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Exploration of Environmental Adult Education Participant Experiences and Implications for Future Practices

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Abstract

Initiatives promoting environmental adult education (EAE) through professional development (PD) ensures educators have the knowledge and skills to inform their audience about environmental literacy and stewardship. However, no research has focused on reflective experiences of an EAE PD from educator participants at least five years after participation. Eight past participants were interviewed to determine whether and how they saw their performance changing in relation to natural resources conservation and how they shared these changes with others. Analysis using the contextual lenses of EAE, outdoor experiential learning, and transformative learning theories led to five emergent themes: (a) becoming a more effective educator; (b) increasing awareness of conservation importance; (c) experiencing positive emotional effects; (d) augmenting behaviors that impact the environment; and (e) having positive experiences at the EAE PD location. These findings may ignite new means for approaching curriculum specific content with heightened attention on the value of conserving natural resources.

Introduction

Concerns about the sustainability of our natural resources continue to escalate. To help address this issue, education has been identified as an effective means to inform the public about environmental literacy and stewardship (Ardoin & Heimlich, 2013; Jacobson et al., 2015). Environmental educators recently began to prioritize initiatives that promote environmental adult education (EAE), including PD workshops (NAAEE, 2016). However, the lasting effect of these types of educational efforts and workshops on the PD participants in the long-term are rarely monitored (Liddicoat & Krasny, 2013). It appears that almost no researchers have focused on the reflective experiences of an EAE PD on educator participants at least five years after participation. Currently, most of the studies on EAE workshops are quantitative and measure short-term effects.

There is a need to understand whether and how past participants see 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). Examining the participants memories years after an event can help program developers identify which elements of what they offer are most meaningful and best align with their mission and vision. The recollections and actions that remain with a person over a longer time can be classified as a significant life experience (Williams & Chawla, 2015). This essential qualitative study, conducted through interviews, serves to explore the most salient learning experiences from an EAE PD taken at least five years previously. The results help researchers understand what the participants did with the knowledge and skills acquired in the workshop.

The current research is designed in recognition of the importance to understand what improvements to the PD, if any, are still necessary from the participants' perspectives. Workshop participants' general experience, understanding of the acquired information, and application of workshop material can reveal needed improvements in certain areas. Identifying how individual workshop participants are influenced by an EAE PD may help reveal what remains salient in their learning experiences and the specific knowledge and skills they have indeed gained. Understanding the perspectives of workshop participants over time may help to determine what specific characteristics of these workshops made the most impact and in what capacity (Liddicoat & Krasny, 2013; Williams & Chawla, 2015).

Conceptual Framework

The conceptual frameworks that guided this study were Clover et al.'s (2013) EAE with a focus on outdoor experiential learning theory, and Mezirow's transformative learning theory (Mezirow 2009; 2000; 2012). Based on Clover et al.'s EAE framework, environmental education programming goals revolve around building upon participants' awareness, knowledge, skills, attitudes, and involvement to understand the environment and take informed action towards protecting the environment (UNESCO, 1977). Clover et al. viewed all environmental education practices through a lens of adult education on a personal and socially transformative level. According to Clover et al., adults taking part in outdoor activities such as nature hiking, plant identification, bird watching, map reading, among other similar experiences can predominantly develop knowledge about the natural world and help build a deeper appreciation for it. Other uses of outdoor experiential learning can illustrate the human impact on the environment that may lead to stewardship efforts in the 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 certain vital principles or philosophies behind outdoor education that can guide EAE (Clover et al., 2013). These principles 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. The premise of 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 the teacher as knowledge expert transforms into a "facilitator of experiences" (p. 33). Exposure to an EAE PD experience could result in a change in attitude, behavior, and how an individual teaches about natural resources conservation could result after (Bush-Gibson & Rinfret, 2010; Sondergeld et al., 2014). Confidence in the knowledge and skills sought can lead to empowerment or confidence and ultimately transformation.

To see whether past EAE workshop participants have experienced transformation, the transformative learning theory by Mezirow (2009) also acts as a component of this study's conceptual framework. 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 the meaning schema can have a significant 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 the 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 know whether a transformation has taken place, the researcher believed that the individual's frame of reference needs to be acknowledged, and their experiences analyzed through this frame. Transformative learning takes place when a person's problematic frames of reference become more inclusive, discriminating, reflective, open, and emotionally able to change. The goal of this study was to understand whether such transformation has taken place among the EAE PD participants after at least five years of their participation.

