thinking or actions. Using transformative learning theory and outdoor experiential learning theory within the context of EAE as the conceptual framework will help examine past EAE PD workshop participants' experiences. Their salient memories and reflections will provide insight to any influences of the workshop to their personal lives and connections to the natural world.

### **Rationale for the Framework**

Although initiatives to promote EAE PD workshops received top priority for environmental educators to teach about environmental concerns and stewardship (NAAEE, 2016), the lasting effect on the workshop participants after their training long-

term are rarely monitored (Liddicoat & Krasny, 2013). Researchers have been relatively slow or ineffective in identifying any success in reaching the goals of environmental education as identified by UNESCO (1977) (Ardoin et al., 2013). Few studies have examined educators' experiences with an EAE workshop (Liddicoat & Krasny, 2013; Sondergeld et. al., 2014; Williams & Chawla, 2015). Specifically, it appears that no researchers have focused on the reflective experiences of EAE PD workshop on educator participants at least 5 years after participation. There is a need to understand whether and how their behaviors changed in relation to natural resource conservation years after the EAE PD, and how they shared these changes with others through their own interactions (Liddicoat & Krasny, 2013; Williams & Chawla, 2015). Using the outdoor experiential learning theory in conjunction with Mezirow's (2009; 2000; 2012) transformative learning theory may help with understanding the experiences of past EAE PD workshop participants.

### **Literature Review**

The purpose of this basic qualitative study using interviews was to explore what remained salient in the participants' learning experience from an EAE PD taken at least five years previously and understand what the participants did with the knowledge and skills they have gained from the workshop. This review of literature includes a discussion of studies that examined the value of EAE PD workshops in fostering environmentally friendly behaviors. This is followed by a discussion of how EAE has been experiential and transformative, a section of the best EAE PD practices, and the research on effects of EAE workshops.

## **Value of Environmental Adult Education Professional Development Workshops**

With increased habitat fragmentation and pollution concerns in the mid-1990s, raising adults' environmental awareness and helping improve their self-efficacy in acting against social-ecological degradation became recognized as a priority in environmental education (Clover et al., 2010). EAE is a complex mix of methods, analytic practices, theoretical perspectives of adult education, feminist education, anti-racism education, outdoor education, and even art-based education, discursive lenses and epistemological technologies (Clover et al., 2013; Dentith et al., 2014; English & Mayo, 2012). The main principles of EAE include critical analyses of humanities' responses, reconnection to sensory-rich experiences, experiential connections to urban and rural environments, examining root causes of environmental crises, linking environmental and social issues, using creativity, beginning with individuals' own experiences and locations, trying to solve problems to evoke positive social-ecological change, making links between local and global concerns, and empowering people as agents of social-ecological change (English and Mayo, 2012). EAE often has the intent of activism toward a social-ecological issue, such as helping to empower oppressed populations living in areas of environmental concern. However, the approach to teaching and learning in EAE is holistic and the objective is a positive transformation.

To realize the value of conducting EAE PD workshops, developing an understanding of its foundational concept of environmental education is necessary. Environmental education has varying definitions provided by different authors. In 1979, one of the earliest studies by the Environmental Education and Training Partnership

(EETAP), provided the definition that environmental education is about education designed to produce a citizenry that has adequate knowledge on the biophysical environment and the relevant problems, aware of how to solve environmental problems, as well as motivated to work towards the solutions to these problems (EETAP, 2017). Brennan (1979) further described environmental education as the education aiming to develop within men a sense of interdependence with all life forms and a recognition of their responsibilities to ensure the environment remains fit for life and fit for living – natural aesthetics included and people living in harmony. Through Mbalisi's (2010) study of the effectiveness of EE programs on adult learners' behaviors, he claimed that the definition from the United States Federal Register could help provide a clearer guide to the expectations of environmental education initiatives thereby leading to pro-environmental behavior. According to this definition, environmental education is a process whereby people's understanding and awareness of environmental issues and challenges are increased so that they can develop the necessary skills to address these challenges adequately and be more responsible.

In the literature, studies have shown EE leads to positive effects. For instance, Mbalisi (2010) found that environmental education can lead to improved critical thinking, better problem-solving skills, enhanced decision-making skills, which all enable an individual to better weigh different sides of an environmental issue or problem before making informed as well as relevant decisions. Anijah-Obi, Eneji, and Ubom (2013) revealed that environmental education is linked to better awareness and understanding of the environment, of one's relationship and responsibility to the environment, and of the



necessary skills for the survival of current and future generations. Eceberger (2006) found that with higher awareness come changed perceptions and attitudes toward positive environmental practices such as waste segregation. The researcher in particular found that participants were more willing to alter their behavior in solid waste preparation after they underwent a workshop. More recently, Zsoka, Szerenyi, Szechy, and Kocsis (2013) explored how strong the relationship between environmental education is and participants' environmental knowledge, attitude, as well as reported actual behavior. Results were positive, showing that participants who underwent EE experienced increased intrinsic motivation to voluntarily make consumption-related lifestyle changes.

Apart from knowledge and awareness, studies established the relationship between environmental education and connectedness with nature, showing why EAE is important. Frantz and Mayer (2014) reviewed research in EE's relation to connecting with nature and environmentally responsible behavior. By reviewing past research on self-reported behavior and then integrating as well as summarizing new research showed that EE leads to connectedness to nature, which in turn lead to actual conservation behavior. They further stated that environmental education that promotes connectedness to nature has great value in promoting environmentally friendly behavior.

EE programs also emphasize the importance of understanding environmental change (Ardoin et al., 2013). Programs often convey current scientific data, such as biodiversity statistics to help inform the participants. The Center for Biological Diversity (CBD) (2016) indicated by mid-century an expected 30-50% of endangered plants and

animals will completely vanish. Saving them could be a costly endeavor. However, not saving them will also be expensive in terms of lost livelihoods, vanished water supply, lowered food security, and the resilience to extreme events (Dunlap & Jorgenson, 2012). Therefore, it is imperative for us to learn about our ecosystems and how to conserve our natural resources through EAE workshops that address habitat destruction and alteration, invasive species, overuse or misuse of natural resources, and pollution of the air, land, and water.

Unlike other subject domains, EE aims to transcend just teaching knowledge to transform students' meaningful and complex understanding of their personal and collective roles and duties within ecosystems (Ardoin & Heimlich, 2013; Roczen et al., 2014). Environmental education helps students of any age acquire pro-environmental attitudes and values, and to promote willingness and readiness to carry out environmental action (Ardoin & Heimlich, 2013; Roczen et al., 2014; Saylan & Blumstein, 2011; Sondergeld et al., 2014).

Warren et al. (2014) conducted a knowledge review on studies about social and environmental justice while determining gaps in current social justice literature and practice. They found that at the core of experiential learning are the three concepts of flexibility, participation and contextualization (Warren et al., 2014). Flexibility refers to the ability to adapt programs to local ways and meet the needs of the local peoples. Participation refers to how learners can actively engage in the activities and contextualization demonstrates how empowered people feel to make decisions around that experience (Warren et al., 2014).

Whittmer and Johnson (2000) discovered in their account of the Audubon Expedition Institute, experiential education is an essential element of EAE. Experiential education leads to effective EAE programming through preparation, direct experience, reflection, transformation, and action. This approach encouraged building on the learners' previous and present learning. Experiential learning in EAE also emphasized that the learning includes how to develop skills to help meet a program's specific long-term outcomes like participants' involvement in citizen science or stewardship.

Clover et al. (2013) stated that the environment is now a common theme in adult education, and EAE programs play a key role in responding to environmental concerns. However, the researchers also indicated that the debates and discussions that took place at the United Nations Conference on Sustainable Development (Rio+20) in June 2012 revealed major environmental challenges continue to persist, demanding richer and more robust education and learning so that advocacy and activism can be augmented. Clover et al. argues that even though there have been years of environmental movements and activity at local, regional, and international levels, educators are still not experts of "research and scholarship" on green and environmental concerns.

EAE programs also recognize the importance of socialization in adult education and values of "justice, fairness, equity, equality, and collectiveness" (Clover et al., 2013, p. 12). Learning settings consist of a time for reflection on personal experiences and other connections and realities related to the topic. Clover et al. (2013) indicated that this type of deep thinking can result in risk-taking, empowerment, and transformation. Kovan and Dirkx (2003) also conducted a study to understand the process of learning and self-

renewal in the lives of experienced and committed environmental activists and found that transformative experiences in EAE programs can lead to feelings of accomplishment and success, unlike the feelings of hopelessness or despair resulting from learning about negative environmental accounts.

Coyle (2005) conducted a study regarding the nation's environmental literacy. Coyle found that a definitive study in environmental education practices of educators is needed. The study provided recommendations for environmental educators, non-governmental organizations, government agencies, funders, and other stakeholders affected by environmental issues. Coyle expressed a need for more research in environmental learning, clear benchmarks to demonstrate program impact, and stakeholder coordination and experiences in environmental situations. Although Coyle's work is an aging document, the need to develop these areas still exists today as identified by NAAEE (2016). This was particularly relevant to my study since few studies have been published to help further clarify and strengthen the empirical and theoretical research in EAE.

EAE combines environmental education and adult learning theory to give learners and practitioners a meaningful and fruitful lesson on successful and genuine environmental change (Clover et al., 2013; Fleming, 2009; Haugen, 2010; Lange, 2010).

The field is still quite new, but the body of literature has been steadily growing (Clover et al., 2013; Karlovic, & Patrick, 2003). Proponents of this type of education seek to combine ecological orientation with a learning paradigm so that environmental issues and concerns can be approached academically (Walter, 2007). Environmental

educators recognized an advantage of pairing environmental education with adult education (Ardoin & Heimlich, 2013). Adults taught about the status of the environment and how ecosystems function could start to have an appreciation and awareness of what was happening around them (Milana, Rasmussen, & Holford, 2016). New populations who were not normally reached could be taught about how to facilitate broader and more genuine change.

In the 2000s, environmental adult educators started to encourage learners to participate in dialogues and discussions more with the purpose of finding answers to specific problems, and to determine the root causes of these problems so that they can be properly and effectively eliminated (Haugen, 2010). EAE is characterized not as a top-down, monological learning experience. Instead, it is described as a dialogical, community-based approach to determining the solutions to the myriad of environmental problems cropping up and persisting every day (Butterworth & Fisher, 2002). Moreover, during this period, environmental adult educators recognized that all learners have significant contributions to make, notwithstanding their backgrounds in terms of education, race, and socio-economic status (Haugen, 2010).

Research in this era revealed that environmental problems were intertwined with social, political, economic, and cultural issues (Clover et al., 2013; Fleming, 2009; Haugen, 2010; Lange, 2010). Therefore, to ignore these issues and segregate environmental problems from them would be irresponsible. Teaching about environmental problems without linking these to the other issues is also

futile. Experiential and transformational learning in EAE workshops was one response and is covered next.

### **Experiential and Transformational Learning in Environmental Adult Education Professional Development Workshops**

According to Kovan and Dirkx (2003), transformative learning theorists have provided that the knowledge acquisition process should be supported with a sense of calling or a spiritual dimension for the experience to be meaningful. Learners go beyond understanding and learning about environmental issues, they should feel the desire to do something about these issues after undergoing a PD in EAE (Bush-Gibson & Rinfret, 2010). Similarly, Clover (2013) claimed that providing EE and teaching ecological knowledge should go beyond addressing students' lack of awareness. Rather, EAE should be transformational, in that learners feel compelled to act after acquiring the ecological knowledge.

Transformation begins with individuals questioning and changing the way they see their place in the world (Bush-Gibson & Rinfret, 2010; Jarvis, 2010; Kucukaydin & Cranton, 2013). Utilizing education as a means to raise awareness of current social and environmental conditions may provide individuals with the information necessary to change viewpoints. Clearing the misconceptions adults may have about natural resources could result in education for community action and the development to improve local habitats.

In education, trying to relate a message to the students' personal life to induce an attitude change could help make learning more meaningful (Jarvis, 2010; Kucukaydin &

Cranton, 2013). Adult education in any capacity has the goal of creating more open-minded, responsible, and self-directed learners that can think critically about situations and make informed choices (Merriam & Bierema, 2013). Adults who partake in formal or non-formal education are opening themselves up to the possibility of transformational learning (Jarvis, 2010; Kucukaydin & Cranton, 2013). Emancipatory knowledge is often sought from learners in adult education programs to guide that individual to awareness and growth (Kucukaydin & Cranton, 2013). In EAE, programs that raise awareness about a local environmental concern or ecological connection may evoke a transformational process with the participants leading to taking action toward conservation (Kucukaydin & Cranton, 2013). Several empirical studies showed that transformational learning can indeed take place through EAE PD workshops (Ardoin et al., 2013; Reid, Jensen, Nikel & Simovska, 2010). These studies have shown that environmental education programs can lead to significant behavioral changes in their target audience, especially in promoting successful long-term conservation compared to biologically focused scientific work. Empirical research showed that properly administered environmental adult education such as outreach programs can lead to sustainable behavior, promote public support for conservation, reduce poaching, as well as lessen vandalism practices in protected areas (Ardoin et al., 2013; Cauffield & Woods, 2013; Reid et al., 2010). Cauffield and Woods in particular, evaluated the effects of experiential learning on socially responsible behavior through a qualitative longitudinal research design. The researchers gathered data from 25 graduate students and found that

94.7% who report a positive learning experience were also the ones to engage more in socially responsible behavior.

Kovan and Dirkx's (2003) study from nine semi-structured interviews with peer-nominated environmental leaders revealed that teaching about the environment beyond just raising awareness is impactful to one's emotions. They learned that encouragement for transformation among the learners can reduce feelings of hopelessness often experienced when teaching about ecological issues under previous models. Learners' perceptions may change based on material and experiences with the topic. Conclusions of Ardoin et al.'s (2013) mixed-methods study of peer-reviewed articles, and interviews, surveys, and networking with environmental education experts that if an environmental education program participant can identify a personal connection with the environmental topic, such as visiting a threatened natural resource in their region it may lead to a new outlook on environmental impacts and action. They will then be encouraged to taking action on the environmental situation, such as implementing stewardship practices or helping with habitat remediation (Ardoin et al., 2013). Furthermore, the participants could help spread the message to others, such as in K-12 schools or other adults in hopes of transforming their ideas or helping local businesses and organizations change their views about their environmental impact. In these cases, transformation would have occurred at the individual, organizational and community levels. Mezirow (1991) emphasized discourse and dialogue to conjure a critical assessment of a situation prior to making decisions or changing one's mind. If one's habit or habit-of-mind becomes changed due to new experiences, then a transformation may be underway (Kucukaydin &



Cranton, 2013). To foster the change, social interaction revolving around a pivotal topic could promote transformative learning among adults. This type of learning can take place in EAE PD workshops. Best practices for these workshops are discussed in the next section.

