

The purpose of this research study is to better understand the long-term effectiveness and implications of place-based environmental and science education, on pro-environmental attitudes, beliefs and behaviors. The approach for this research is methodologically grounded within significant life experience (SLE) and autobiographical narrative research, and will thus be qualitative in nature. Significant life experience research looks to explore what formative life experiences have shaped current adult attitudes, beliefs and behaviors by using adult autobiographical memory, narrative and critical reflection. Few significant life experience studies have looked at the long-term impacts of specific environmental education programs on participants related to the influence such experiences have on environmental stewardship behaviors. This study will look to build on the existing, but limited, understanding of such program impacts as it relates to place-based environmental and science education.

What is known within significant life experience research as it relates to the natural environment is that many adults who have chosen environmental career fields such as environmental activism, conservation, or education, or who consider themselves environmental stewards, credit childhood experiences in nature for their current pro-environmental attitudes, beliefs and behaviors (Arnold, Cohen & Warner 2009; Cachelin, Paisley & Blanchard 2008; Chawla 1998, 2007; Chawla & Cushing 2007; Thompson, Aspinall & Montarzino 2008; Wells & Lekies 2006). The breadth of experience ranges from regular, everyday interaction with nature and the outdoors to a one-time outdoor adventure with an influential mentor or caregiver (e.g., parent, teacher, caregiver). Other findings reveal that participants also credit negative environmental experiences, such as witnessing a favorite natural area razed for housing or commercial development, as influential in career path choice, attitude and behavior as a means to prevent such events from recurring.

Of particular interest to this study, research findings also show that environmental and science education is one of the least credited significant life experiences and there is limited research that demonstrates that it has long-term impacts on attitude, belief and especially behavior. Environmental education programs, however, center their mission on increasing awareness and pro-environmental stewardship among participants. The findings from previous significant life experiences research suggest a gap in understanding the role environmental education has played in long-term stewardship behaviors. This research project will aim to gain a better understanding of the nature of this missing piece.

Currently, many public and private schools and especially higher education institutions around the United States are reviewing and updating their approach to education and curriculum in order to increase sustainability and environmental awareness among students, faculty and campus community. Until we better understand the implications of such an educational approach, our collective efforts may not have the lifelong resonance which we hope to achieve.

Critiques of existing research on significant life experience in environmental education point to the following major limitations of existing findings (Chawla 2001, 2006; Gough, A. 1999; Gough, N. 1999; Payne 1999):

- Lack of diversity (age, gender, ethnicity)
- Lack of comparison groups
- Lack of measurable outcomes to be applied to curriculum
- Need for generational sensitivity that improves on changes in experience
- Need for interdisciplinary approach to methods and theoretical framework
- Need for a combination of quantitative and qualitative research
- Need to look outside of environmental activists, professionals, or educators
- Consideration of situated learning/communities of practice in which SLE took place

This research study will aim to address the points above by: seeking participants of varying age and gender; seeking a comparison group; evaluating relevant program elements; being sensitive to generational changes in experience; exploring an interdisciplinary approach to methods and theory (e.g., sociology, geography, planning (built environment), psychology); combining quantitative and qualitative methods; not precluding participants based on adult career; and, considering the influence of place and community within the participants' significant life experience.

METHODOLOGY

Study Population: The study population will consist of Thorne Ecological Institute program alumni and University of Colorado Science Discovery program alumni. Using the existing database and institutional memory of past participants in both programs, the population will be selected based on years since program participation (e.g., 5 years; 10 years; 15 years; 20 years). A sample size of 50

from each program will be targeted for the survey portion of the study, while the interview participants will be selected from the survey sample size, with a target population of five from each program.

Study Proposal: This research study aims to better understand if place-based environmental education programs, such as Thorne Ecological Institute, have or can have a lasting impact on the lives of its participants based on current adult attitude, beliefs and environmental stewardship behaviors. Guiding research questions will include: Are place-based environmental and science education programs effective in communicating, educating and shaping life-long environmental stewardship behaviors? If so, how? (e.g., teachers, outdoor/hands-on experience, peers?). If not, why? Does it matter if the program is explicitly linked to the study of nature and the environment? Were participants' career choices shaped by the influence of these programs? How did the community (i.e., Boulder County) in which these participants lived contribute to this experience? Thorne Ecological Institute holds 50-plus years of nature education within Boulder County, Colorado while the CU Science Discovery program has been an established science education program for 23 years. While this study is interested primarily with the implications of significant life experience within nature and environmental education programs, the Science Discovery program will serve as a comparison group, as some of the programs offered over the past two decades were not explicitly related to education on the natural environment (e.g., engineering, physics, astronomy). The comparison between the two types of programs will serve as an integral piece to the research approach and potential findings by exploring how different approaches to environmental education or science education influence lifelong pro-environmental awareness and stewardship behavior.

Study Location: The research and study team will be located in Boulder County, Colorado. Surveys will be mailed to each program's list of alumni and interviews will be conducted either in-person or by phone.

Survey and Interview Methodology: Surveys will be mailed to identified past program participants to solicit information about program effectiveness on pro-environmental attitude, beliefs, behavior and current profession. The surveys will ask if participants are interested in participating in a follow-up interview and if so, to provide appropriate contact information. The interview participants from each of the groups will be selected from the survey responses and willingness to participate. It is my hope that the interview selection can be done randomly to control for researcher bias, but will

depend on the number of survey responses. It might be possible to select interview participants based on their survey responses (e.g., response to attitude, belief, behavior, age and gender – to understand a variety of respondents and what worked? What did not work for them? Did the program simply not affect them?).

The interviews for Thorne participants will likely be conducted in an outdoor setting similar to the program setting which was out-of-doors. For Science Discovery participants, the interview location will likely be on campus or in similar venue to the program setting, all of which is dependent on the participants' current geographic location. Long distance phone interviews will certainly be required in some cases. The approach to this type of place-based interview in a location familiar to the participants may help to trigger autobiographical memories of program experiences and can help to provide the participants with a more comfortable setting (Clarke & Hoggett 2009; Evans & Jones 2011).

Study Timeline: Fall 2011; Spring/Summer/Fall 2012; As a third year doctoral student, my focus will shift purely to research. Data collection will begin once I receive confirmation from both my committee and the Institutional Review Board, as early as late Fall 2011. I will also be working collaboratively with each program to establish a database of past program alumni. I plan to have the survey tool completed in Fall 2011 so that mailings can begin as soon as approval is granted. Following receipt of completed surveys, I will then begin to conduct interviews with willing participants. Evaluation of completed surveys will lead to interview participants and the preliminary analysis of survey data. Interview data, however, will require transcription and coding of text, which is time intensive, and the preliminary results will follow late Fall 2012.

Study Evaluation: The purpose of this study is largely exploratory and the evaluation of study “success” hinges entirely on the overall willingness and participation of program participants and subsequent collection and analysis of survey and interview data. The deeper understanding that could be gained from this study for how such place-based, hands-on programs affect participants and, in turn, their respective communities, can ultimately lead to the generation of programs and supportive curriculum suited to making science education influential on lifelong learning, attitudes, beliefs, and behavior.

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