Research Design and Methodology

A qualitative study was deemed more capable of determining what was salient about the experiences of an EAE program on its participants instead of a quantitative approach. As suggested by Miles, Huberman, and Saldana (2014), details divulged by participants in a qualitative study may prompt additional questions from the researcher, thereby potentially enriching the content obtained. A qualitative approach helps explore 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 cannot be accomplished through the collection of numerical data to answer the research question.

Data analyzed through theme analysis allowed for a type of inquiry that could lead to a deeper understanding of participants' experiences, how EAE program material was used, and how it may help guide ideas for future applications. The researcher used a semi-structured telephone interview protocol as the main instrument. The protocol contained the questions to be asked and the guidelines to follow when conducting the interview. With granted permission, the protocol was derived from modified interview questions by Liddicoat and Krasny's (2014) instrument "related to perceived program impact and use of memories" (p. 184). Liddicoat and Krasny (2014) followed an interviewing format with a funneled, semi-structured approach. This format 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 the impact and use of memories.

However, in this study, the researcher deviated from Liddicoat and Krasny's (2014) participant population in respect to the focused community, geographical setting, and venue. Liddicoat and Krasny targeted high school students who participated in a residential outdoor EE program in National Parks in the Rocky Mountains at least five years before the study. They gathered the students' reflections of their experiences as these may help environmental educators create memories that might be used in environmental education goals. For the current study, the participants who were asked to reflect on a residential EE program experience at least five years previously were both formal and non-formal educators who participated in an EAE PD workshop. The questions used for this study were modified with regard to the audience, type of workshop, its location, and tailored it to the focused state rather than a national park (Table 1).

Participants were chosen through purposive sampling. In 2018, the Michigan Department of Natural Resources' (DNR) Education Services Manager provided the pool of participants. The participants attended workshops that were part of the DNR's Academy of Natural Resources (ANR) professional development (PD) program since 2007. ANR attracts formal and non-formal educators for a five-day, residential experiential PD set in northern Michigan. Of the 275 participants of ANR, 143 participated in the PD more than five years ago. The invitation to participate was sent to the 93 with valid email addresses. Of the desired 8-10 responses, only eight responded even after a second request for participants via email. The interview dates were made and data was collected from these eight participants.

All interviews were conducted, audio recorded, and transcribed by the researcher to ensure no details were lost. A transcript review was also used to validate the data from the interviews. Transcript review allowed the participants to review copies of their transcripts from the interviews for them to provide feedback regarding correctness, accuracy and, upon reflection, any additional information.

Table 1: Interview Questions for the EAE Participants. Exploring experiences with the Academy of Natural Resources, a residential EAE PD for formal and non-formal educators.

#	Interview Question
1	What was your overall reaction to ANR?
2	How did your experience fit with previous experiences with EAE PDs?
3	Explain how the location of ANR influenced your experience that week.
4	How would you describe the value of your experience at ANR?
5	What influence, if any, did the experiences have on you personally? Socially?

6	Tell me about any influences ANR 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 ANR.
8	In what way, if at all, did ANR 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 ANR experiences may have had on your role as an educator? New academic interests? Changes in career plans?
11	If the experience with ANR 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 ANR? For what reasons? With whom?
13	If relevant, describe a specific example of something that you did or learned at ANR that you are still doing or using today? If so, explain.
14	To close, think about all your experiences at ANR - 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?
15	Is there anything more you would like to say or add about your experiences at ANR?

Data Analysis

Analysis began with the uploading and sorting of the transcripts generated from the interviews within the NVivo 12 software. Themes within the responses were identified through thematic analysis, using the six-step protocol suggested by Clarke and Braun (2013). In the first step of the thematic analysis, the researcher conducted an in-depth review of the data to become familiar with its content. In the second step, initial codes were labelled within the data as vital descriptive words or phrases. The researcher 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, the themes were refined before they were named in the fifth step. The last stage 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.

Discussion

Five themes emerged from the study: a) becoming a more effective educator; b) growing more aware of the importance of natural resources conservation; c) experiencing positive emotional effects; d) augmenting behaviors that impact the environment, and e) having positive experiences at the EAE PD location (Table 2). Each set of findings can be analyzed in relation to previous literature and against the conceptual backdrop of the study, which is Clover et al.'s (2013) EAE with a focus on outdoor experiential learning theory, and Mezirow's transformative learning theory.