### **Best Environmental Adult Education Professional Development Practices**

Determining the existence or extent of environmental awareness and understanding can be challenging without a standard for comparison (NAAEE, 2016). The National Project for Excellence in Environmental Education, initiated by NAAEE in 1993, was charged to research and document what it means to be environmentally literate. The National Project for Excellence in Environmental Education called on a diverse team of professionals reviewed the data and material that emerged and eventually compiled the guidelines for EE programs. Through the dissemination of the identified themes and characteristics in the guidelines, the intent was to help ensure an environmentally literate citizenry able to make informed choices, compete, and act in a local and global capacity. Using EAE as a lens to view these topics may help EE practitioners and scholars understand best practices in the facilitation of material. The guidelines collection continues to expand as new needs and research becomes apparent.

The NAAEE not only has dedicated peer-reviewed journals and professional affiliations, they also have a collection of documents called the Guidelines for Excellence in EE that directly relates to environmental literacy (NAAEE, 2016). The guidelines include these following documents: Guidelines for the Preparation and Professional Development of Environmental Educators, Non-formal Environmental Education

Programs: Guidelines for Excellence, Excellence in Environmental Education: Guidelines for Learning (K–12), Environmental Education Materials: Guidelines for Excellence, Early Childhood Environmental Education Programs: Guidelines for Excellence, and a new set of guidelines on Engaging Communities in Environmental Stewardship is currently in development. While the guidelines exist for best practices in EAE, the approaches for teaching educators these guidelines or realizing their experiences during or after exposure to some or all the guidelines have not been explored. Rather than have mandatory standards in EE, the establishment of guidelines for best practices have given direction to educators and credibility to the profession (NAAEE).

Until recently, most of the EE material has been directed toward capturing the attention and interest of youth (Clover & Follen, 2004). These efforts may help create the next generation of environmentally literate citizens, but researchers have observed a need for more immediate action. Our society mainly relies on adults to make informed decisions about the conservation of our natural resources and to educate others about ecological conditions (Ardoin & Heimlich, 2013). Ardoin and Heimlich emphasized the importance of understanding how adults' environmental education experiences have been perceived and employed to help create better PD opportunities and achieve natural resource conservation. Increased attention on the adult learners' perspectives and needs are gaining interest with environmental education researchers and conservation biologists (Ardoin et al., 2013). Promoting ecological literacy, fostering sustainable behaviors, and promoting citizen involvement in conservation can help advance EAE and encourage positive social-ecological change (Lange, 2010).

By conducting a meta-analysis, Caffarella and Daffron (2013) found some theorists and many practitioners in adult education tend to ignore the complexities of adult learning when developing programs for adults. According to Caffarella and Daffron, the aspects of the learning environment to consider should include people's personalities and background, education setting, and political climate. Additionally, taking into consideration all stakeholders when developing an adult education program could determine program success. Those who consider a breadth of perspectives in adult education which revolve around a timely and pertinent issue may have greater successes in responsiveness and accomplishing goals than agencies or organizations who do not consider the complexities of adult learning (Knox, 1993; Kudryavtsev, Stedman, & Krasny, 2012). EAE educators have a multitude of considerations when planning a class, workshop, or program.

As an EAE professional, objectives for most of the programs designed may revolve around increasing the levels of knowledge, appreciation, and experience along with demonstrating ways adult citizens can make a positive social-ecological difference in the community (Clover et al., 2013). To create this type of experience, program applications should include immersion into experiencing relevant ecological principles, the natural resource management proposals or plans in the region, and the types of stewardship and conservation programs and projects available in the area (Ardoin et al., 2013; Plummer, 2010). The more exposure to a natural resource topic in situ and introduced in various settings, the more the audience may adopt a stewardship ethic toward the environment (Ardoin & Heimlich, 2013; Seng, 2008).

Considering the formal educators, research indicated preservice teachers in an environmental science discipline have a rudimentary understanding of ecological concepts, and do not meet the expectations public schools have for secondary-level students (Puk & Stibbards, 2012). The 25 university students in the study had a familiarity with ecological vocabulary but could not provide robust definitions or analyze an ecological scenario. The problem also existed with how to ascertain the conceptual maturity or level of understanding the learners possess. The researchers used coding and assessment of the participants' definitions with a qualitative content analysis approach. The central question in the study focused on the level of understanding the preservice teachers had of key ecological concepts that would be required of them to teach in a future classroom. The influences of the preservice teachers' educational experiences, and potential solutions to issues were also examined. The majority of students' university classroom experiences existed as a lecture and textbook-based style with little experiential, critical thinking, or lesson plan development included in the courses. The researchers recommended preservice teachers using "concept analysis and the emergent maturity scale as a diagnostic tool" (p. 369). As a formative assessment, university courses for preservice science teachers should include a focus on developing a deeper understanding of social-ecological connections through experiential means.

The transferability of the Puk and Stibbards's (2012) qualitative study to an exploration of what EAE participants learned from a past workshop could prove useful to understanding the level at which they learned key concepts. The researchers also acknowledged that although the conceptual maturity scale they developed was supported

by data, theory, and past publications, the interpretation is still subjective. Also recognized by the researchers, the definitions provided by the participants might not fully embody what they actually know. Determining the extent learners know the material could help reveal the effectiveness of the EAE workshop experience.

Puk and Stibbards (2012) strongly suggested that if an individual is considered environmentally literate, then the person needs to demonstrate the knowledge of key ecological concepts through certain skills and a disposition made apparent in the person's actions. The person needs to also realize reciprocal relationships that exist between the social and ecological systems. A person lacking this understanding may not possess the capacity to make environmentally sound decisions. Keeping these ideas in mind, it may help ford efforts in facilitating and educating future and existing educators in formal and non-formal settings.

Teaching and mentoring adults, especially educators, about ecological principles and natural resource management in the region in which they work could help foster a sense of place and ownership that carries over to their audiences (Darner, 2009; Thompson, Coe, Klaver, & Dickson, 2011). Educators reach a large audience every year from directly teaching their students and potentially either directly or indirectly educating the students' families. What often hinders educators from pursuing ecological, environmental, or conservation lessons is a lack of experience in these topics (Sondergeld et al., 2014).

The importance of raising educators' self-efficacy in understanding ecological principles and leading activities with students outdoors served as the premise of

Sondergeld et al.'s (2014) study. The researchers purported that educators did not utilize information or material from an EE program because they lacked the confidence. A place-based education (PBE) foundation for the professional development program, A River Runs Through It (ARRT) provided a philosophy and opportunity for educators to become immersed in field-based inquiry experiences to strengthen their environmental awareness and literacy (Sondergeld et al., 2014). AART involved an eight-day summer workshop with field investigations, data collection, classroom instruction, and data analysis; then three meetings in the fall for lesson plan support, dialogue, and further guidance from the facilitators.

According to a literature survey conducted by Sondergeld et al. (2014), the main characteristics of EE programs should include getting the audience outdoors, integrating several content areas to elucidate ideas, helping identify the relevancy of the topic to students, encouraging lifelong learning, and using social contexts. If an educator does not implement these strategies, the reason that will likely exist is that the EE program and/ professional development workshop did not support these features. For AART, all five characteristics were used and the researchers' study supported that the framework was effective. Realizing the effects of place, relevancy, and reflection can help develop effective EAE program framework.

Effective PBE programs combine the natural, social, and built environments in the lessons and often incorporate inquiry learning and students taking environmental action within the place of study (Kudryavtsev et al., 2012). Kudryavstev et al. (2012) identified PBE as the combination of place attachment and ascribed place meaning to

develop an overall sense of place. Using experiential and instructional practices convey the type of messaging to help the learner develop a sense of place. In this study, the researchers used a positivist framework to build on the empirical sense of place literature, with the purpose of investigating the effects urban EE programs on sense of place. Place identity and place dependencies were identified as sub-constructs. The researchers utilized a quasi-experimental approach using pre/post surveys of 87 high-schoolers in either a 5-week environmental or non-environmental summer youth programs in the Bronx, New York City, in 2010. The relationship between sense of place and pro-environmental behavior indicated PBE participants with a strong place attachment and meaning will likely continue to work toward protecting the place or act to protect another place of interest. Likert-scaled surveys measured these factors to determine peoples' sense of place and pro-environmental behavior, while open-ended surveys and semi-structured interviews helped identify how people characterized a place and what a place meant to them.

Kudryavtsev et al. (2012) only explored PBE programs from areas with pristine or natural settings such as national parks or rural areas. Conducting similar studies in urban or developing areas would strengthen or weaken the claim that PBE leads to pro-environmental behavior. Overall, the research provided good insight into the past, present, and future of PBE. The effective combination of experiential and instructional lessons in PBE discovered in the literature supported the philosophy of EAE programming. Using long-term direct, positive engagement with a place that includes the ecological, social, and built aspects of a place will help promote a sense of place and pro-

environmental behavior. This type of messaging could be used in EAE workshops to promote local environmental knowledge, appreciation, and potentially leading to effective environmental action.

### **Effective Environmental Adult Education Professional Development Workshops**

An intrinsic evaluative, mixed methods case study of ARRT tried to provide a better understanding of the phenomenon occurring within the program (Sondergeld et al., 2014). The researchers started by taking a broad look at environmental education and then narrowing the focus to their environmental education professional development program- "ARRT." The methods included observing the participants during the field investigations, collecting required online survey data for the grant, determining the beliefs of the participants and the suspected student perceptions about EE through an open-ended questionnaire, examining the lesson plans created by the participants, and evaluating the reflections written by the participants. The researchers wanted to know the educators' knowledge and beliefs of the local environment and how or why ARRT may have influenced these in hopes of using ARRT as a model for EE PD.

The greatest limitation of the case study involved the self-selection of educators who participated (Sondergeld et al., 2014). Those participating in the study may already have had an existing environmental appreciation, higher than average knowledge base in EE, and/ no negative attitudes toward the program. However, the researchers did not attempt to generalize the results to all EE program participants. Another concern existed with the fact the instrumentation was developed by the grant-funding agency and the researchers could not make comparisons to other programs. In addition, collecting actual



perceptions of the participants' students could have helped support the researchers' claims. Overall, the study had many strengths compared to its weaknesses.

Another way of examining impact of a program is to conduct a retrospective study. To understand participants' experiences in an EE PD program, Liddicoat and Krasny (2013) used a retrospective program evaluation based on significant life experiences and long-term memory theory. They looked at the long-term impact of an environmental education program with the understanding the participants volunteered for the program and likely already had environmental interests. Data were collected from 98 induction graduates and 390 induction participants by asking them to complete surveys. Long-term was identified as at least 1 year post-program. They recommended basing length of time on what the research states as adequate time for maturation of learning to occur and EE practices put into place, and what makes sense for the situation. The researchers provided the interview questions in the appendix and will help guide the semi-structured interview process in my study. Liddicoat and Krasny (2013) focused on attributes of the program that may have contributed to transformational experiences, what was most memorable about the experiences to make a lasting impact, and if there were specific memories of the program experience linked with behaviors afterwards. They learned that "time spent in nature, especially with environmental organizations and with environmentally active friends, may be more important in influencing subsequent stewardship behaviors than formal EE" (p. 295). The concerns of internal validity were with self-reporting and providing socially desirable responses. Additionally, memory failure or inaccuracies reported could skew the results, and the inability to locate past

participants of a program could prove problematic. However, the importance in moving beyond immediate post-program evaluations to investigate long-term impacts of a program can prove beneficial to formal and non-formal EE program outcomes.

Considering outcomes, the public needs to have awareness about conservation issues if an expectation exists for them to change their behavior or make decisions, and to promote natural resource agencies taking further action with conservation (Cooke et al., 2013). According to Cooke et al., protecting freshwater biodiversity is a priority but management communities do not typically meet that objective. The two main reasons for policy failure involve scientists having the inability to communicate science to the public effectively, and politicians not putting conservation issues on the public agenda or promoting evidence-based decision-making. In the literature, the researchers showed dialogue with diverse audiences using the appropriate verbiage for the context and involving the public in activities surrounding the current topic or issue will lead to greater success than one-way communication and just publishing in journals or producing reports.

Cooke et al. (2013) did not provide views of the public opinions conservation industry. Providing examples from these perspectives would have strengthened the EE strategies developed by the researchers. Furthermore, no future recommendations existed for the application or analysis of the strategies developed to promote conservation. However, recent and relevant literature helped develop the strategies proposed in the study and the strategies could represent a starting point for strengthening EE while supporting conservation efforts.

The background information, framework, and proposed strategies in Cooke et al.'s (2013) study can serve as a useful reference. They indicated few examples existed for successful public engagement, policy dialogue with managers, or resource allocation decisions. Through the researchers' extensive literature review, the study exemplified the aforementioned needs in the fishery conservation industry, identified the barriers why public engagement does not exist, and strategies for environmental education initiatives to promote fisheries conservation. The framework focused on interventions relevant to conservation science objectives such as to "convey information, build understanding, improve skills, and enable sustainable actions" (p. 1000). Researchers lack the time to spend on outreach, the complexity of ecosystem threats complicates messaging to the public, and people feel removed from nature. Some useful suggested strategies to engage or educate the public included natural resource organizations mandating public education for scientific grants, quantifying ecosystem services to help people realize the importance of a healthy environment; and, developing an evaluation tool to associate inland fisheries to food, economy, cultural, and environmental services. In addition, a practical framework or portfolio was designed to help align education and outreach interventions in formal and non-formal EE venues with the overarching goal to engage the public in conservation efforts. The EE intervention portfolio developed by the researchers to engage the public in conservation efforts could help with developing and implementing similar ideas in future, EAE PD endeavors.

Educating educators about natural resource topics and issues can help with conservation groups' mission statements (Ardoin & Heimlich, 2013). After educators

participate in a PD, especially one that has a natural resource organization as a partner, they will have accurate and current information to teach relevant natural resource issues while also building the students' stewardship ethic that could have a lifelong impact (Ardoin & Heimlich, 2013; Seng, 2008). Ardoin and Heimlich's (2013) intent was to explore education and outreach strategies of government agencies and non-government organizations for accomplishing outcomes associated with biodiversity conservation and natural resource management. They conducted a mixed-methods study wherein the researchers collected data from 656 participants, interviewed 15 of them, and asked 75 to participate in focus groups to investigate the use of social strategies such as education and outreach by non-governmental organizations and government agencies to reach outcomes related to biodiversity conservation and resource management. The level of efficacy for using education to meet those outcomes was evaluated from a mixed method approach using surveys, interviews, and discussion groups tailored for conservation practitioners or conservation educators. Results of the study indicated education as an integral part of natural resource management. The researchers provided suggestions for professional development opportunities and materials based on the emergent themes from the data. The themes included providing more evaluation strategies and models that practitioners can access and understand, conducting case studies to showcase successful conservation education programs, developing program models that integrate education with science and policy, and to provide resources to help understand how to incorporate social strategies within conservation education initiatives.

Ardoin and Heimlich's (2013) study seemed robust in terms of the topic researched, the methodology, results obtained, the data interpretation, and implications. Triangulation of the data collection helped prevent biases which may have occurred from the use of one particular method, a large and diverse participant pool existed for each research method, and further measures occurred to ensure reliability or validity. Pre-testing the questionnaire, drawing items from frameworks in the literature, and having a panel of experts evaluate the items strengthened the study. An advisory group helped identify individuals for the semi-structured interviews of decision makers and the researchers developed a matrix for selecting individuals based on the type of organization and geographic location to ensure different perspectives. The researchers advertised for discussion groups across a variety of organizations for nonformal and formal environmental educators. Seventy-five participants for the discussion group ensued which would provide ample data for analysis, but was not feasible for my dissertation in terms of recruitment or analysis for one researcher.

