Studies in Educational Evaluation 41 (2014) 58–67

Contents lists available at ScienceDirect

Studies in Educational Evaluation

journal homepage: www.elsevier.com/stueduc

Seeking excellence for the land of paradise: Integrating cultural information into an environmental education program in a rural Hawai'ian community

Rebecca E.W. Thomas *, Tara L. Teel, Brett L. Bruyere

Department of Human Dimensions of Natural Resources, Warner College of Natural Resources, Colorado State University, Fort Collins, CO 80523-1480, USA

ARTICLE INFO

Article history:
Received 4 June 2013
Received in revised form 7 September 2013
Accepted 19 September 2013
Available online 25 October 2013

Keywords:
Program evaluation
Student evaluation
Evaluation methods
Environmental education
Cultural knowledge
Sense of place

ABSTRACT

The purpose of this case study was to: (1) assess whether a group of 12 students from a rural Hawai'ian community acquired local environmental knowledge through a place-based environmental education program, and (2) determine how integration of cultural information into this program affected participants' views about their natural world. A tertiary objective was to develop and test a methodological approach for evaluating youth environmental education programs. Findings revealed a tripartite foundation of novel experiences, mentorship through social connections and learning about nature through a cultural lens facilitated a deeper understanding of nature and culture. Additionally, the mix of qualitative techniques effectively facilitated an in-depth understanding of program impacts on participants' views toward the local environment.

Introduction

Forces of modernization have fundamentally changed how children in the United States interact with and learn about nature, which has implications for future natural resource stewardship. Broad-scale changes, including population growth and changes in land use (Cordell, Bergstrom, Betz, & Green, 2004; Rivkin, 1995) as well as urbanization, economic development and technological advancement (Clements, 2004; Pergams & Zaradic, 2006, 2007; Rideout & Hamel, 2006; Roberts, Foehr, & Rideout, 2005), have all contributed to a trend that Louv (2005) calls "nature-deficit disorder", which stems from the widening divide between children and the outdoors. Learning about nature increasingly occurs in indirect ways, often through restricted or managed contexts such as zoos or parks, or through vicarious or symbolic experiences (e.g., television), as opposed to day-to-day experience (Kahn & Kellert, 2002, chap. 5). Therefore, children's perceptions of the natural world are likely to be increasingly influenced more by television programming, technology and textbooks than by actual time spent outside.

When considering the potential consequences of this growing disconnect between children and nature both in terms of children's physical and emotional development and academic achievement (Chawla, 1999; Jordan & Robinson, 2008; Taylor & Kuo, 2006; Wells & Lekies, 2006) as well as future commitment to natural resource stewardship (Kals & Ittner, 2003; Kellert, 2002; Louv, 2005; Sobel, 2002), it is clear that the future of conservation hinges upon the ability of conservation organizations to respond to the societal trends that have influenced how children learn about and interact with nature. In particular, environmental education programs of these organizations must be able to reach diverse audiences in order to help shape their connections with and perceptions of the natural world. However, few studies have focused on how to implement and evaluate effective environmental education programs in unique cultural contexts (Beh, 2011; James, 1998), and even fewer have evaluated critical, place-based approaches (Gruenewald, 2003). Furthermore, while environmental education has traditionally incorporated scientific, biological and ecological content, less attention has been given to programs that integrate information about local culture (Beh, 2011). Gaining a better understanding of local community knowledge, traditions, and values becomes critical not only in designing and implementing nature-based programs that can appeal to local audiences but also in developing culturally sensitive evaluation methodologies to document the reach and effectiveness of these programs.

This study was part of a larger project designed to help state fish and wildlife agencies in the United States improve environmental education initiatives through a better understanding of target

* Corresponding author. Tel.: +1 814 6599682.
E-mail addresses: rebecca.wagner.thomas@gmail.com (Rebecca E.W. Thomas), tteel@lamar.colostate.edu (T.L. Teel), Brett.Bruyere@colostate.edu (B.L. Bruyere).

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http://dx.doi.org/10.1016/j.stueduc.2013.09.010

audiences. The primary purpose of this study was to evaluate the impacts of a youth environmental education program in a rural community in Hawai'i. Specific objectives were to: (1) assess whether a group of 12 students from a rural community in Hawai'i could acquire local environmental knowledge through a place-based environmental education program, and (2) determine how the integration of cultural knowledge and values into this program affected participants' views about their natural world. A tertiary objective of the study was to develop and test a qualitative methodological approach for evaluating environmental education programs targeting underserved youth. Frameworks of sense of place and traditional ecological knowledge were useful in interpreting the data and addressing these objectives.

Theoretical frameworks

Place-based education can take many forms, but is considered here as a sub-field of environmental education focused specifically on local environments (Eijck & Roth, 2010), with strong components of service learning, experiential learning and problem solving (Howley, Howley, Camper, & Perko, 2011; Mannion & Adey, 2011). Eijck and Roth (2010) define *place* in this context as a social construct, "a lived entity that results from a dialogical transaction between a community and its material environment at a particular moment in cultural-historical time and which hence shapes and is shaped by the identity of the people" (p. 887). *Sense of place*, which can be fostered through place-based educational experiences, refers to emotional connections between people and meaningful places, contextually bound within identifiable natural, cultural, political and historical landscapes (Semken & Freeman, 2008).