Table 2: Five Emergent Themes from the EAE PD Interviews. Frequencies and percentages show support for each theme identified.

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 natural resources conservation	38	32.20%
3. Experiencing positive emotional effects	21	17.80%
4. Augmenting behaviors that impact the environment	11	9.32%

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

Becoming a More Effective Educator

Based on the experiences of the participants, the EAE PD allowed them to become more effective educators. 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. Furthermore, hands-on instruction was seen as effective in ensuring that the goals of the curriculum are achieved. The results of the current study can be described as supporting the theory of transformative learning. 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. Overall, the supporting examples of this study's theme uphold Clover et al.'s (2013) EAE framework.

Growing More Aware of the Importance of Natural Resources Conservation

The participants noted that the EAE program had increased their awareness of the relevant conservation measures which in turn can benefit society as a whole. Clover et al. (2013) stated the environment is currently a common theme in adult education, and EAE programs play a crucial 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 that 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.

Furthering conservation awareness, the EAE PD also created increased awareness about the conservation of state parks and public lands. Environmental education helps students of any age acquire pro-environmental attitudes and values, and to promote willingness and readiness to carry out ecological action (Ardoin & Heimlich, 2013). The awareness of more students regarding an environmental movement is confirmed by the results of the current study. Most participants viewed conservation as an important topic. With the recent environmental concerns such as global warming and climate change, educators need accurate scientific data and insight on current trends in natural resources and how the data is collected and monitored. Thus, the awareness gained from the ANR PD can be properly imparted to others who have not experienced the EAE PD.

The results were not surprising given what has been previously found of environmental education. For instance, 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 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, events, or with a natural resource professional carrying out their duties.

Experiencing Positive Emotional Effects

Participants emphasized a third theme of experiencing positive emotional effects as a result of. All eight participants shared fond memories of ANR. Nobody had identified experiences comparable to this PD that created the same positive emotional reaction and professional gain. Seven of the eight participants attended ANR more than once. All eight individuals also expressed sharing these experiences with others – family, friends, students, customers, and visitors in the workplace.

These positive emotional effects were expected, given the existing literature. EE programs have been established as capable of promoting a deeper connection to nature, which will often lead

to actual conservation behavior (Frantz & Mayer, 2014). More importantly, 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 (Frantz & Mayer, 2014). According to past researchers, 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.

Augmenting Behaviors that Impact the Environment

The fourth theme of the study focused on the topic of changing behaviors that impact the environment. Clover et al. (2013) indicated that this type of deep thinking could result in risk-taking, empowerment, and transformation. This idea has been affirmed by the transformation and empowerment of the participants regarding an environmental stance developed or deepened through the changing behaviors of an individual. Research in this area revealed that ecological problems were intertwined with social, political, economic, and cultural issues (Clover et al., 2013; Fleming, 2009; Haugen, 2010). Transformation based on the experience of the participants includes 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 always to 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). 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. If one's habits or habits-of-mind become changed due to new experiences, then a transformation may be underway (Kucukaydin & Cranton, 2013).

Having Positive Experiences at the EAE PD Location

The fifth theme pertained to the impression or impact 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 that the environment 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 the participants to experience nature, ecology, and natural resource management practices. The educators could translate the experience to fit their workplace location and teaching needs even if their classroom or workplace did not have access to a similar setting. This finding affirmed what Ardoin and Heimlich (2013) claimed, which is that locations where environmental education is implemented could transform the experience toward a more complex understanding of personal and collective roles in environmental protection.

Additionally, Warren et al. (2014) found that at the core of experiential learning are the three concepts of flexibility, participation, and contextualization. This was supported in this study, given the contextualized and specific experiences of the EAE PD location. A participant claimed that the experience 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, and to find inspiration to generate new ideas for presenting ecological and natural resources topics. Moreover, the participants reported their satisfaction over 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 hours 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 made simple and powerful by stepping outdoors at the facility or driving a short distance. The EAE PD location became an avenue of awareness for natural resource management.

The findings of the five emergent themes were further summarized and analyzed in relation to previous studies (Table 3). Through this analysis, a summation of the interpretations emerged regarding the PD atmosphere and participant experiences (Figure 1).

Table 3. Interpretation of Findings. An interpretation of the five emergent themes with a closely associated study demonstrating support of the claim.