Many aspects of the Ardoin and Heimlich (2013) study proved useful in EAE research and PD programming. The methodology and the types of questions used in the interviews provided a helpful reference. The emergent theme of providing more successful case study examples of conservation education programs aligned with my research intent. Other gaps found in the study included conservation education practitioners lacking training or understanding of adult learning, best practices in adult teaching for conservation education, and how to evaluate the relationship between education and conservation outcomes. Providing theoretically based research results to

develop EAE programs that bridge adult citizens and natural resource organizations to achieve conservation outcomes needs further exploration.

Engaging adult citizens in conservation activities as part of an organization's education and outreach efforts can help empower the participants and promote the type of messaging and outcomes intended (Ardoin & Heimlich, 2013). Effective teaching and learning approaches to help protect and conserve local ecosystems can include habitat restoration and biodiversity inventories and monitoring. Using these experiential methods for teaching about ecological systems and conservation issues could enhance people's connection to nature, increase environmental literacy, and promote stewardship behavior.

To help build on the EAE program participants' knowledge, the facilitator needs to understand what background knowledge and skills they possess. A method to consider for determining participant understanding and perspectives of topics within an EAE program could involve Q methodology. Fraser, Gupta, and Krasny (2015) used folk narratives and emerging community concerns about the environment in formal and non-formal education settings with people of diverse backgrounds and experiences in EE. Although the participant pool consisted of diverse people, it did represent a national or international perspective on EE. The 35 statements that emerged from the study relating to EE outcomes included 10 unique subcategories: environmental sustainability, place-based, spirituality, cognitive, collectivist, agency, individualist, problem-solvers, moral responsibility, and life skills. Further sorting and analysis of the statements identified

five categories of significance: fundamental coexistence, spiritual instrumentalism, moral stewardship, skilled community activism, and social-ecological ethicists.

The main focal points in the Fraser et al. (2015) results indicated an emphasis on the interconnections among living and non-living things, a sense of moral obligation to care for the environment through education and action, and to build children's competency in becoming environmental stewards. The major gap identified was the lack of focus on lifelong adult education in EE. Additionally, the researchers discovered a disconnection between EE academics and practitioners. The academics typically had a narrow focus of EE, whereas the practitioners had more of an open-mind toward diversity of perspectives in pursuit of understanding social-ecological dynamics. The results of the study could help formulate interview questions to probe for experiences related to an EAE PD and help interpret those findings.

With increased demand for school accountability, PD programs for teachers have grown (Lumpe, Czerniak, Haney, & Belyokova, 2012). The focus of Lumpe et al.'s study was to examine the effects of a large-scale PD program on elementary teachers' efficacy in teaching science. The study included 43 elementary schools and 450 teachers for a course of one-year. The researchers wanted to know (a) if the teacher's belief to teach science improved after the intense PD, (b) what types of teacher demographics determine the beliefs, and (c) if the beliefs were predictive of student achievement. To test the teachers' beliefs, the Science Teaching Efficacy Beliefs Inventory and the Context Beliefs about Teaching Science instruments were used. The researchers noted strong construct reliability and validity results demonstrated. To overcome any

shortcomings of raw scores, the Rasch analysis “converted them to equal-interval units for more accurate statistical analysis” (p. 159). The design of the study intended to transform two school district’s science education from kindergarten through sixth grade and improve science teaching and learning through extensive PD. Based on their state’s standards, both districts had deficiencies in science scores.

Lumpe et al.’s (2012) PD program involved teachers attending six, 2-week long summer programs running 8 hours a day. The researchers framed the PD using Desimone’s (2009) recommendations for an effective PD to identify the “content focus, active learning, coherence, duration, and collective participation” (p. 157). Throughout the PD and during the following school year, 16 support teachers assisted the teachers with introducing and executing lessons in the classroom. In addition, to help the researchers understand the challenges of implementing school reform; all principals attended a one-day retreat and subsequent sessions throughout the year. Lastly, paired *t*-tests and multiple regression analyses helped determined if a significant difference occurred between variables and to what extent certain factors affected the results.

The study indicated teachers exhibited “significant gains in their science teaching self-efficacy, [but] no gains in outcome expectancy beliefs were found [while] teaching self-efficacy is positively related to student achievement” (Lumpe et al., 2012, p. 162). The significant variables found predictive of teacher beliefs included the time spent teaching science, and males displayed greater self-efficacy in teaching science than females. A decrease in context beliefs after participating in the PD occurred and that seemed curious given the amount of time and support the teachers had for the program.



However, the researchers explained that many of the teachers did not teach science prior to the PD project and the adoption of this new curriculum caused added stress on the teachers.

Overall, the Lumpe et al. (2012) study seemed thorough with the design to improve teacher's self-efficacy while also measuring for it, the variables acting upon it, and the effects on student achievement. Following a well-researched framework for designing effective PDs will be an efficient tactic for developing successful EAE programs. However, the program in this study seemed very ambitious and the likelihood of recruiting the support staff will likely prove currently impossible on a personal level. The project was part of a grant from the National Science Foundation, so finding funds for support is essential in bringing such a project to fruition. The instruments used in this study to measure efficacy may also be useful in an EAE program. In addition, building on the researchers' statistical analyses, a qualitative investigation could help determine factors affecting an outcome measured within the EAE program under investigation. Finally, involving the principals or administrators of the participants in an EAE program could help with supporting the PD and the resulting curriculum alterations or supplementations.

When change is involved, considering transformative learning frameworks can prove helpful (Liddicoat & Krasny, 2013). For D'Amato and Krasny (2011), the interpretivist and transformative learning theories served as lenses to explore what elements of an outdoor adult education experience was significant to its participants. The research questions focused on how participants described their course experiences, and

what elements of the course led to personal growth or environmental behavior change. Three types of 30 to 90 minute semi-structured interviews were used to obtain a deeper understanding of experiences – a retrospective (1-5 years), pre-post, and reflective interviews. The interview questions were included in their document and will help guide my study. D’Amato and Krasny (2011) concluded from the interviews that transformation, time spent outdoors in pristine nature, a break from typical lifestyle, community-building with participants, and the challenge of the program were identified as the themes from the researchers’ content analysis. A need identified by the participants was opportunities for post-course action or interactions to help with the transfer of learning of knowledge and skills learned from the course.

Although the participants had multiple experiences with the interviewers prior to the study, the level of trust developed could have helped with or hindered the sharing of responses (D’Amato & Krasny, 2011). The participants may have felt comfortable enough to share and elaborate on experiences, provided what the researchers wanted to hear, or omitted what they thought the researchers did not want to know. Nevertheless, the transformational learning theory framework suggested ways EE courses or programs might incorporate personal growth with instrumental learning to help develop environmental behaviors after the course. These considerations would help with forming EAE courses and advancing EAE research.

Through narrative inquiry, Williams and Chawla (2015) explored experiences identified as salient memories from adults who participated in environmental education programs in their youth – 5 to 40 years after the involvement. The researchers used a

lens of social practice theory to interpret the development of a social environmental identity and make suggestions for designing and evaluating future programs. Significant life experience research was noted as integral in identifying how well conservation education programs align communicating information regarding stewardship and tracking behaviors.

The more experiences for which people identify as an environmental actor, the more that particular identity surfaces and fosters environmental stewardship in the future (Williams & Chawla, 2015). The researchers identified personal changes after an EE program need to be placed in a social-ecological context, and the environmental experiences before and after a single program. More specifically, the contributions of one program to the learner's initial understanding and feelings toward the environment, and how the single program connects to other experiences in the learner's life. Retrospective narrative interviews showed to have the ability and effectiveness to probe for similar and elaborate answers.

Narratives allow people an opportunity to assign meaning to experiences and identify contexts in which the experiences fit (Williams & Chawla, 2015). The limitations of the study existed in having a self-selected sample that may reflect positive bias toward the program, and a lack of minority perspectives were reflected in the demographics. The researchers' approach and recommendations could prove useful in future EAE studies. The social practice theory enabled interpretation of a social environmental identity but did not incorporate an ecological identity that comes from direct contact with nature. However, by developing a social environmental identity,

ecological identity may ensue based on an understanding of personal and social history and places. Following researched best practices in EE will also help with developing meaningful experiences in an EAE program.

Exploring past participants' salient memories could lead to building effective EE programs (Liddicoat & Krasny, 2014). Liddicoat and Krasny (2014) drew upon retrospective studies and memory psychology literature to examine long-term impacts of EE. Their study focused on how 54 teens used their memories from a residential outdoor EE program taken five years previously. They also probed how those memories related to EE's goals of developing environmentally literate and responsible citizens. The researchers claimed memory use is an appropriate perspective for determining lasting impacts of participating in an extended EE experience. Liddicoat and Krasny's study focused on the episodic autobiographical memories of the participants. These types of memories emphasize experiences associated with specific events and related to the effects on oneself.

By conducting semi-structured interviews, Liddicoat and Krasny (2014) explored the experiences of the teens from the past EE program. The researchers interviewed participants from two different residential outdoor EE programs. However, both programs had similar missions, objectives, and venue. Similar results emerged from the participants of each program. The results supported Liddicoat and Krasny's (2014) conceptual framework of memory use and function in which memories can "*direct* environmental attitudes and behaviors, foster related *social* interactions, and contribute to an understanding of *self*" (p. 182). Furthermore, the participants' experiences correlated

to specific events in the residential outdoor EE program. Liddicoat and Krasny (2014) reported numerous accounts of environmentally responsible behavior and recalling scientific information associated with the EE program. Additionally, social aspects of the program were often associated with the participants' recall of the program.

Liddicoat and Krasny's (2014) study provided a unique approach to EE program evaluation by exploring the directive, social, and self-elements to experiences. Their suggestion for further research was to explore what types of EE program experiences lead to lasting use of those memories. Although their study focused on youth, the intent of the study aligned with the types of experiences needing to be explored in my study of adults who had attended a past EE program. By considering lasting impacts of past participants of EE programs can offer new insights on how to achieve long-term EE goals.

Stern, Powell, and Hill (2014) reported the types of practices and examples of empirical evidence in environmental education programming that accomplishes set objectives effectively and those practices that do not by using the NAAEE's Guidelines for Excellence publications as references to guide and compare results for best practices. From the systematic literature review of 66 articles, the analysis of 86 environmental education programs also revealed promising initiatives in environmental education and program evaluation. The best practices identified included: active and experiential engagement in real-world environmental problems, empowerment and student-centered learning, social engagement, identity and/ style of the instructor, emotional connections, and having a holistic experience. The results indicated most studies focus on EE for children – giving support for research in EAE. Moreover, a lack of attention on

educators' delivery styles and characteristics in the literature ignores a major part in the affective domain in EE. Additionally, a need for more research in EE was identified – in particular, qualitative studies to help determine how or why EE evaluations result the way they do. In addition, EE programs need to have clearly identified objectives and outcomes in order to produce meaningful evaluations. The study provided an insightful overview of what is trending or lacking in EE, but because it was a literature review the researchers could not account for or interpret results to its fullest extent. Regardless, the information can lend itself to developing future EAE studies and help interpret data.

Tidball and Krasny (2011) developed an “ecology of learning” and an “ecology of environmental education” from reflecting on 17 years of environmental education research. Their review questioned any evidence on individual understanding and behavior changes affecting the larger encompassing system. The researchers' philosophy of learning focused on an interactive and experiential process. An ecological view of learning allows the learner access to all possible avenues for gaining knowledge about the system. Understanding the backgrounds and needs of all levels of a system – individual, community, natural resource organizations, and ecosystems to determine a civil ecology project could provide a holistic and meaningful experience for the learner and serve as the foundation for an effective program. They concluded that the learners' needs and experiences provided insight for improving the adult learning process. They also stated an effective program would have measurable social and ecological outcomes.

Realizing the varying needs of constituents and aspects of adult learning are unique in each educational experience could help the EAE facilitator and the learners

(Clover et al., 2013). Through decades of working in a variety of EAE settings and conducting quantitative and qualitative studies, the researchers concluded adult education exists in formal, non-formal, and informal measures with differing theories applicable in each situation dependent on the context. Clover et al. found the fewer stresses and pressures experienced by the adult learner led to increased learning. Alternatively, regarding each audience member as a unique individual regardless of how similar everyone seems serves as a reminder not to make assumptions about the adult learners' knowledge, experiences, attitudes, beliefs, values, or skills.

A person in an EAE program could offer a different perspective on social-ecological topics and aspects of the PD experience that could lead to enriched or new programs (Clover et al., 2013). Considering and trying to incorporate the participants' perspectives and prior experiences will help provide an enriched learning experience and may increase the transfer of learning after the PD. Techniques that can be used to enhance EAE learning can include: group discussions, written reflections, and semi-structured interviews and focus groups provided rich context for learning about the adults participating in the workshop and how to improve future programming.

Although Clover et al. (2013) provided a seminal description of and work conducted in EAE, the explicit details of the research through the years is not shared but is referenced. The intent of the work was to provide a guide to understanding and working in EAE. The emphasis also focused on the diversity of situations that arise in the teaching and learning settings. The strength of this resource lies in the framework it displays but is limited in its methodology.

## Summary and Conclusions

From the literature reviewed, EAE was identified as an engaging, inclusive, and active educational approach influenced and shaped by multiple disciplines and theories that informs and empowers the learners (Clover et al., 2013; English & May, 2012; Walter, 2007; Whittmer & Johnson, 2000). Following the EAE conceptual framework, educators can transform ordinary learning experience into the understanding and action of adults to address the root causes and possible responses that will eliminate triggers of environmental problems. Environmental adult educators have great roles to play. They do not stop at hoping learners will come away with the necessary knowledge on environmental issues and the causes behind these problems. The educators were striving to engage the learners in social activism to act as agents in combating environmental problems and role models to demonstrate and exhibit respect and reverence for the natural environment.

The literature review has provided a comprehensive understanding of how EAE practice originated and what components are needed to form a coherent EAE theory (Clover et al., 2013; Haugen, 2010; Walter, 2007). However, actual experiences have not been examined. There is a lack of researchers who examined what experiences from EAE PD workshops five plus years ago made the most impact on the educator participants (Liddicoat & Krasny, 2013; Sondergeld et. al., 2014; Williams & Chawla, 2015). There is a need to understand whether and how they see their behaviors changing in relation to natural resource conservation years after the EAE PD workshop, and how



they shared these changes with others through their own classes (Liddicoat & Krasny, 2013; Williams & Chawla, 2015).

Fleming (2009) and Haugen (2010) suggested that a need exists for in-depth qualitative approaches to help improve EAE initiatives. Explicitly, they indicated that literature is limited that emphasizes an EAE framework for educators to follow. These studies also indicated that researchers have a limited understanding on the experiences of educators who have attended a professional development (PD) workshop as it pertains to learning and teaching about natural resources. Liddicoat and Krasny (2013) showed that few studies consistently use a theoretical framework in retrospective EE studies or long-term impacts of EE programs.

