

EE/ES Research Trends in the United States

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If I had to summarize contemporary EE research mandates and foci within the U.S. in one word it would be "accountability." In the formal education arena (schools, universities, training programs), accountability is tied to standardized, high-stakes testing and productivity. In federal agencies, land-management agencies and organizations, not-for-profits, and all the free-choice learning settings (e.g. parks, zoos and aquariums, nature centers, museums – see Falk, 2005), accountability takes on a slightly different meaning. For agencies, accountability is the degree to which education directly contributes to the reduction in pollution or the increase in positive indicators of environmental health. For the educational organizations or NGOs, accountability is tied with education leading to continued or increased support for missions, implementation of desired outcome behaviors, or contributing to the mission of the organization beyond its borders. In all three views of accountability, research and evaluation studies are driven in a dramatically different direction than some of the basic research would dictate. Ultimately, we are seeing a major shift in EE from an internal view of contexts, risk, and reflection (i.e. from the perspective of what happens to the learner or individual in the process) to one of EE as a means of mediating change in others leading toward achieving the goals of the organization (O'Donoghue and Russo, 2004). What follows are descriptions of some of the many areas of current inquiry in the EE community of the U.S. and to a smaller degree, North America. These statements are not comprehensive nor do they reveal what current research is finding. These ideas are presented in the context of understanding the study of how our programs lead toward outcomes desired by dominant stakeholders – government, schools, communities, agencies, and NGOs – through studying what programs are, how they are constructed, how they work, how they affect the learner, how they affect society, and how they lead to change.

Formal Education

Within the formal education system, environmental education must demonstrate how it contributes to student growth and maturation and more importantly how it directly supports the goals and test scores of the educational system. To this end, much of the current research in formal education ties environmental education programs generally to science education standards and outcomes. Although environmental science does draw together the different science branches, it does not necessarily focus on the critical thinking, humanities, and arts components also important to EE (Taskin, 2003). The danger of seeing this as EE is that it limits EE's purpose to meeting science goals to justify its existence in formal school systems (Levermann, 1992). Gruenewald (2004) cautions that institutionalizing EE within the general education system works against the field's own socially and ecologically transformative goals. Many aspects of formal EE studies in the U.S. are providing important insights into learning, teaching and the exchange. Following are some of the broad areas that might not be as easily recognized in traditional classroom-based research.

- Action Research. Action research places EE in the context of education and social change (Stapp, 1996). Although not for all teachers (Menter, 1996), action research can provide a framework for environmental education's goals in schools (Lewis, 2004; Mordock and Krasny,

2001). Research on action research is increasingly being conducted in EE to explore deeper connections of individuals to their learning, communities, and other school subjects.

- **Cultural Relevance.** EE can reveal, sustain, and celebrate the varied cultural traditions and connections of learners to their environment (Grass, 1994). Some researchers are interested in understanding how environmental problems or issues are tied to the cultures from which they emanate (Marouli, 2002; Saul, 2000). Others are looking for factors that influence racial diversity in the field (e.g. James, 1996; Hilton, 1999; Rivers, 2003) and in those engaged in EE programming (Armstrong, 1997; Hilton, 2003; Jacobs and Reyhner, 2002; Lewis and James, 1995). An entire area of study related to ecofeminism emerged in the 1970s and remains an important contributor to understanding learning about the environment as it provides a framework for studying the intersect between human and environmental factors (Henderson, 1997).
- **Experiential Education.** A strong intersect exists between the practice of environmental education and the field of experiential education (Luckmann, 1996). Experiential education allows us to teach environmental education within specific contexts related to the learners (Smith and McGinnes, 1995) to help them understand complex environmental issues and increase impacts on pro-environmental behavior (Ewart, 1996). Adults as well as youth prefer experience and task centered learning (Wright, 2000) which is a goal of experiential – as well as environmental – education. Regardless of age, learning has an active side that changes the objective conditions for the experience creating learning as a transaction between the individual and their environment (Kraft and Kielsmier, 1995).
- **Place-based education.** One consistent desire in environmental education is to provide meaningful, contextual experiences in both natural and constructed environments so learners become both academic achievers and good citizens (Leo-Nyquist and Theobald, 1997; Loveland, 2003; Woodhouse and Knapp, 2000). How it is possible to use the local environment as a forum for fieldwork, research, service projects, and entrepreneurial enterprises is an important aspect of place-based education research (Null, 2001). Place-based education (or sense of place education) uses natural and cultural history (Orion Society, 1999) to help generate emotional connectedness in the learners (Sobel, 1997).
- **An important movement in research and educational institutions is the “greening campus” effort led by organizations such as Second Nature.** David Orr and others (e.g. Berheim, 2003; Browning, 2003; Carroll, 1999) examine how to better educate students in sustainability through making the systems in which they study sustainable. Green buildings, purchasing, cleaning, and campus programs are all part of the applied research focus.