Theme 1	<p>Educators often claim a lack of experience or efficacy in teaching about the environment, ecological connections, or the conservation of natural resources <i>Sonderaeld et al. (2014)</i></p>
Theme 2	<p>Environment is currently a common theme in adult education <i>Clover et al. (2013)</i></p>
Theme 3	<p>Understanding environmental change can also be equated to performing actions toward remediating environmental issues <i>Ardoin et al. (2013)</i></p>
Theme 4	<p>Deep thinking can result in risk-taking, empowerment, and transformation <i>Clover et al. (2013)</i></p>
Theme 5	<p>Locations where environmental education is implemented had transformed the experience <i>Ardoin and Heimlich (2013)</i></p>

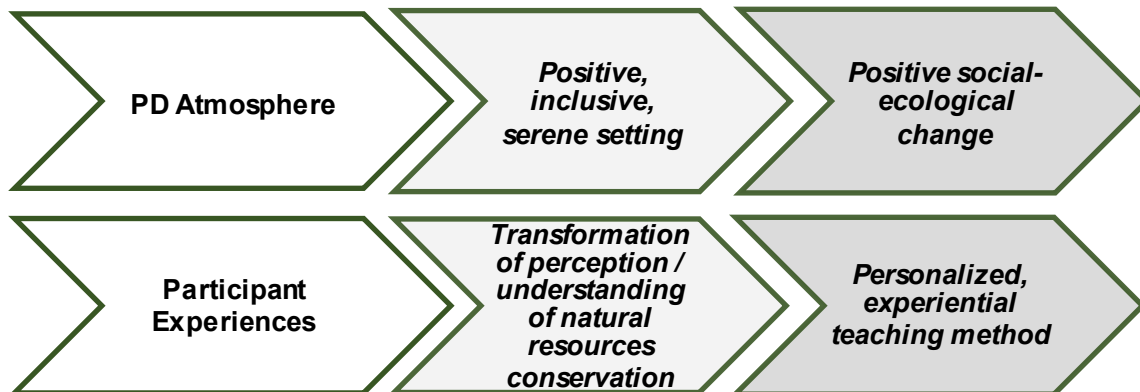


Figure 1. Summation of Interpretations. Interpretations of the findings involving the PD atmosphere and participant experiences.

Implications

The EAE PD experiences of the eight participants can be used for initiating positive social-ecological change at many levels (Figure 2). Individually, it could be said that the 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 own 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.

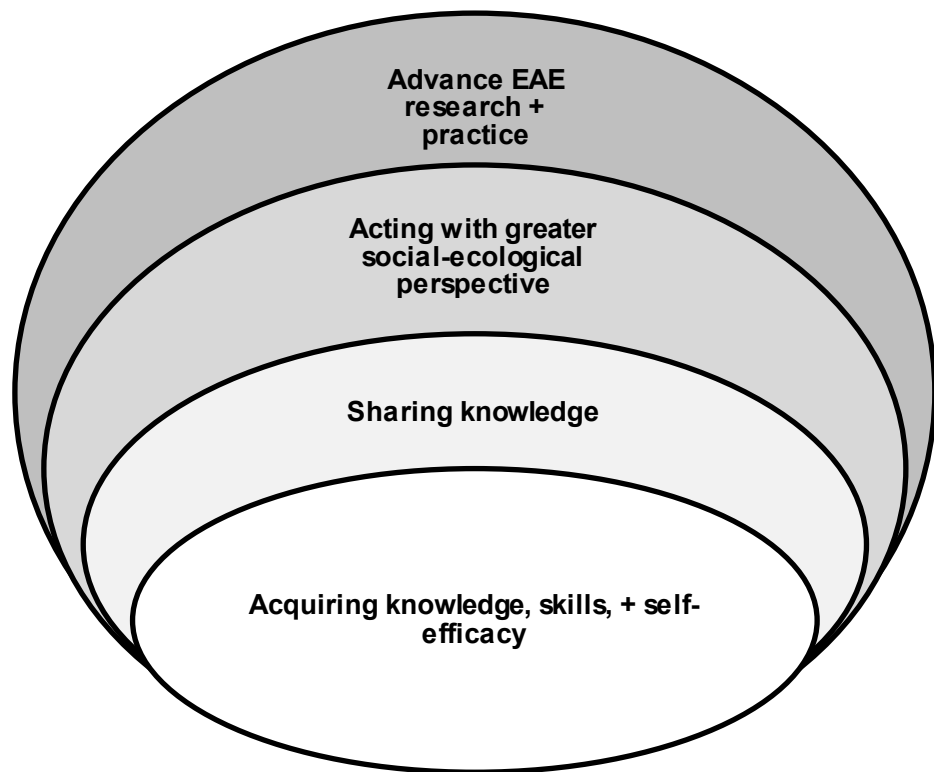


Figure 2. Implications of the Study. Experiences of the eight EAE PD participants had an impact for positive social-ecological change at many levels.