Focusing on adult participants of past EAE PD workshops and exploring their experiences could help determine what constitutes an effective program. Currently there are no peer-reviewed studies found that specifically explored educators' experiences related to their reflection on past participation in a natural resource based EAE PD workshop at least five years beyond their participation. Knowing whether the PD influenced the participants, or how it affected the participants' educational practices may inform approaches to EAE programs. Environmental literacy, natural resource conservation, and stewardship are desired outcomes of many EE programs (NAAEE, 2016).

### Chapter 3: Research Method

EAE PD workshop educators strive to promote adult participation toward natural resource conservation or stewardship through education (Clover et al., 2013). In EAE, adults become exposed to the concepts of conservation in an interactive, experiential way. These adults have the opportunities to examine the environment and learn about it while sharing, challenging, and creating new knowledge and meaning. The problem addressed in this study focused on the fact that few studies have examined educators' experiences with an EAE PD (Liddicoat & Krasny, 2013; Sondergeld et. al., 2014; Williams & Chawla, 2015). Specifically, it appears that no researchers have focused on the reflective experiences of EAE PD workshop participants at least 5 years after participation. The purpose of this basic qualitative study using telephone interviews was to explore what remained salient in the participants' learning experiences from an EAE PD taken at least five years previously and understand what the participants did with the knowledge and skills they gained from the workshop. To address the problem and achieve the purpose of the study, the appropriate methodological approach was qualitative inquiry. In this chapter, the discussion includes the details of the chosen methodology and research design of the study.

Chapter 3 begins with the discussion of the research design and rationale to explain and justify choosing a basic qualitative inquiry. The chapter also includes a discussion of the role of the researcher, the issues of bias, and how to address those issues. The details of the methodology, such as population, sampling strategy, instrumentation, recruitment procedures, data collection procedures, and data analysis

plan, are all part of the chapter to provide a basis for understanding the procedures undertaken in addressing the problem, purpose, and RQ of the study. I discuss the issues of trustworthiness in the latter part of the chapter, which includes a discussion of ethical procedures. A summary is presented at the end of the chapter.

### **Research Design and Rationale**

The RQ was: What were the experiences and reflections of participants of an EAE PD workshop held at least 5 years prior as they continue to practice ecological and environmental education in the present? As the researcher, I gathered in-depth data to answer the RQ. Qualitative analyses helped provide a deeper understanding of the participants' experiences rather than using a quantitative survey would have done (Patton, 2002). A qualitative study can help determine what was salient about the experiences of an EAE program to its participants.

As suggested by Miles, Huberman, and Saldana (2014), details divulged by participants in a qualitative study may also prompt additional questions from the researcher, thereby potentially enriching the content obtained. A qualitative approach helps explore an experience in depth through the collection and analysis of narrative, textual, or observational data to help understand an issue or topic (Katz, 2015; Nakai, 2012). Therefore, this study could not be accomplished through the collection of numerical data to answer the RQ. If there were a need to establish the existence of a relationship between two or more variables using numerical data and statistical analysis, then a quantitative methodology would be appropriate (Neuman, 2016). In a quantitative study, a rejected hypothesis could also sometimes indicate answers unexploited. To help

remedy this, a mixed methods approach would further the understanding of a study's topic by using both quantitative and qualitative data (Neuman, 2016). However, this methodology is beyond the scope and intention of this study's RQ.

As the purpose of this study was to explore the experiences related to an EAE PD workshop that remained influential to the educator participants who had attended them, I deemed a basic qualitative inquiry appropriate. The focus of the study was to explore and try to describe and understand the salient experiences of the past EAE PD workshop participants. I conducted a basic qualitative approach, with data analyzed through theme analysis. A basic or otherwise known as a generic qualitative inquiry allows a researcher to describe the behavior of interviewees within formulated systematic rules (Percy, Kostere, & Kostere, 2015). I considered other qualitative research designs for this study, but those designs (i.e., phenomenology, grounded theory, narrative research, and case study) did not align with the problem, purpose, and RQ. The basic qualitative inquiry helped develop a deeper understanding of participants' experiences, how EAE program material was used, and how it may help guide ideas for future applications.

### **Role of the Researcher**

In a qualitative study, the role of the researcher is to be the central research instrument for data gathering and analysis (Silverman, 2016). My role as the researcher in this qualitative study was to conduct telephone interviews, transcribe the interview recordings, and analyze the responses. As an instrument of data gathering, I conducted the interviews with educators who participated in an EAE PD workshop at least five years prior. Based on the interviews I analyzed and made interpretations of the

participants' experiences and perceptions to explore the phenomenon of focus in the study. To avoid any potential bias during the interviews, I used a discussion guide. There were subquestions designed to help prompt more answers if the participants did not provide adequate details. Moreover, prior to data collection, I identified personal points of view and possible biases in relation to the phenomenon being studied.

As the researcher, I had been exposed to education and different academic exercises throughout my professional career. Since 1999, I have worked and networked in the field of EAE in formal and nonformal education settings. I have worked as higher education faculty since 2001. Additionally, I have worked as a volunteer community educator for a local watershed organization since 2001. I have also worked as an instructor and planner since 2013 for the state's Department of Natural Resources' (DNR) summer professional development workshop for educators with a focus on conservation, the Academy of Natural Resources (ANR). In 2016, I spearheaded the state's environmental educator certification and now serve as its coordinator. As of October 2016, I was president-elect for the Michigan Alliance for Environmental and Outdoor Education (MAEOE) and took office as president in October 2017. MAEOE is the state's only professional environmental and outdoor education organization. In my formal and informal encounters with EAE activities, I have known many people throughout the state and have started to network on a national scale with other environmental education groups. Through my associations in the field of EAE, I may have developed personal preferences, biases, and opinions that may unknowingly influence the outcome of the study. Therefore, I needed to identify any connections or

conflicts of interest. My personal biases were set aside when conducting participant selection, data collection, and data analysis for the study.

To ensure that I remained unbiased during data gathering and analysis, I used bracketing. Bracketing, together with the concept of intellectual honesty, helped me maintain the authenticity of the research (Baugh, McNallen, & Frazelle, 2014; Chan, Fung, & Chien, 2013). Bracketing allowed for a visual representation of the data to help view the interconnectedness among themes as well as help maintain the focus of the research and not interject personal opinions into the research process, specifically during the data collection and analysis. Moreover, with an interview guide, I was able to facilitate the interview while maintaining alignment with the purpose of the study. Intellectual honesty required me to avoid allowing personal beliefs to interfere with data collection and analysis (Baugh et al., 2014). No information was purposefully omitted or altered, and information was verified through participants reviewing their interview transcript. I shared transcripts with participants to ask for their feedback regarding accuracy of transcription and if there were any additions they wanted to be made.

### **Methodology**

In this discussion of my methodology, I include a description of the sample size and rationale in relation to potential participants and inclusion criteria, the instrumentation used, and procedures for recruitment, participation, and data collection. Additionally, this section includes an explanation of how I coded and analyzed the data, a discussion of the strategies I used to enhance the study's trustworthiness, and a description of the procedures I used to ensure the ethical implementation of this study.

### **Participant Selection Logic**

Participant inclusion criteria for the interviews consisted of formal and nonformal educators who had previously attended an EAE PD at least 5 years prior. Additionally, the PD must have had an emphasis on natural resources conservation in the state. The exclusion criteria eliminated educators who participated in an EAE PD workshop within the last 4 years or when the workshop had a focus other than natural resources conservation. Based on these criteria, participants were selected through purposive sampling.

Purposive sampling is a sampling technique commonly used for qualitative studies that is focused on the inclusion and exclusion criteria for its sample (Barratt, Ferris, & Lenton, 2015). Barratt et al. (2015) claimed that participants who were selected purposively were often more willing to participate and more likely to contribute to the richness of the data for a given study. Based on the RQ of this study, I used a homogeneous purposive sampling process because the questions required in-depth information to be gathered from a specific group of the sample. The homogeneous sample's common characteristics were based on the inclusion and exclusion criteria.

Prior to conducting the interviews, participants received notice about the study via email. The email list was provided by the DNR's education services manager consisting of past participants of natural resources education residential workshops in the state for formal and nonformal educators. The workshops were part of the DNR's ANR professional development that has run since 2007 every July for 5 days. The participant recruitment letter asked for qualified and interested participants to contact me via e-mail.

The participant selection was based on the eight people who self-identified as fitting the criteria by responding to the e-mail. To increase the chances of recruiting the desired number of participants, both formal and nonformal educators were accepted into the study. Those who agreed to participate in the semistructured telephone interview replied to the e-mail serving as an informed consent before the interview was scheduled. Based on the timeframe presented in the solicitation letter, the participants specified the best dates and times for the interview.

The sample size of 8–10 participants was determined from the literature of past qualitative studies. The basis for determining the appropriateness of sample size for qualitative studies is the data saturation point (Fusch, & Ness, 2015). Scholars claimed that the range of sample size to achieve data saturation is from five to 20 (Fusch, & Ness, 2015). Yin (2013) also claimed that increasing the sample sizes of qualitative studies does not produce a more reliable and valid data set. Yin claimed that recruiting at least six individuals who have the relevant characteristics for the study is enough to achieve data saturation for qualitative studies. Patton (2002) advised selecting a sample size based on a minimum number that would likely provide sufficient data for the purpose of the study. Patton further recommended not having more than 10 participants would ensure manageability and richness of data. Merriam (2009) emphasized the importance of the nature of the questions asked, data gathered, and the resources available. Rather than struggle to make sense of too little data, Seidman (2013) suggested erring on more data collection to achieve sufficiency and saturation of data. Based on these perspectives



and factors, eight was determined to be the minimum number of participants for this study and 10 was the maximum number.

### **Instrumentation**

For this study, I used a semi structured telephone interview protocol (Appendix A). The protocol contained the questions to be asked and the guidelines to follow when conducting the interview. With granted permission (Appendix B), the instrument for this research was derived from modified interview questions by Liddicoat and Krasny's (2014) instrument "related to perceived program impact and use of memories" (p. 184). The researchers developed the interview guide from the first author's retrospective research conducted and literature review on memory use (Liddicoat, 2013). Liddicoat and Krasny (2014) followed an interviewing format with a funneled, semi-structured approach. This allowed for a progression of more specific questioning with the option of rewording, follow-up statements, and reordering topics as necessary. The format presented un-cued memories followed by cued memories, then succeeded by reflections on impact and use of memories.

The participant population for Liddicoat and Krasny's (2014) research differed from this study's population, location, and venue. Their study's participants were high school students who participated in a residential outdoor EE program in National Parks in the Rocky Mountains at least five years prior to the study. However, they expressed the application of their research combined with other research focused on reflections of experiences may help environmental educators create memories used to meet environmental education goals. The instrument used in this study also pertained to an

interview of participants reflecting on a residential EE program experience at least 5 years previously, but the audience included both formal and nonformal educators who participated in an EAE PD workshop. The fact a different audience demographic was used makes the instruments application unique. The questions used for this study were modified to fit the audience, type of workshop, its location, and tailored to a state rather than a national park focus. The intent of Liddicoat and Krasny's questions remained the same in this study.

### **Procedures for Recruitment, Participation, and Data Collection**

Prior to conducting participant recruitment, approval was granted from Walden University's Institutional Review Board (IRB: 04-02-18-0403416) to recruit participants and conduct the data collection and analysis for the study. Upon approval from the IRB, I utilized the statewide database provided by the Education Services Manager with the DNR. I advertised the research via email and solicited for participants who met the criteria. The mailing list included almost 300 past participants of natural resources education residential workshops for educators. However, if fewer than 8-10 volunteers would have emerged from the email list, then I had permission through the terms of being a member of an organization to access a different statewide Listserv for formal and non-formal environmental and outdoor educators to be used for further recruitment. The initial database identified included past participants of only natural resources education workshops; whereas, the latter Listserv identified has participants with diversified workshop topics which may or may not include natural resources. In the invitation email, I included a discussion of the purpose and potential benefits of conducting the study. The

inclusion and exclusion criteria were also provided in the invitation to inform the recipient if they were qualified to participate in the study.

Qualified and interested candidates self-identified based on the criteria provided and contacted me via email if they were interested in participating. I waited two weeks for potential participants to reply with a consent to the terms indicated. I sent an additional email at the end of the 2 weeks requesting participation. After another week of no responses, the eight people who consented were selected for the study. Candidates not selected for the study received an email message thanking them for their interest in my study and that it was determined their participation was not necessary.

Prior to the interviews, I prepared the materials needed for the data collection, such as testing the reception of the telephone service, audio-recorder functioning, and setting a quiet and private area for the telephone interview. To begin data collection, I conducted the telephone interviews following the interview protocol and interview guide (Appendix A). Approximately, 60 minutes was allotted for each participant's interview.

All interviews were conducted, audiorecorded, and transcribed by me to ensure no details were lost. I also used transcript review to validate the data from the interviews. Transcript review allows participants to review copies of their transcripts from the interviews for them to provide feedback in terms of correctness, accuracy and, upon reflection, any additional information. The participants were informed that future contact may be necessary for further clarification during transcription, and were given the completed transcripts for review. Data analysis commenced once all details were transcribed accurately.

## **Data Analysis Plan**

Analysis began by uploading and sorting the transcripts generated from the interviews within NVivo 12 software. Any similarities or themes within the responses were identified through thematic analysis, using the protocol suggested by Clarke and Braun (2013). In the first step of thematic analysis, I conducted an in-depth review of the data to become familiar with its content. In the second step, initial codes were labeled within the data as key descriptive words or phrases. I created nodes in NVivo 12 and grouped units of data that expressed similar ideas or meanings into those nodes. The third step involved searching for themes by grouping similar codes into potential themes. In the fourth phase, I refined the themes developed in the previous phase. I further refined the themes in the fifth phase by defining and naming the themes. The last step, or sixth phase involved displaying the themes and data in various ways, such as in a word cloud, frequencies, percentages, or tables to assist in analysis.

Upon organizing and entering the data, I analyzed the collected information and identified any similarities or themes within the responses through thematic analysis. With this qualitative data analysis approach, I sought to reveal any patterns, commonalities, and themes within the research data set. For this data analysis methodology, I organized the data in a manner that allowed an efficient coding process to take place. As suggested by Clarke and Braun (2013), I divided data from the transcripts into smaller more easily coded fragments and assigned new labels, or nodes, to fragments or pieces. These nodes allowed the researcher to assimilate responses, answers, or statements made by the participants in a manner that is relevant to the research being

conducted. This led to the creation of a taxonomy and classification with material relevant to the research inquiry. I then created a new narrative of the interpretation of the results. After narrative interpretations, conclusions were derived in the last phase.

### **Issues of Trustworthiness**

The concern for every qualitative study is addressing the issues of trustworthiness (Elo et al., 2014). Trustworthiness involves establishing or improving credibility, transferability, dependability, and confirmability (Elo et al., 2014; Lincoln & Guba, 1985). Trustworthiness must be demonstrated to ensure the appropriate methodological considerations and rigor was used throughout the data collection and analysis process. All protocols for ensuring trustworthiness were followed accordingly.

Credibility refers to the qualitative counterpart of internal validity of the data (Lincoln & Guba, 1985). To improve the credibility of the data collection method, I ensured items in the interview protocol were aligned with research questions, purpose of the study, and the conceptual framework. I also included the opportunity for participants to review the transcripts for accuracy.