Non-formal/informal

The vast majority of an individual’s life is spent not in school, university, or formal training (Heimlich, 2005) and, as humans are by nature a learning being (Bloom, 1976), one of the growing areas of study in EE in the U.S. is that of the free-choice or informal/nonformal) learning.

- **Free-choice learning.** Most of what a person learns throughout life is self-motivated and guided by the needs and interests of the learner. People engage in free-choice learning through the use of museums, libraries, parks, television, newspapers and books, when conversing with friends and family, and increasingly, through the Internet. (Falk and Dierking, 2002) This important type of learning is undervalued and poorly understood, especially in terms of EE (Falk, 2005). The basic human drive to know and understand that which is around them is a factor in free-choice

environmental learning (Meyers, 2005) and by far the majority of what a person believes, knows, or thinks about the environment is shaped by free-choice rather than formal learning (Heimlich, 2005).

- **Adult Environmental Learning.** In many cases, there is a disconnect between what we claim environmental education to be and what many adults understand as 1) "education" and 2) environmental education versus nature study or environmentalism. The perceptual dilemma for some was generated by the dominant approach to learning as defined by formal educational systems (Sears and Kessen, 1964). On the other side of the teaching/learning exchange, Mathews (2002) suggests that incidental and even informal learning is not of interest to many educational professionals who are more interested in examining instruction-learning process including selection, arrangement, and delivery of information in an appropriate setting and the way the learner interacts with the environment. The vast majority of adult publics perceive environmental education as a body of knowledge and absolutes based on their prior experiences as preadults (Heimlich, 2005) so adult EE has a primary focus on improving quality of life – whether through use of environment for literacy, empowerment, transformative learning, or application to daily life and sustainable living (Daudi, 2000; Hauteccour, 2002). Joyce and Weil (1980) suggest learning should be structured to aid individuals in achieving a fully functioning state where the ideal and the real selves meet – the learner's capacity to deal constructively with life is respected and developed. Adult education can address both the natural and the human-caused issues of the environment as a learning priority with the "complexity of environment becoming the text to be continually reread and interpreted, constantly helping people to build and rebuild themselves (Orefice, 2002).
- **Citizen-science.** One of the growing movements, and therefore areas of inquiry in terms of efficacy, is that of citizen science. In the classroom, citizen science is often teachers conducting their own research and then using the data to improve their classroom performance (Shepardson et al. 2003). More generally, citizen science is the continuous, integrated, and sequential programming of engaging individuals in gathering meaningful data used for scientific inquiry and relies on its accountability (and the focus of much of the research) in the development of the data gathering rigor (Vacoob, Brantly and Whiteford, 1996)
- **Community-based Education.** As much of non-school learning is based on what people need to live their lives, there is a significant transformative purpose in community-based educational programs (Clover et al. 2000; Boyer and Michael-Roth, 2005). Community-based education occurs in a variety of settings with a wide variety of foci (Bruening, 1994). One of the most exciting aspects of true community-based EE is that is it intergenerational (Gallagher and Hogan, 2000) and leads us to needing to create and study models of what works, where, why, and how. In the political system of the U.S., participatory citizenship is important, and environmental responsibility is a part of citizenship that often must be taught (Peters, 1993). Ultimately, community-based education grows from the needs of those in the community (often driven by health, safety, and family concerns) and is therefore instantly relevant and meaningful (Enos, 1999).

Environmental education research in the U.S. and indeed in North America is not a neat, tightly related body of study. My simple attempt to illustrate the breadth of EE related to themes of educational research is, I hope, a means by which to reveal the tremendous variety of topics, efforts, and intents in the research community. Every element of the examples above can be, and in many cases is being, examined from an array of perspectives using a large arsenal of research tools and strategies. There is no paradigm of research dominating in the U.S. today. Rather, the need to

know the efficacy of that which we do, the cultural and social constructs in which these educational programs occur, and the real and deep impacts of our programs on the lives of people drive the research that we do. And we continually discover that where we are grows out of where we came from – but that change is possible.

As long as we are held accountable.

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