The five emergent themes of this 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 studies in EAE. Developers and facilitators of EAE programs can now use the findings to discover means for educating the populace in a more meaningful and impactful way. Programs with a specific outlook on and consideration of the interconnectedness between humans and the environment can be developed. Such programs can reinvigorate people's 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.

Despite these implications, the current study had limitations. First, the sample of the study only focused on educators with actual lived experiences of an EAE PD from at least five years ago. This limitation prevented educators from participating who have received recent knowledge and experiences with the EAE PD. Another limitation was the reliance on the participants' self-reported data. 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.

The generalizability of the study's results may have been affected by the setting as it was limited to the state of Michigan. The results from this study may not apply to PDs offered in other states. Moreover, it is noteworthy that the researcher in this article has been involved in EAE since 1999 and has networked and partnered with many people and organizations in the field through the years. Furthermore, the researcher has been associated with but not employed by ANR since 2013. These types of associations could lead to unintentional bias in the research.

Recommendations

This study offers baseline data to continue work with the EAE PD and ideas for broadening the scope of the research (Figure 3). Future studies 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. Future researchers may also consider doing the same study 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 study would allow for a larger sample and to consider correlations and any significance between variables or treatments. Mixed methods would allow a broader perspective of the experiences of the EAE PD. It is also recommended to 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 against 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 the strengths and weaknesses of the PD.

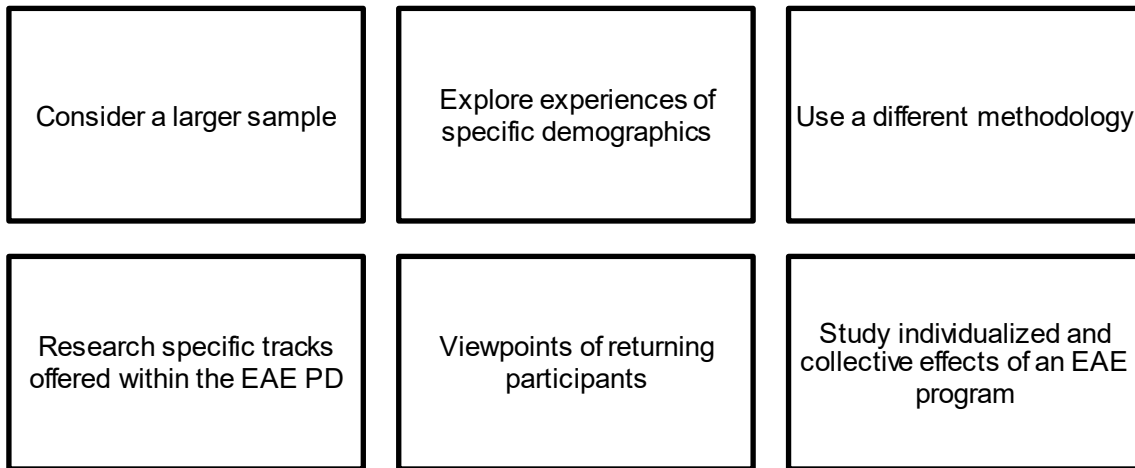


Figure 3. Future Recommendations. Ideas for building upon and/ broadening the scope of the current study.

Conclusion

Developing a positive experience for EAE PD participants while immersed and engaged with topics outdoors are key to developing salient memories and changing perspectives. An effective immersion is one that requires educators fully experiencing the subject in situ while carrying through the activities their potential students would execute. Based on the current study's findings, 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 as they experienced a transformation in their perception and understanding of natural resources conservation and translating it into a personalized, experiential teaching method. Participants also expressed a passion to share the PD experience with their students, family, and friends. As such, more of these workshops may be beneficial. This can create a broader network of people who are consciously making decisions for the environment, equip workshop participants with effective EE strategies, and impart to them knowledge about current natural resources conservation topics in an extended, relaxed natural setting. Overall, these programs may help lead to positive social-ecological change in the world that takes into account the sustainability of our natural resources.

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