Transferability denotes the qualitative counterpart of external validity for the data and instruments involved in the study. Transferability involves the ability to transfer the study's findings from one population to a different population from the one used in the original study (Lincoln & Guba, 1985). For this study, I provided complete and detailed descriptions of the methodology used and outputs of the study. I also provided justification for the processes and the findings to help other researchers understand the

approach and effectively assess the applicability of the findings to other groups or populations (Lincoln & Guba, 1985).

Dependability refers to the qualitative reliability counterpart of the data collection method and resulting data (Houghton, Casey, Shaw, & Murphy, 2013; Lincoln & Guba, 1985). To improve the dependability of the study, the researcher performed an audit trail, which is a collection of tangible documentation of the processes that were implemented in the study (Houghton et al., 2013). I documented every step and procedure that occurred in the methodology chapter to enhance the study's dependability (Houghton et al., 2013). Moreover, I transcribed the interviews from the use of an audio recorder during the discussion and speech recognition software to facilitate verbatim transcription.

Confirmability refers to the qualitative counterpart of objectivity (Lincoln & Guba, 1985). To improve confirmability, I ensured the discussion protocol had an iterative form of questioning, which involved inquiries that were repeated and reworded to help the participants provide consistent answers. Furthermore, Miles et al. (2014) emphasized that iterative questioning may be helpful in encouraging the participants to provide detailed answers in otherwise lacking responses.

### **Ethical Procedures**

Before conducting any research that involves human participants, Walden University researchers must first seek the permission of Walden University's IRB to conduct the research. Upon Walden University's IRB's approval for the research, an informed consent form was completed by potential participants that detailed all of the expectations of participating in the research. The informed consent entailed the study's

purpose, form of data collection, any known risks involved, the right to withdraw at any time, complete confidentiality, and potential benefits accrued to the participants if they decide to participate. It was also made clear that participation is voluntary. There were no consequences for declining to participate or leaving the study before completing the process through transcript review.

To ensure participant privacy, electronic data and audio recordings were kept secure in a password protected data management system, and all paperwork regarding the study was kept in a locked filing cabinet housed within my private, home office.

Transcriptions occurred soon after the interviews, any need for clarification resulted in direct contact with the participant, and all participants were given the final transcription to ensure accuracy. Complete confidentiality was also guaranteed through name changes in the documentation and private interviews. Lastly, I will keep all the data for five years after the completion of this study for reference to the research results. I will be able to access the data for the next 5 years if needed, after which I will destroy all data through deletion or shredding.

### **Summary**

The purpose of this study was to explore what experiences from a residential EAE PD workshop five plus years ago made the most impact on the educator participants. To address the research question of the study, a basic qualitative inquiry was used. The target participation was educators, from the formal and nonformal sectors who have participated in an EAE PD at least five years ago. The inclusion criterion for the study was educators who participated in a residential PD at least five years ago in one

Midwestern state and the topic of the PD needs to have focused on natural resources conservation. The exclusion criteria did not involve educators who participated in a single-day EAE PD within the last four years and the topic was other than natural resources conservation. I collected data using semi-structured telephone interviews. Data were analyzed using thematic analysis. Transcript review and an audit trail were used to improve trustworthiness and ensure ethical procedures. Data collected from this qualitative study has potential to offer EAE scholars and practitioners the practical and applied input from past program participants. The expressed experiences, content, and application may ignite new means for approaching curriculum specific content and/ making curricular-related decisions for future EAE PD programs. Chapter 4: Results

The purpose of this basic qualitative study was to explore what was salient in the learning experience from an EAE PD taken at least 5 years previously and understand what the participants did with the knowledge and skills they gained from the workshop. Exploring participants' perspectives may help with understanding the general experience of the PD, validating the information presented, assessing the application of the PD material, or learning about areas for improvement. The reflections of the experiences may provide insight to help further EAE theory and practice (Fleming, 2009; Haugen, 2010; Liddicoat & Krasny, 2013). The results of this study could also contribute to the improvement of EAE programs and provide insight for EE PD developers or future research in EAE.



The RQ explored for this study was: What were the experiences and reflections of participants of an EAE PD workshop held at least 5 years prior as they continue to practice ecological and environmental education in the present?

This chapter includes the setting of the study and the demographics and characteristics of the sample. I also discuss the data collection process and include any variations from the plan presented in Chapter 3. Data analysis includes the inductive process of determining codes, categories, and themes. I also provide evidence of trustworthiness. Lastly, all data supporting the research question, any discrepant cases, quotes from the transcripts, and tables and figures to illustrate the results are included.

### **Setting**

I conducted and recorded interviews by telephone at a time of the participant's choice. Participants were asked to choose the time of the interview to allow them to provide full and rich responses to the interview questions without feeling pressured by other obligations. Additionally, participants were able to choose the place from which they would participate in the telephone interview, so they would be as comfortable as possible during data collection. All participants stated that they were giving their responses from their homes. I conducted the telephone interviews from a private location to ensure that all information remained confidential. There were no known influences affecting the interviewer or participants at the time of the study that could influence the interpretation of the study results.

## Demographics

The demographics of study participants are presented in Table 1. Participants were both formal and nonformal educators. Formal educators were defined as those trained in teaching with the same students on a regular basis, typically in a classroom setting (e.g., preschool through college). Nonformal educators might not have formal teaching skills and only have a set of students for a limited period (e.g., in nature centers, zoos, museums, etc.). In this study, eight people were interviewed with various backgrounds (Table 1). There were six participants who were, at least for some time, formal educators, and five who were, at least for some time, nonformal educators. Three of the six formal educators became nonformal educators in their career. At the time of the interviews, there were four formal and four nonformal educators. The grades taught by the formal educators included preschool, kindergarten, first grade, middle, and high school levels. Positions held by the participants included in a nature center, state park, state outreach division, and nonprofit outreach organization. Lastly, the formal educators consisted of one man and three women, and the nonformal educators consisted of two men and two women.

Table 1

*Participant Demographics*

Participant	Name	Gender	Grade level(s) taught	Formal or non-formal educator	Year(s) of EAE PD attendance
1	Jen	Female	Head Start	Formal	2012 - 2013
2	Bonnie	Female	Kindergarten	Formal	2012 - 2017
3	Jack	Male	7th to 11th	Both	2010
4	Kristy	Female	First	Both	2010 - 2014; 2016 - 2017
5	Amy	Female	All	Non-formal	2012 - 2014
6	Tara	Female	All	Non-formal	2008 - 2015
7	Paul	Male	High School	Formal	2012; 2014
8	Nate	Male	All	Non-formal	2008 - 2011

Each participant provided a brief description of their experience of the residential EAE PD program and its location. These accounts are presented as follows, in the participants' words, as introductions to the participants themselves and to the EAE PD experience.

**Participants**

**Participant 1: Jen.** Jen gave the following very positive account of EAE PD:

I remember being out fly fishing and doing the canoeing where it was just like nauseatingly hot, it was so glorious, it was so beautiful, and so you know the settings were picturesque, and of course you're not doing everything that you have to do; you're not learning anything just being behind a desk—there was some of that—but the most part was getting out for the day. And, of course, the

food was great . . . It was just like being a kid again. I think that sounds really corny, but it's the truth. And you know that when I did a canoeing there, it was just really very comfortable. The staff did a good job sending everything that we should bring so that we would be prepared. I loved everything about the whole environment at the conference center.

**Participant 2: Bonnie.** Like Jen, Bonnie gave a very positive account of the EAE PD:

We went to the river and we went on an owl hike and just like we were outside at different points in the day different weather, and it was just so refreshing and relaxing, and it was very energizing to be out in nature. I felt at home with the area in general because I was familiar with the area from visiting when I was little. It was uncomfortable because it being a little different being in a dorm and having to share, you know, your life for a week with strangers, but in the end it was fine and like I said, you meet people at different points in the day and have conversations and get to hang out so in the end, it turned out to be really good.

**Participant 3: Jack.** Jack's account emphasized the appeal of the EAE PD residential location:

It is a great location for learning because when you see the beautiful log buildings, it gives you a taste of life in northern Midwest. The center provides a very relaxed atmosphere where you feel comfortable and people tend to have a good time.

**Participant 4: Kristy.** Kristy had particularly appreciated the people and the outdoors learning:

It was a location where you can be outside; you weren't stuck in a lecture hall.

Everyone there was very friendly. The location had a rustic feel and you're outdoors for activities so you can use the resources, so that was very worthwhile.

**Participant 5: Amy.** Amy emphasized the pleasant effects of the learning environment's location on learners' moods:

There's the habitat, the environment—you are totally immersed in natural habitat.

It puts you in a state of mind—yeah, I'm up north in nature, relaxed—and it makes you feel inspired the whole time. There's the beach and bonfire at night to hangout. Food is good. You're not stressed—it's all taken care of. It's like summer camp for educators.

**Participant 6: Tara.** Tara referred to the educational value of the location:

I think it's a good starting point; driving distance is perfect to areas. You can hit on a lot of different ecosystems that you can touch on and get hands-on examples. There's a lot of things that they obviously could do education-wise there too with the grounds there that would help everyone get that hands-on time and apply what they're doing.

**Participant 7: Paul.** Participant 7 reported that the location had made a deep impression on him:

Ecology changes as you go north. So being there [at ANR] everything—it just makes you feel part of it. You have access to all these things in northern

Michigan. I remember the first one [ANR] I went to. We got lost looking for a logging site—very memorable—it was like I had never been in those kinds of woods before, and I've been going out for years.

**Participant 8: Nate.** Participant 8 contrasted the EAE PD location and its effect on mood with the urban environment to which he was more accustomed:

I go up that way all the time so it wasn't like so far away. It was nice to get away from the city setting and be out there where you can relax and let your guard down. I live in Detroit; you don't let your guard down so much. It's a lot more relaxed up at ANR just being outside somewhere else.

### **Data Collection**

Of the 275 participants of the EAE PD, 143 attended the PD more than 5 years prior. The invitation to participate was sent to the 93 with valid e-mail addresses. Of the desired 8–10 responses, only eight responded, even after a second request for participants via e-mail. The interview dates were scheduled and data were collected from the eight participants. A semistructured telephone interview was conducted and recorded for each participant using a 14-question instrument as a guide (Appendix A). The interviews were conducted in a location of choice for each person to ensure privacy during the interview. An interview lasted between 20-50 minutes, with longer interview times occurring with participants who attended the EAE PD multiple times. The interviews were audio recorded with a voice recording device then uploaded onto a password protected, personal computer and a secured internet cloud account.

The data collection plan presented in Chapter 3 served as the foundation of this study's methodology. Specifically, I listened to the recordings and transcribed them myself either by typing what I heard or using a feature within Google Doc's Microsoft Word called voice typing. In this process, the interviews were listened to with headphones at a slow speed or repeatedly, and then spoken aloud for voice recognition to provide the information for transcription. Additionally, notes were taken during and after the telephone interviews to help with transcription and interpretation.

Prior to data collection, I had eight people who immediately consented to participate in the study. I allowed 2 weeks for other recipients of my invitation e-mail to respond, but nobody else responded. One of the respondents did not provide a time or phone number for the interview and did not reply to three additional e-mail attempts. Another e-mail invitation was sent to the list of past participants and one more person consented. Therefore, the minimum of eight participants for the study sample was obtained. No unusual circumstances were encountered during data collection, and there were no deviations from the data collection procedure described in Chapter 3.

### **Data Analysis**

The typed transcripts were emailed to and reviewed by the participants to ensure accuracy. When participants had approved the transcripts, I uploaded them into NVivo 12 software for assistance in analysis. With the organized and entered data, I analyzed the collected information and to identify any similarities or themes within the responses through thematic analysis, using the protocol suggested by Clarke and Braun (2013). In their first step of thematic analysis, I conducted an in-depth review of the data to become

familiar with its content. The second step consisted of the generation of initial codes, which were labeled with key descriptive words or phrases. In conducting that step, I created nodes in NVivo 12 software and grouped units of data that expressed similar ideas or meanings into those nodes. The third step involved searching for themes. In this step, I grouped similar codes into potential themes. In NVivo, this process involved the creation of parent nodes, which were labeled with descriptive words or phrases. Similar nodes created during the second step of the analysis were grouped under the parent nodes as child nodes. The fourth step of the analysis consisted of reviewing the themes. In this phase, I refined the themes developed in the previous phase. The fifth phase consisted of defining and naming the themes. In this phase, I further refined while defining the themes. Lastly, the sixth phase consisted of producing the presentation of results which is presented in the following figure and tables. To illustrate the potential relative emphasis on salient topics or experiences, Figure 1 includes an NVivo word cloud indicating the 25 highest-frequency words of five letters or more in the dataset. Irrelevant words were excluded such as really, little, and things. Additionally, only the stem of words was searched and utilized to allow for a thorough and meaningful search within the coding.





*Figure 1.* Word cloud showing 25 highest-frequency words of five letters or more.

### **Evidence of Trustworthiness**

In qualitative research, multiple steps must be followed to ensure that the study conducted has data credibility, transferability of findings, dependability of study results, and confirmability of researcher bias. While conducting this study and completing data analysis, I followed strict protocols to ensure the trustworthiness of this study.

### **Credibility**

To ensure the credibility for the study, I maintained a research journal in which I recorded ideas, observations, and thoughts during and after interviewing each participant. Notes were also taken after each transcription to help capture the full interview experience and to identify key segments for data analysis. Additionally, participants had the opportunity to review the transcripts for accuracy and to add any additional reflections. Another process I used to establish credibility was analyzing my data for

discrepant cases. The participants' background was then examined for context to help understand the responses.

### **Transferability**

To increase transferability of this study, I used an interview protocol and guide to gather rich, thick descriptions from the participants. The emergent themes were supported with vivid details of the findings to provide readers with enough information so that transferability might be considered. Additionally, I provided information regarding the participants' profession and explicit details of the methodology for potential transferability of this study.

### **Dependability**

To safeguard the dependability of the results, I conducted regular peer discussions with those who work in the field of EAE and those who hold a doctorate in an associated field. I also reviewed the study with my doctoral committee to ensure the proper format and methodology was used. Additionally, I kept a detailed journal of the study procedures, coding process, and findings as an audit trail. For the study procedures, I wrote notes before conducting the interviews, while interviewing the participants, and after the interviews to ensure I followed my study protocol. I made notes regarding coding during data analysis, determined categories, and developed possible questions to ponder while analyzing my data.

### **Confirmability**

For confirmability, I journaled my personal reflections on the recruitment of participants, setting up interviews, interviewing participants, reviewing transcripts, and

questioning of my interpretation and analysis of data. I also identified potential questions regarding my role as the researcher and provided thorough responses to avoid bias. I recorded questions, assumptions, and beliefs I had while conducting research to ensure that they would not impact the objective nature of my study.

### **Results**

The research question used to guide this study was: What are the experiences and reflections of participants of an EAE PD workshop held at least five years ago as they continue to practice ecological and environmental education today? Five major themes emerged during data analysis to answer the research question (Table 2). The five themes were: (a) becoming a more effective educator; (b) becoming more aware of the importance of conservation; (c) experiencing positive emotional effects; (d) changing behaviors that impact the environment; and (e) experiences of the EAE PD location. Data from the fifth theme, *experiences of the EAE PD location* were presented in the demographics section as introductions to the participants and their initial accounts of the EAE PD experience and its location. Results related to the other four themes are presented below. Table 2 indicates the themes that emerged during data analysis and the number and percentage of data elements included in each theme.