Sense of place has been linked to increased responsibility toward the environment (Eijck & Roth, 2010), heightened understanding of watershed functioning (Endreny, 2010), improved community engagement through intergenerational learning (Mannion & Adey, 2011), and increased student motivation and learning (Powers, 2004). Failure to develop a strong sense of place, alternatively, may contribute to a younger generation that is disconnected from the life lessons contained in the land's native stories (Basso, 1996) and apathetic toward local environmental or social degradation (Semken & Freeman, 2008).

Exploring ways to incorporate place-based information about local culture into environmental education programs can be facilitated by drawing upon the concept of traditional ecological knowledge (TEK), since traditional ways of knowing have been found to instill in youth a strong sense of place (Semken, 2005). TEK, defined as a complex arrangement of knowledge, practice and beliefs that incorporates local knowledge of and interaction with ecosystems (Berkes, 2008), is a specific focus within a body of literature on indigenous knowledge, which includes, more broadly, the unique, local knowledge of particular groups or peoples (Dudgeon & Berkes, 2003).

Intergenerational transmission of TEK involves the process through which older generations deliberately transmit values, knowledge and skills to younger generations (Cristancho & Vining, 2009). This collectively owned knowledge is rooted in a strong oral tradition and is often shared through stories, songs, folklore, proverbs, rituals, community laws, and local language (Berkes, 2008). Broad-scale societal changes discussed at the outset of this paper have resulted in several key differences between how today's children in many societies learn TEK versus how they learned it in the past. These differences can be attributed to the loss of native languages (Cristancho & Vining, 2009; Ellis, 2005), the diminishing role of the oral storyteller (Butz, 1996; Chinn, 2007; Cruikshank, 1997; Green, Billy, & Tapim, 2010; Pierotti & Wildcat, 2000; Reid, Teamy, & Dillon, 2002), and standardization of formal education based on Western science (Chinn, 2007; Cristancho & Vining, 2009; Reid et al., 2002), all of which have contributed to a decrease in direct contact with nature as a result of more time spent in school instead of in communication with elders (Chinn, 2007; Cristancho & Vining, 2009).

Western-based education systems have sought to standardize and decontextualize the educational experience, making it difficult for some students to engage with locally relevant environmental issues (Gruenewald, 2003). This shortcoming can be addressed by allowing elders and educators to teach scientific concepts using traditional oral storytelling methods instead of standardized Western science curriculum. In addition, educators must be encouraged and rewarded for respecting the oral traditions associated with TEK (Ignas, 2004). In this way, educators and community elders can play a joint role in mentoring youth and imparting knowledge about local culture and the environment in ways that are meaningful for both preserving important cultural traditions and fostering environmental stewardship as well as promoting science-related careers for indigenous youth (Eikck & Roth, 2011) and instilling in them a strong sense of place (Semken, 2005).

Methodological considerations for evaluating the role of culture in environmental education

Developing a thorough understanding of the role of culture in connecting youth to nature implicates a thoughtful methodological approach that demands consideration of the challenges associated with research involving children. Using multiple methods when researching children's experiences is valuable because it offers complementary insights and understandings that would be difficult to access through reliance on a single method of data collection (Darbyshire, MacDougall, & Schiller, 2003). For instance, visual methods, such as mapping and photo elicitation, have proven useful in generating different ideas than those derived solely from written questionnaires or verbal interviews (Booth & Booth, 2003; Killion & Wang, 2000; McIntyre, 2003; Wang & Burris, 1997; Wang & Redwood-Jones, 2001). These kinds of qualitative techniques have led to advancements in our understanding of children's use of physical space (MacDougall, Schiller, & Darbyshire, 2004) as well as how children relate to the natural environment (Aitkin & Wingate, 1993; Dodman, 2003; Morrow, 2001; Percy, 1995; Rasmussen & Smidt, 2003; Young & Barrett, 2001).

The cultural context must also be considered when choosing a research methodology. In many cases, mistrust of a research agenda can develop when local community members see conservation agencies and institutions and the researchers they support as agenda setters. Instead of being driven by an outside group of elites, goals for the research must be viewed as reflecting the shared interests of the broader community (Ballard, Trettevick, & Collins, 2008). Photo elicitation, a qualitative research methodology rooted in feminist theory, constructivism and document photography, has been employed as a community-based participatory research strategy that has proven useful in gathering information from culturally diverse groups by giving participants the opportunity to take photographs that address a salient concern (Hergenrather, Rhodes, Cowan, Bardhoshi, & Puia, 2009; Beh, 2011). Participants are asked to take photographs and then discuss these photographs during an interview (Samuels, 2004). The approach ensures that participants who may not otherwise be heard have a chance to contribute to community dialog, allows entry into some communities that would have otherwise been restricted, and can enhance respect for local knowledge and bridge cultural differences by enabling the researcher and community members to become co-learners in the research process (Booth & Booth, 2003; Castleden, Garvin, & First Nation, 2008; Jurkowski &