Table 2

*Major Themes: Frequencies and Percentages*

Theme	Number of occurrences of theme	Percentage of data elements included in theme
1. Becoming a more effective educator	38	32.20%
2. Becoming more aware of the importance of conservation	38	32.20%
3. Experiencing positive emotional effects	21	17.80%
4. Augmenting behaviors that impact the environment	11	9.32%
5. Experiences of the EAE PD location	10	8.47%

*Note.* A total of 118 data elements or units of data were identified during analysis.

**Theme 1: Becoming a More Effective Educator**

All eight participants indicated that EAE PD had given them knowledge, ideas, or strategies that had made them more effective educators in their own classrooms or roles.

Table 3 indicates the codes that were grouped into this theme and the number and percentage of data elements included in each code.

Table 3

*Theme 1: Becoming an Effective Environmental Educator Codes, Frequencies, and Percentages*

Code	Number of occurrences of code	Percentage of data elements included in code ( $n = 118$ )
Valuable ideas and strategies	12	10.17%
Teaching natural resource management	8	6.78%
Academic impact	8	6.78%
Impact on teaching methods	5	4.24%
Hands-on instruction	5	4.24%

All eight participants indicated that the EAE PD had acquainted them with valuable ideas and strategies for enhancing the instruction they delivered in their work as educators. Bonnie stated, “I teach kindergarten and we don’t have a scripted curriculum, but I do science things in the classroom . . . Now I just feel like I’ve been able to put so much more into my classroom because of ANR.” Jack, who had taken the EAE PD with a focus on wildlife, stated, “I found it valuable for teaching in the classroom.” Participant 4 reported that she had implemented educational activities she had learned in the EAE PD: “The value was huge...in my teaching as a profession. I use the teaching resources and do the activities with my kids.” Amy had found the recommendation of a more demonstrative style of instruction in EAE PD to be valuable in her own teaching: “now at the nature center I actually show people what I’m talking about and have them do it, like winter tree ID or taking water samples.” Paul shared his EAE PD experiences with his

students: “[T]he kids are looking at you, and you have to have experiences to share with the kids. You need to give real examples and just share what you’ve done, like showing pictures and reflecting on how we did the fish shocking or forestry [at ANR]”. Nate, who taught archery, had learned ways of incorporating more environmental awareness into his curriculum through EAE PD: “I tie nature into it—definitely because of ANR—wild edibles, shelter building, like the hunger games . . . I use the tools I got, all the resources from ANR.”

Six out of eight participants indicated that EAE PD had given them ideas related to teaching natural resource management that had made them more effective educators. Jen reported that after EAE PD she had become passionate about “talking to the kids about everything from taking care of the environment and studying what's on the ground, getting into the gardening and the planting and just watching things growing.” Jen believed that educators had “an opportunity and a responsibility to share knowledge about our natural resources and conservation with our young people,” and she felt that the EAE PD had made her more effective in doing so. Bonnie had started conversations about resource management with her young students by using techniques learned in the EAE PD: “I like that and ANR showed me different ways to be comfortable taking a whole class - little kids outside and letting them explore and then also coming back and talking about what they discovered and making connections to the world around them.” Nate referred to a number of lessons in resource conservation that he had conveyed from the EAE PD to his students: “I learned so much at ANR . . . now people can start to

understand why it's important to save plants for the monarchs, plant trees to offset carbon footprints . . . why hunting and buying a license is so important.”

All eight participants indicated that the EAE PD had impacted them academically while giving them ideas that made them more effective educators. Bonnie had decided after attending the EAE PD that she would earn an additional certification to become a better educator: “I’m not just going to teach kids how to read, but now I’ve taken a step to become certified as an environmental educator.” After learning in the EAE PD about “bringing the classroom outdoors,” Kristy decided to earn an advanced degree: “I feel like ANR pushed me into that direction [of bringing the classroom outdoors], and doing that for a Master’s.” Tara had advanced enough in her own education through the EAE PD to become a more well-rounded instructor: “I definitely got more into fisheries and forest resources...Becoming an instructor that first year I needed that knowledge base...so that was big for me to learn.”

Five out of eight participants indicated that their EAE PD experiences had caused them to make ongoing changes in the methods by which they delivered instruction to their students. Bonnie had implemented a class garden to increase student engagement: “I feel that I’ve taken more of an initiative with my science curriculum in my own classroom . . . We have a garden and we use the garden. And [students will] ask how can we get involved and then just taking that step and being more involved.” Jack had implemented lesson plans that were compatible with state curriculum: “I used anything the Project WILD and other activity guides would offer to enhance lesson plans in the

classroom...[for example] we raised salmon from eggs to salmon of suitable size to deposit into a . . . river at the end of the school season.”

Kristy had implemented more participatory learning, saying that the EAE PD had taught her, “To be more hands-on than ever. I would never have thought to have my first graders just dig into owl pellets [without the EAE PD].” Amy felt that the EAE PD had enhanced her attitude and her resourcefulness as a teacher, and said that the EAE PD “really helped me build my toolkit, and stay fresh and stay motivated and get excited again about what I do.”

Five out of eight participants indicated that the EAE PD had given them ideas for effective hands-on instruction, which they had subsequently implemented in their classrooms with positive results. Jen described her use as an educator of insect collection techniques learned in the EAE PD: “I remember going out taking nets and catching bugs out in the field across the road. And then just really studying what's in the net...I've done that with our kids at school.” Bonnie and her class,

had a day with birds and we went out and we did all kinds of different activities—bird calls, Growing Up WILD activities, Bird Beak Buffet, Project Feeder Watch with Cornell University—those are all things I am still doing today that I took back from ANR.

Tara had taken her students to experience hands-on activities that she had first tried in the EAE PD, such as, “Going out with the Fisheries Division shocking and doing macroinvertebrates. I literally did it last week one day and I'm going to be doing it twice next week.”



## Theme 2: Becoming More Aware of the Importance of Conservation

All eight participants indicated that the EAE PD had made them more aware of and more concerned with issues related to the conservation of natural resources. Table 4 indicates the codes that were grouped into this theme and the number and percentage of data elements included in each code.

Table 4

*Theme 2: Becoming More Aware of the Importance of Conservation Codes, Frequencies, and Percentages*

Code	Number of occurrences of code	Percentage of data elements included in code ( $n = 118$ )
Talking more with others about conservation	10	8.47%
Greater awareness of conserving public lands	8	6.78%
Greater awareness of conserving state parks	8	6.78%
Conservation issues more meaningful	7	5.93%
Specific conservation issues	5	4.24%

Seven out of eight participants stated that increased awareness of conservation issues gained through the EAE PD had caused them to talk to other people more about conservation and resource management. Jen had learned in the EAE PD, “Just how important it is and how important it is that we talk about [conservation] with our young people and families. That we could do so much more from preschool all the way up.” Bonnie promoted conservation in talks with others by promoting the EAE PD: “I think and talk about [the EAE PD] a lot because I'm trying to get more people to come. So I'm

always bringing it up to different groups and with different teachers - just promoting it.”

Kristy stated that because of the EAE PD, “I have the confidence now to talk about nature or natural resources to people around here.” Amy also regularly shared lessons learned in the EAE PD: “I share with other educators all the time. I talked yesterday to a mom who does homeschool, [and I] mentioned to her about MAEOE and ANR.”

Six out of eight participants reported that from the EAE PD they had learned the importance of conserving public lands. Bonnie became more concerned with the conservation of public lands when she learned in the EAE PD what public lands were: “I guess one of the big things I didn't realize is what ‘public lands’ mean. That we all, in a sense own the public land and that they're not state owned.” Jack also became more aware of the need to conserve public lands as a result of the EAE PD: “Regarding public lands; I gained a better appreciation of the need to manage the use of public lands.” Amy had begun talking to other people about the conservation of public lands: “I didn’t realize [before the EAE PD] how much the DNR is responsible for managing with such a little amount of money or resources . . . [now] I share the message with people about how it’s our job to protect public lands.” Nate had become more engaged with conservation and had begun informing others about the need to make responsible use of public lands: “I respect the [public] land a lot more just so much more—to leave a softer footprint. I also try to get people to use them more.”

Five out of eight participants reported that from EAE PD they had learned the importance of conserving state parks. Jen had gained a greater appreciation and concern for state parks: “I never realized the education that went on at the state parks and the

activities that go on at the state parks...We need to be taking our kids to them, and caring for them.” Amy enjoined her acquaintances to contribute to the state parks’ revenue stream: “I didn’t know the money for state parks and managing natural resources mostly came from hunting licenses and fees and such...So I’m like telling people, ‘Get your fishing license! Get your recreation passport!’ State parks are so important.” Tara had deepened her appreciation for state parks through the EAE PD, and said that before she took the continuing education course she, “didn’t know the depth of what you could do at state parks. I also didn’t know about the Ranger programs or Explorer Guides or visitor center’s interpreters—there’s a lot more available than I ever knew as a kid.”

Five out of eight participants reported that conservation issues had become more meaningful to them as a result of the EAE PD, because their experience in the EAE PD had added a new significance to aspects of conservation that they had not previously regarded as important. Jen learned the importance of caring properly for injured or abandoned animals: “I remember as a kid growing up rescuing animals . . . We just didn’t have that information back then that we shouldn’t do that . . . knowing what to do and not to do—I never gave it a thought before going to the ANR camp.” Bonnie had become aware of the importance of the functions of the Department of Natural Resources, which she had previously regarded as a bureaucratic nuisance: “To really be involved in it [ANR] and to see exactly what’s going on, to see how they calculate things is helpful and it’s given me an opportunity to go back to different people and say, ‘Hey, this is really important.’” As an example of a DNR function she had learned to value, Bonnie cited the following: “When we went out to a cut site it’s not just about cutting down trees.

There is a method to the madness...They are measuring and thinking about different species.” Kristy reported an enhanced interest in issues related to conservation after attending the EAE PD: “[ANR] helped raise my awareness about diseases going through wildlife, like white nose syndrome in the bat populations.” Nate referred to a specific element of the EAE PD curriculum as particularly impactful: “going through that year when they [ANR] did the Leopold Project, it was really the most meaningful and impactful curriculum. Really important to me—I mean bar none that hit me at home—conservation big time.”

Four out of eight participants reported that they had become aware of specific conservation issues through the EAE PD. Bonnie had become aware of the environmental consequences of fracking and of issues related to wolf populations: “It was really interesting to hear a first-hand account of people who are so deeply involved with those different issues and it really gave me a different perspective. It also made me anxious to explore that topic more.” Jack had learned about the potential ecological impact of invasive species: “The focus on invasive species and possible diseases that can kill trees is very important for the public. It’s important to recognize the diseases and/ the critters that cause the diseases to the natural environment.” Amy had not thought about the environmental impact of poaching until she attended the EAE PD: “I think for sure poaching was a biggy in the natural resources. Like how [DNR personnel] manage for that . . . because really how can you help create a balanced ecosystem with people not following the rules like that.” Paul became aware of fracking and its environmental

consequences through the EAE PD: “Fracking first came to light to me there. I didn’t know about it, didn’t know what it was all about.”

### **Theme 3: Experiencing Positive Emotional Effects**

All eight participants indicated that they experienced positive emotional effects, both in the short- and long-term, as a result of attending the EAE PD. Table 5 indicates the codes that were grouped into this theme and the number and percentage of data elements included in each code.

Table 5

*Theme 3: Experiencing Positive Emotional Effects Codes, Frequencies, and Percentages*

Code	Number of occurrences of code	Percentage of data elements included in code ( $n = 118$ )
Impact over time	9	7.63%
Feeling connected	6	5.08%
Intense reaction	6	5.08%

Seven out of eight participants reported that their experience of EAE PD had continued to have a positive emotional effect on them over time. Jen stated that she experienced positive emotional effects when she reminisced about the EAE PD experience: “it was just action packed and yet relaxed at the same time and it just felt really good . . . every day brought something new, just so fun and relevant. And I still think back to it.” Bonnie experienced excitement when she contemplated returning to the EAE PD: “For me, the initial impact was huge - just going and branching out and meeting new people. But I’ve gone back for five years and every time I go back I’m just

so excited to go back.” Kristy referred to positive emotional effects that deepened with time: “I’d say [the impact of the EAE PD has] been ongoing . . . it’s influenced me since then. The experiences stay with me. I’ve really branched out.” Amy continued to enjoy reminiscing with friends about the EAE PD: “I would say during [the EAE PD]: I’m like, ‘This is so special, I’m so lucky to be here and meeting these cool people’; years later—I love how we can still be like, ‘Remember when we . . .’” Nate reported positive emotional effects that appeared to be permanent: “[The impact of the EAE PD] was happening all the time and it’s still happening. It became part of my life. It changed me for the better.”

Four out of eight participants reported that the EAE PD had had the positive emotional effect of helping them feel more connected to colleagues. Bonnie had enjoyed networking with like-minded educators: “I met so many great people who had a similar interest and a similar passion for getting environmental ed[ucation] back into classrooms and that was my biggest thing.” Amy had also enjoyed networking: “I feel more connected to EE and the education world in general. I felt like I needed that boost and I had been looking for different ways to do that so ANR did that . . . After ANR I felt more connected.”

Four out of eight participants described their positive emotional reactions to the EAE PD in terms that portrayed those reactions as especially intense. Jen used strong terms in describing her emotional reactions to the EAE PD: “I just was absolutely enthralled with the entire process from the setting..You know I don't think I've ever been to anything before that was quite that intense . . . it was the most captivating training I've

ever been to.” Kristy likewise used strong terms in describing her experience: “I was overwhelmed. Lots of information to take in, but also feeling excitement. And every time since then: excitement.” Paul described himself as very moved by the outdoors, hands-on quality of the EAE PD:

Well my whole experience with the feathers, fins, and whatever [the Forest, Field, and Fins track at ANR], doing everything we did. I never saw that before—the whole process of everything—was like whoa. Getting lost in the woods, going to the lumber, I've never seen it. The awesomest experience.

Nate also reported a powerful and positive reaction to the EAE PD: “I absolutely loved it . . . I . . . learned things I didn’t know, like plant ID and animals and even the journaling part . . . It was totally life changing . . . It really showed me what I liked doing, so I started teaching.”

#### **Theme 4: Augmenting Behaviors That Impact the Environment**

Six out of eight participants reported that as a result of the EAE PD they had changed or reinforced one or more of their own behaviors that impacted the environment. Table 6 indicates the codes that were grouped into this theme and the number and percentage of data elements included in each code.

Table 6

*Theme 4: Augmenting Behaviors that Impact the Environment Codes, Frequencies, and Percentages*

Code	Number of occurrences of code	Percentage of data elements included in code ( $n = 118$ )
Heightened attention to impact	6	5.08%
Reinforcing responsible behaviors	3	2.54%
Recycling	2	1.69%

Five out of eight participants reported that as a result of their EAE PD experiences they now paid more attention to the impact of their behaviors on the environment. Jen described her custodianship of a pet duck: “We have a falcon visiting our neighborhood and I have a pet duck and when you have a pet duck you feed every starling I think this side of the Mississippi. The starlings prevent the falcon from eating and such and so the duck’s in at night.” In describing the specific effect of the EAE PD that had increased her attention to the interrelationships among her animal and wild animals, Participant 1 said she had learned, “an awareness that everything we do everything belongs, every creature matters.” Bonnie helped implement a recycling program in her school as a result of her EAE PD experience, and she had also started teaching her students about the interdependence among living things: “[My students] might be afraid of a bumblebee and so learning about why the bee is important to our environment, why we need it, and explaining that to them and me not showing fear.” Kristy made more environmentally responsible choices after the EAE PD: “I definitely feel that I’m a little more



conscientious about how I affect the natural world around me. Where I rent—I'm on a lake—so I don't use weed killer. I think about things first." Nate had also started making more environmentally responsible choices: "I became much more aware of everything—impact and connections and all that. So recycling, getting outside, really getting my family aware and paying attention to all that."

Two out of eight participants reported that the EAE PD had reinforced environmentally responsible choices they were already making. Amy said that the EAE PD had had the effect of, "just motivating me to keep doing what I do, that it's important for the environment. ANR was just an inspiration to keep doing it . . . Connecting with the natural world more for sure." Paul also reported that the EAE PD had reinforced his positive behaviors, including, "we recycle—my wife and I, our carbon footprint is small, we plant our own garden."

Two out of eight participants reported that they had implemented environmentally responsible practices learned in the EAE PD. Jen implemented several new behaviors in her school:

When I came back we did update our recycling and reuse reduce recycle thing with our Head Start program and you know that came directly out of that [ANR]. Experiences that I had their affected how we work with the kids on being aware of our environment right down to not killing bugs in the classroom.

Tara implemented techniques from the EAE PD at home and at her place of employment: "there were a lot of little things that I learned from the ANR presenters that I could take

back to the Nature Center. Also, at home a lot of those things translated—like gardening is a great example.”

### **Summary**

The purpose of this basic qualitative study using interviews was to explore what was salient in environmental educators’ learning experiences in an environmental adult education professional development (EAE PD) taken at least five years previously, and to understand what the participants did with the knowledge and skills they gained from the workshop. To achieve this, one-on-one, semi-structured telephone interviews were conducted with eight educators who had attended an EAE PD more than five ago, with an emphasis on natural resources conservation. The following research question was used to guide the study: What are the experiences and reflections of participants of an EAE PD workshop held at least five years ago as they continue to practice ecological and environmental education today? The major themes that emerged during data analysis indicated that participants’ experiences and reflections had included: (a) becoming a more effective educator; (b) becoming more aware of the importance of conservation; (c) experiencing positive emotional effects; (d) augmenting behaviors that impact the environment; and (e) experiences of the EAE PD location. Chapter 5 includes interpretation and implications of these results.

## Chapter 5: Discussion and Conclusion

This qualitative study was conducted to explore what was salient in the learning experiences from the perspective of an EAE PD taken at least five years previously. The study was specifically conducted to determine if the learning experiences of the students provided a positive impact in their learning and achievements. I also intended the research to provide understanding what the participants did with the knowledge and skills they gained from the workshop. The findings of the study were important to understand what improvements to the PD are still necessary based on the lived experiences of the participants and their perspectives. The findings of the study also help reveal the participants' experiences during the PD, their understanding of the information, their application of the program's workshop material, or any improvement they experienced in some other area. The results of this study may contribute to the improvement of EAE programs and provide insight for EAE PD developers or future research in EAE. The results of the study also presented the contextualized experiences of the EAE PD location.

Based on the literature review for this study, I noted that a qualitative study on the reflective experiences over time of participating in an EAE PD would provide insight to help further EAE theory and practice. The RQ of the study was: What were the experiences and reflections of participants of an EAE PD workshop held at least 5 years prior as they continue to practice ecological and environmental education in the present? To answer the research question, the study relied on self-reported responses of the participants and used the data collected to respond to the research question. The results

of the study showed that even after the curriculum and learning experiences, the learning derived from EAE PD still factored in the decision-making of the participants.

### **Interpretation of Findings**

There were five themes that emerged from the study: (a) becoming a more effective educator; (b) becoming more aware of the importance of conservation; (c) experiencing positive emotional effects; (d) augmenting behaviors that impact the environment; and (e) experiences of the EAE PD location. The first theme revolved around becoming a more effective educator. Based on the experiences of the participants, the EAE PD allowed them to become more effective educators. Paul claimed experience as the key to an effective PD: “[T]he kids are looking at you, and you have to have experiences to share with the kids. You need to give real examples.”. Educators often claim a lack of experience or efficacy in teaching about the environment, ecological connections, or the conservation of natural resources (Sondergeld et al., 2014). Incorporating strategies to accentuate learning objectives for teaching these topics can be invaluable from the PD experience.

Supporting these findings, Clover and Follen (2004) identified that most of EE material is directed toward capturing the attention and interest of youth. This can imply that having the ability to capture youth’s interest is also an indication of being a more effective educator. The themes in this current study support the importance of including valuable ideas and strategies in the PD. The participants also emphasized that having the experiences at the EAE PD gave them the knowledge and skills to teach about natural resource management effectively. Currently, society mainly relies on adults to make

informed decisions about the conservation of our natural resources and to educate others about ecological conditions (Ardoin & Heimlich, 2013). Based on the results of the study, it can be implied that the reliance on the adults to become better educators does not mean that it is because of their respective age but because of their personal experience in this program.

As an EAE professional, objectives for most of the programs designed may revolve around increasing the levels of knowledge, appreciation, and experience along with demonstrating ways adult citizens can make a positive social-ecological difference in the community (Clover et al., 2013). The findings of Clover et al. (2013) may be perceived as related to the current study by meeting all the objectives with the participants. This also appears to contribute to the effectiveness of education resulting in more effective educators overall.

According to Kovan and Dirkx (2003), transformative learning theorists purport that the knowledge acquisition process should be supported with a sense of calling or a spiritual dimension for the experience to be meaningful. From the experiences of the participants, an academic impact seemed to emerge because of the emphasis they made on the importance of the topic being relayed in the PD. Teaching methods demonstrated at the EAE PD also created an impact in making the participants better educators. Further, hands-on instruction was seen as effective in ensuring that the goals of the curriculum were achieved. The results of the current study support the theory of transformative learning in that becoming a more effective educator also means developing the ability over time to educate on matters that are currently pressing, timely,

and important. Additionally, becoming an effective educator capitalizes on Clover et al.'s (2013) outdoor experiential learning theory when the participants spent most of the learning outdoors at the PD. Sondergeld et al. (2014) also characterized effective EE programs would include time spent outdoors, using several means of teaching a concept, identifying relevancy of topics, encouraging lifelong learning, and using social contexts. The current study revealed a concurrence of these characteristics to promoting effective education. Overall, the supporting examples of this study's themes uphold Clover et al.'s (2013) EAE framework.

The second theme focused on becoming more aware of the importance of conservation. The participants noted that the EAE program had increased their awareness on the relevant conservation measures, which in turn can benefit the society in general. Clover et al. (2013) stated the environment is currently a common theme in adult education, and EAE programs play a key role in responding to environmental concerns. This finding was confirmed by the responses of this study's participants as they shared that the program helped in deepening their understanding of the conservation of natural resources. All the participants claimed the PD increased their awareness of current natural resources conservation issues and measures for actions. Seven of the participants noted the EAE PD led them to share with others the importance of conservation. Jen realized a need to share information about natural resources conservation with people of all ages and backgrounds. The findings of the study can imply EAE PDs have an increased relevance to different stakeholders.

Furthering conservation awareness, the EAE PD also created increased awareness about conservation of state parks and public lands. Environmental education helps students of any age acquire proenvironmental attitudes and values, and to promote willingness and readiness to carry out environmental action (Ardoin & Heimlich, 2013). The awareness of more students regarding environmental action was confirmed by the results of the current study as conservation is currently being seen as an important topic. Participant responses revealed that their awareness could benefit society by raising others' awareness. Bonnie learned the importance and function of the DNR through the experiences at ANR. She shared their methods of management with family and friends and emphasized, "This is really important." With the recent environmental concerns such as global warming and climate change, educators need accurate scientific data and insight on how the data is collected and monitored. Thus, the awareness gained from the program can be properly imparted to others who have not experienced the EAE PD.

Mbalisi (2010) found that environmental education can lead to improved critical thinking, better problem-solving skills and enhanced decision-making skills, which all enable an individual to better weigh different sides of an environmental issue or problem before making informed decisions. The results of Mbalisi's (2010) study were consistent with the findings of this study. The participants emphasized the importance of prioritizing conservation, thereby enhancing their decision-making skills. Based on the responses of the participants, their environmental awareness helped in deciding minor decisions such as using more environmentally-friendly materials than the ones that damage the environment. Nate stated, "I respect the land a lot more . . . to leave a softer

footprint.” Four of the eight participants became aware of specific, local environmental concerns such as fracking, wolf population dynamics, invasive species, wildlife diseases, and the impact of poaching. Awareness is seen as one of the benefits derived from effective environmental education (Ardoin & Heimlich, 2013). The EAE PD experiences of the participants in this study brought to light certain local conservation issues and have made them more relevant and meaningful. The current study helped to affirm that the methods of the EAE PD succeeded in featuring the importance of the conservation of natural resources and it also remained salient with the participants through the years. Clover et al.’s (2013) outdoor experiential learning theory could be attributed to this impact. Facilitators of the EAE PD engaged the participants in outdoor activities relevant to the region’s natural resources either with self-exploration of an area, recreation, activities, or with a natural resource professional carrying out their duties.

The third theme emphasized participants experiencing positive emotional effects. There were fond memories of ANR shared by all eight participants. Nobody had identified experiences comparable to the PD that created the same positive emotional reaction and professional gain. Seven of the eight participants had also attended ANR more than one time. Bonnie has gone every year since her first attendance. Kristy, who had been new to teaching and new to environmental and outdoor education felt like she “really branched out” on personal and professional levels. She developed new outdoor skills, felt immersed in the learning about natural resource management from experts, and networked with like-minded educators. These positive experiences led her to developing into the type of educator she wanted to become: an outdoor, environmental educator.



ANR also gave her the confidence to participate in dialogue with people about nature and natural resources management. Nate also claimed a permanent, life-changing effect from ANR. He stated, “It became part of my life. It changed me for the better.” Amy felt “more connected to EE and the education world in general.” The eight individuals also expressed sharing these experiences with others: family, friends, students, and customers/visitors in the workplace.

Brennan (1979) described environmental education as the education aiming to develop a sense of interdependence with all life forms and a recognition of their responsibilities to ensure the environment remains fit for life and fit for living. This can lead to an awareness and understanding toward the importance of interdependence and thus having a concern regarding social-ecological benefits and a healthy environment. EE programs also emphasize the importance of understanding environmental change (Ardoin et al., 2013). Positive social behaviors could be observed as long-term and short-term. The positive emotional behaviors have caused the participants to feel connected with the environment and at the same time have attentive and curious reactions toward environmental concerns. As found in the study, positive emotional effects are related to the findings of Ardoin et al. (2013) in that understanding environmental change can also be equated with performing actions toward remediating environmental issues. Some participants even had the voluntary willingness to impart their knowledge to other people who did not participate in the EE programs. EE programs often convey current scientific data, such as biodiversity statistics or status of natural resources in a region to help inform the participants. In so doing, a stronger or more meaningful connection can be

made to the issue. EE programs promoting a deeper connection to nature will often lead to actual conservation behavior (Frantz & Mayer, 2014). Discovering this awareness, experiencing the issue first-hand, witnessing how to teach it effectively, and participating as a student can create positive emotional feelings through increased efficacy. Based on the results of the study, the positive emotional effects have been experienced by the participants, and they mainly attributed these emotional effects to the EAE PD.

The positive emotional effects are also related to available literature stating that unlike other subject domains, EE aims to transcend just teaching knowledge to transform students' meaningful and complex understanding of their personal and collective roles and duties within ecosystems (Ardoin & Heimlich, 2013; Roczen et al., 2014). It can be said that transcending mere knowledge of environmental awareness is a positive emotional effect. Whittmer and Johnson (2000) discovered in their account of the Audubon Expedition Institute that experiential education is an essential element of EAE. The findings of the study can be interpreted as having emotional effects as a form of experiential learning that goes beyond theoretical knowledge. EAE programs also promote the importance of socialization in adult education and values of "justice, fairness, equity, equality, and collectiveness" (Clover et al., 2013, p. 12). This description proposed by Clover et al. (2013) may be confirmed by the third theme through the positive emotional effects the PD helped develop or foster.

The fourth theme of the study focused on the topic of changing behaviors that impact the environment. Clover et al. (2013) indicated this type of deep thinking can result in risk-taking, empowerment, and transformation. This idea has been affirmed by

the transformation and empowerment of the participants in terms of an environmental stance developed or deepened through the changing behaviors of an individual. Research in this area revealed that environmental problems were intertwined with social, political, economic, and cultural issues (Clover et al., 2013; Fleming, 2009; Haugen, 2010; Lange, 2010). Transformation based on the experience of the participants include being able to develop heightened attention to the environment and the things that can negatively impact it.

Since the EAE PD experience, five of the eight participants reported they pay more attention to their potential impact on the environment. The transformation of the participants included their voluntary decisions to always choose the decisions that will benefit the environment. Transformation begins with individuals questioning and changing the way they see their place in the world (Bush-Gibson & Rifret, 2010). Jen started to consider interconnections of living things and instituted recycling and more outdoor play at her entire school. Bonnie implemented a recycling program in her school and began spending more time outside with students and teaching about interconnections and niches. Kristy now thinks about her behavior and its impact on the watershed; she no longer uses weed killer on her lake front property. ANR reinforced Amy and Paul's existing environmentally minded behaviors. The participants of the study have affirmed that a transformation often needs to occur to ensure the mitigation of any environmental concerns that are collectively affecting these individuals.

The way of thinking can affect the environment (Ardoin et. al, 2013), as confirmed by the points of view of the participants. The desire to conserve the

environment will lead the participants to focus on the environmentally sound decisions instead of acting in an apathetic manner. Mezirow (1991) emphasized discourse and dialogue to conjure a critical assessment of a situation prior to making decisions or changing one's mind. The findings of the study confirmed that the mind is a powerful tool in making life choices that will become beneficial to the environment. If one's habits or habits-of-mind become changed due to new experiences, then a transformation may be underway (Kucukaydin & Cranton, 2013). Individual transformation also included the ability to reinforce responsible behaviors such as reducing your household's carbon footprint or recycling can be done at the individual level. The current study is consistent with the available literature that the transformation in the environment is linked to the habit-of-mind of the individuals.

The fifth theme pertains to the experiences of the EAE PD location. Based on the responses of the participants, the EAE PD provided them the lived experience or immersion into a natural setting while studying and interacting in it thereby enabling them to apply more into their classroom in the future. Each participant in the study expressed the setting was conducive to their learning. Having an extended residential PD amongst diverse, natural habitats provided a place to witness and practice topics presented in the PD. Exposure to these settings allowed for the educators to experience nature, ecology, and natural resource management practices. The educators could translate the experience to fit their workplace location and teaching needs. This finding affirmed the study conducted by Ardoin and Heimlich (2013) which claimed that the locations where environmental education is implemented had transformed the experience

toward a more complex understanding of personal and collective roles in environmental protection.

Warren et al. (2014) found that at the core of experiential learning are the three concepts of flexibility, participation, and contextualization. This was confirmed in this study, given the contextualized and specific experiences of the EAE PD location. Amy stated that ANR was like “summer camp for educators.” The relaxed atmosphere provided an escape from daily lives to let their guard down, allow time to learn new things, meet like-minded people, to find inspiration to generate new ideas for presenting ecological and natural resources topics. Four participants reported the PD setting as a relaxing atmosphere that also included the demeanor of the staff. Considering the location and topics discussed, spending time outdoors and at least learning experientially are ideal. The varied facilitators brought in throughout each day were allowed the flexibility to utilize these resources as they saw fit. Two participants acknowledged the various opportunities to interact with different people throughout the day – in the designated track attended during the day, in the dining hall/picnic area, after hour’s activities, and in the cabins. Those who participated in these situations and potential conversations with new people had increased opportunities for learning experientially. Contextualizing what was presented was simple and powerful by stepping outdoors at the facility or driving a short distance. All participants of the study shared these sentiments when reflecting on the overall reaction to EAE PD experience. The EAE PD location became an avenue of awareness for natural resource management.

### **Limitations of the Study**

The current study had several limitations. One of the limitations was related to the sample used in this study. The sample of the study only focused on educators with actual lived experiences of an EAE PD from at least 5 years ago. Thus, the limitation of the study was that other educators were excluded. This prevented educators from participating who have received recent knowledge and experiences with the EAE PD and those with no experience who may have differing perspectives on environment education programs. Another limitation was the reliance on the participants' self-reported data. Self-reported data is limited by the fact that it cannot be verified independently. The self-reported data was dependent on the accurate recall of the participants. The participants may not have remembered the events accurately, believed some events happened at a specific time and place when they took place at another, attributing positive or negative experiences to potentially inaccurate accounts of events, and exaggerating outcomes or impacts of the EAE PD on them.

Further, the setting of the study also presented a limitation of the study. The generalizability of the study's results may have been affected by the setting as it was limited to programs in one Midwestern state. The results from this study may not be applicable to PDs offered in other states. Another limitation may be related to researcher bias. It is noteworthy that I have been involved in EAE since 1999 and have networked and partnered with many people and organizations in the field through the years. Furthermore, I have been associated with, but not employed by ANR since 2013. These types of associations could lead to unintentional bias in the research.

## Recommendations

The recommendations that emerged from this study were influenced by the method and the results. A future study could consider a larger sample to enhance the generalizability of the study's results. Conversely, the study could examine a particular audience to explore experiences or determine differences – such as formal and non-formal educators, primary and secondary educators, or urban and rural educators. Further, future studies may consider using the same method, research questions, and sample but in a different state to incorporate their natural resources and outreach techniques for educators.

A different method such as quantitative or mixed methods may also be beneficial. A quantitative method would allow for a larger sample and to consider correlations and any significances between variables or treatments. Mixed methods would allow a broader perspective of the experiences of the EAE PD. Future studies could include additional research questions to expand the results. It is also recommended for further research into the types of tracks offered within the EAE PD. In this manner, the strengths and weaknesses of the program would be better analyzed. Another focus may be on the individualized and collective effects of the program. There may be striking differences in the achievement of conservation and environmental goals when investigated at the individual level, or at the collective or societal level.

A PD may change over time, and a study that examines these changes through the eyes of returning participants could help identify strengths and weaknesses of the PD. A longitudinal study that examines these foci could reveal the uses of the knowledge and

skills attained in the PD. Mezirow (2009) recognized that a person realizes a transformation has taken place after time is spent reflecting or discussing an experience. Including outreach to past participants years later could help them reflect critically on their experiences at the PD to identify what was gained. EAE PD developers could strengthen overall EE goals and objectives with the information gleaned from such studies. From the current study, EAE PD developers could utilize the themes that emerged to build future experiences for educators.

### **Implications**

The EAE PD experiences of the eight participants had an impact for positive social-ecological change at many levels. Individually, participants experienced growth by acquiring new knowledge and skills, and greater efficacy in discussing natural resource management and conservation. As educators, they can now share this information confidently with many audiences with the possibility of those individuals in turn sharing the information. This can promote social-ecological change through enriching, not only their knowledge, but also others' ecological knowledge which can be translated into practicing positive environmental behavior. The participants seemed to act with a greater social-ecological perspective to work toward creating a more environmentally aware citizenry. Nate and Paul noted becoming concerned about their daily carbon footprint, and shared actions taken to compensate such as raising student awareness and planting more trees. Jack used the multiple EE curriculum support guides for messaging about invasive species and tree diseases. For Bonnie, Kristy, Tara, and



Nate the EAE PD altered their career path to focus more on teaching about ecological relationships and natural resources management in an outdoor, experiential approach.

The findings of the study will promote progress in EAE research and practice by identifying the salient memories of the participants years after a PD. Considering the demographics and setting of the EAE PD, the lived experiences of the participants could be applicable to similar situations within one Midwestern state. Further, any possible shortcomings identified by the participants will be helpful to the administrators to address the future needs of the stakeholders. The findings of the study may aid in advancing best practices for raising environmental awareness in adults and conveying those messages to other audiences. Adults as decision makers who have this knowledge can work toward the necessary environmental action in applicable political scenarios. The results of the research may also improve similar EAE programs and could provide insight for EAE PD developers or future research in EAE.

Practical contributions of the study could help expand and positively develop PD experiences with an EAE framework to maximize the likelihood of participants' applying the knowledge and skills to a field-based scenario and educational setting. The themes and supporting data that emerged from this study may allow others a variety of ways to analyze how EAE program material is applied, how it can be improved, and future applications of EAE. There could be positive changes in terms of material implementation, EAE program participation, and program commitment. The use of Liddicoat and Krasny's (2013) interview guide provided an instrument model for this study and could be used in other circumstances. The modified questions provided a

broad perspective encompassing many possible experiences of the participants. Having a social-ecological perspective could benefit society through the age of globalization and climate change.

The findings of the study may also lead to significant social change. The developers and facilitators of EAE programs may obtain the knowledge from the results of this study and could have benefits outside the PD setting. Natural resource managers may discover means for educating the populace in a more meaningful and impactful way. Having similar experiences offered to the general public as exposure to why, what, and how natural resource scientists conduct their jobs could help clarify and gain support of their objectives. Additional programs with a social-ecological approach may emerge based on the findings and conclusions of the study. Programs with a specific outlook on, and consideration of the interconnectedness between humans and the landscape can be developed. The citizens and other stakeholders will also have a more positive outlook in terms of the importance of the environment and social-ecological approach. Prospective uses will be based on existing EAE program applications in stewardship or citizen science projects and visions from natural resource managers of how to work with the citizenry in a cooperative social-ecological approach. The participant responses revealed that the EAE PD allowed them to have renewed thoughts on helping the environment such as consciously choosing the actions that will not harm the environment and becoming a voice of knowledge and experience to help educate others.

## Conclusion

This qualitative study focused on interviews to achieve an overall view of the experiences of the educator participants who attended an EAE PD taken at least five years previously, and to understand how the participants acted with the knowledge and skills they gained from the PD. One-on-one, semi-structured telephone interviews were conducted with eight educators who had attended an EAE PD more than five ago, with an emphasis on natural resources conservation. The RQ was: What were the experiences and reflections of participants of an EAE PD workshop held at least 5 years prior as they continue to practice ecological and environmental education in the present? Based on the results of the study, five major themes emerged, including: (a) becoming a more effective educator; (b) becoming more aware of the importance of conservation; (c) experiencing positive emotional effects; (d) changing behaviors that impact the environment; and (e) experiences of the EAE PD location. The results of the study confirmed available literature that the program has helped the participants become more effective educators through outdoor, experiential means and by having a heightened focus on the importance of the conservation of our natural resources. Corresponding with Clover et al.'s (2013) view of all EE practices, the EAE PD in this study fit the lens of adult education best practices on a personal and socially transformative level. The professional growth was enhanced by the emotional growth that transpired.

The atmosphere in which the PD took place provided a positive, inclusive, and serene setting conducive to supporting positive social-ecological change in the participants' lives and potentially in their student's lives. Developing a positive

experience for EAE PD participants while immersed and engaged with topics outdoors are key to developing salient memories and changing perspectives. The immersion requires educators fully experiencing the subject in situ while carrying through the activities their potential students would execute. Regardless of whether the participants were formal or non-formal educators, the EAE PD had a positive social-ecological impact on them through the years.

The experiences of the participants transformed their perception and understanding of natural resources conservation and translating it into a personalized, experiential teaching method. Six of the participants attribute ANR for helping them develop a conscious focus of making ecologically sound decisions. All eight individuals in the study were determined to make a positive change in their teaching based on the experiences and content gained at ANR. They expressed a passion to share this with their students, family, and friends. This can create a broader network of people who are consciously making decisions for the environment. Considering the salient memories of the participants, by offering EAE PDs with effective EE strategies and current natural resources conservation topics in an extended, relaxed natural setting may help lead to positive social-ecological change we need to make a positive difference in political arenas that take into account the sustainability of our natural resources.

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## Appendix A: Interview Protocol, Introduction, and Interview Questions

Interviews can be a challenge because of the number of sessions that may need to take place, and the concern for potential inconsistencies that may occur during the interviews. To help minimize these challenges, the following steps assisted in creating a non-threatening and systematic approach.

### Protocol

- ❖ Technology for the telephone call and the audio recorder for the interview will be tested. The telephone call will take place in a quiet and private area. Hands-free technology will be used to allow for note taking. Testing of voice clarity on the telephone and any potential background noises that may be heard will be tested. The audio recording of the interview will occur as a reference for the transcribing process.
- ❖ Questions will be typed in a Microsoft Word document to allow notes to be taken during the interview to emphasize important points or thoughts I have throughout the interaction.
- ❖ The interview questions utilized will be shared with others to receive feedback and help prepare for the interview.
- ❖ For the interview, establishing a calm and open rapport with the interviewee will set the tone for the interview.
- ❖ The reason for and the uses of the study will be explained clearly to the interviewee to ensure he or she understands my intent.
- ❖ Relevant background information about me as the researcher will be provided.
- ❖ Let them know about the confidentiality policy and the right to withdraw from the study.
- ❖ Due to the nature of a telephone call, thoughtful, but not overly expressed sounds of understanding or interest will be made.
- ❖ Notes will be taken when necessary. Responses will not be typed during the interview because of the potential of causing a noisy distraction.
- ❖ Ask if the person has anything else to add to the conversation.
- ❖ Thank them for participating in the study.

### Introduction

- ❖ Thank you for agreeing to the interview.
- ❖ I am a PhD candidate in education at Walden University, specializing in environmental adult education leadership. The purpose for the interview is to explore the experiences of a professional development workshop from at least five years ago that focused on natural resources education for educators. The emphasis for today's interview will have you reflect on the salient memories from experiences in the past workshop.
- ❖ Your name will remain anonymous, and only I will know your identity.
- ❖ There are no known risks or discomforts associated with this study.

- ❖ The results obtained from the interview will be used in formal reports and may be submitted to scholarly journals, EAE program directors, and/ DNR reports.
- ❖ You should be aware that you are free to decide not to participate or to withdraw at any time.
- ❖ The interview will take approximately 60 minutes, and I will be audio recording the interview to help me with the transcription process afterward.
- ❖ Do you have any questions regarding the process?
- ❖ Although you have previously consented to participate via email, do you still give consent to proceed?

### **Interview Questions**

The following questions are based on Liddicoat and Krasny's (2014) "interview questions related to perceived program impact and use of memories" (p. 184). The primary changes in the wording was the location of the experience, focusing on the state rather than national parks or federal concerns,

1. What was your overall reaction to the [EAE PD]?
2. How did your experience fit with previous experiences with EAE PDs?
3. Explain how the location of the [EAE PD] influenced your experience that week.
4. How would you describe the value of your experience at the [EAE PD]?
5. What influence, if any, did the experiences have on you personally? Socially?
6. Tell me about any influences [the EAE PD] had on your views of nature? Specific environmental issues? Conservation of natural resources?
7. Describe any changes in your own environmental behaviors following participation in [the EAE PD].
8. In what way, if at all, did [the EAE PD] change your views of State Parks? Public Lands?
9. What in particular, if anything, did you learn about natural resource management from the workshop?
10. Discuss any changes your [EAE PD] experiences may have had on your role as an educator? New academic interests? Changes in career plans?

11. If the experience [with the EAE PD] had an impact on you, was it during the experience, right after, or over the years since attending it? Explain if and how those impacts have changed over time.
  12. How often do you think or talk about your experiences at the [EAE PD]? For what reasons? With whom?
  13. If relevant, describe a specific example of something that you did or learned at the [EAE PD workshop] that you are still doing or using today? If so, explain.
  14. To close, think about all your experiences at [the EAE PD] - if you could pick just one thing that you experienced there that you hope every participant experiences today and in the future, what would it be?
- ❖ Is there anything more you would like to say or add about your experiences at [the EAE PD]?

## Appendix B: Permission for Instrument Use

Permission to use Liddicoat and Krasny's (2014) instrument, "Interview Questions Related to Perceived Program Impact and Use of Memories" was sought 9:40 a.m. on December 9, 2017. The following correspondence and ultimate permission occurred:

Greetings, Drs. Liddicoat and Krasny!

I am a doctoral student at Walden University working on my Proposal. The instrument you used in the study, "Memories as useful outcomes of residential outdoor environmental education" (2014) seems to fit very well with my research.

It is my hope that you would consider allowing me to use your instrument with modifications. Although the audience and venues would differ, I believe the data collected could help expand our knowledge about the types of things that remain salient with EE program participants.

The focus of my study is on formal and non-formal educators who participated as students at least five years previously in a five-day, professional development workshop on natural resources education. My title [thus far] is, "Experiences and Practices of Environmental Adult Education Participants".

Your instrument obviously was used in a different context, but the intent of the questions I would use would remain the same. I would mainly need to modify the type of workshop and its location. I am on schedule to complete the Proposal by the beginning of February (the end of our quarter).

Please let me know if it is possible for me to move forward with my research using your instrument as indicated. I can provide further information if necessary.

Thank you for reading and considering my request.

Sincerely,  
Cindy Fitzwilliams-Heck  
PhD Candidate, Walden University

[On 12/9/2017 at 10:20a.m.]

Dear Cindy, Thanks for contacting us. I'll leave it to Kendra to respond since she developed the instrument. Best of luck with your graduate research! Marianne

[On 12/9/2017 at 3:57 p.m.]

Hi Cindy,

Thanks for your message. You are welcome to modify and use our interview questions. I would love to hear what you learn from your study! ...  
Good luck with your study! Let me know if you have more questions as you prepare your research proposal.

Regards,  
Kendra

Kendra Liddicoat, Ph.D.