

THE HAWAIIAN CULTURAL ROLE IN PLACE-BASED AND ENVIRONMENTAL
EDUCATION

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Chapter One, Introduction

Individual educators and organizations agree that education must play a crucial role in environmental affairs, especially in the sustainability of the planet (Bertrand, 1995; Orr, 1992; UNESCO, 2005). Environmental education (EE) helps to play out that crucial role as it aims to foster a citizenry capable of addressing the world's environmental problems (Stapp et al., 1997; UNESCO, 1977). PBE offers a way to contextualize student experiences with the aim of "achieving a sustainable society" (Meichtry & Smith, 2007, p. 15). John Dewey pointed out that school teachers often expected students to learn well without making an effort to tie the material to their lives (G. A. Smith, 2002). He believed the content would be much more meaningful to students if it dealt with their everyday reality. David Gruenewald describes the processes of "decolonization" and "reinhabitation" that lead the learner to recover social and ecological places of value (2003a, p. 9). Gregory Smith cites examples of schools that achieve the social justice and ecological sustainability goals envisioned by early environmental educators through grounding student learning in local reality (2007, p. 190).

The majority of studies in the PBE and EE literature are conducted on a specific school or school program (Howley, Howley, Camper, & Perko, 2011; Jennings, Swidler, & Koliba, 2005; G. A. Smith, 2007; Takano, Higgins, & McLaughlin, 2009; Yamauchi & Purcell, 2009). There are few, if any, that investigate a city or region's range of PBE and EE efforts. This range might include PBE and EE efforts made by non-profit organizations, universities, or government entities. Gathering data from a variety of sources can promote a broader perspective of PBE and EE efforts rather than one based on a particular school. For this reason, I will investigate a range of stakeholder perspectives on place based and environmental education in Oahu, Hawaii. Utilizing qualitative methods, I will conduct semi-structured interviews to uncover perceived benefits and drawbacks of these educational approaches. I intend to interview the following stakeholder groups: informal and formal teachers; parents; and representatives from non-profit organizations and government institutions.

The setting of this study, Oahu, is significant for two reasons. First, PBE studies are often conducted in rural school settings (Howley et al., 2011; Jennings et al., 2005; Takano et al., 2009; Yamauchi & Purcell, 2009). Oahu encompasses both urban and rural areas (C&CofHonolulu). This study site will help break out of the mold of predominately investigating PBE in rural settings. Second, Oahu is part of the rich Hawaiian cultural landscape that pervades this part of the Pacific. Hawaiian ways of learning and knowing as well as the history of the Hawaiian people are recently seen as significant to PBE and EE efforts (Chinn, 2011; Sato & Staab, 2012). Yet the research is recent and short. Continuing these efforts can further reveal the unique aspects of PBE and EE in Hawaii and add to global literature on education of indigenous minorities.

Chapter Two, Literature Review

This literature review is broken into three sections. The first briefly defines environmental education (EE) and place-based education (PBE). Then, I will highlight overlaps between PBE and EE in the literature. The second section mentions benefits for learning and challenges for

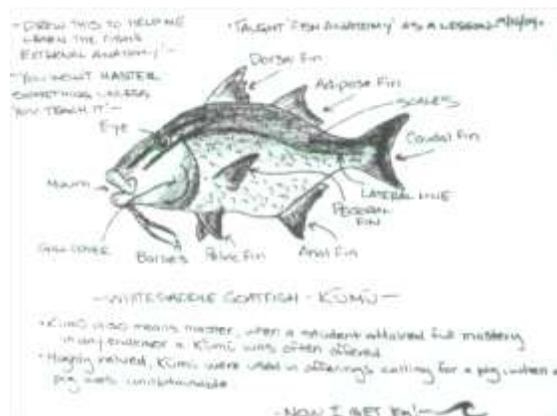
implementation of PBE and EE. The third section discusses literature on integrating indigenous and Hawaiian culture into formal education as well as on Hawaiian sense of place. Finally, I will present gaps in the literature that is relevant to this study.

Environmental Education (EE)

Despite “shifts in thinking” (Hungerford, 2010, p. 2), environmental education (EE) retains its roots in the Tbilisi Declaration (Cole, 2007; Howley et al., 2011; Hungerford, 2010; UNESCO, 1977; Volk & Cheak, 2003). Dr. William Stapp, a consultant of the Tbilisi Declaration, stated that EE aims toward “producing a citizenry that is knowledgeable” about the natural environment and its problems; aware of how to solve its problems; and “motivated to work” for its solutions (Stapp et al., 1997). The idea of EE, developing students to be more aware, informed, and invested in environmental phenomena (sometimes called environmentally literate), is also found in writings on sustainability literacy and sustainable education (Stribbe & Luna, 2009, p. 10).

Place-Based Education (PBE)

While there are discrepancies in delineating what PBE means (Jennings et al., 2005), I refer to the definition of PBE as education grounded in local phenomena (Gruenewald, 2003a; G. Smith & Sobel, 2010; G. A. Smith, 2002; Woodhouse & Knapp, 2000). A tangible example of PBE is in the above figure: a drawing from a student in University of Hawaii’s teacher preparation program. The student, who goes fishing often, discovered the native Hawaiian fish, Kumu



(Whitesaddle Goatfish), as a tool for understanding and teaching anatomy (Ebersole & Worster, 2007). While we usually think of teachers using PBE to help their students learn; here, the teacher is also the student. Fishing as something grounded in their local phenomena has helped the student to learn about anatomy.

PBE is very broad and has many applications. Some have tried to break down its applications. Smith’s (2002) describes five themes of PBE: cultural studies, nature studies, real-world problem solving, internship/entrepreneurial opportunities, and induction into community

processes (Ebersole & Worster, 2007; Gruenewald, 2003a; Knapp, 2005; Yamauchi & Purcell, 2009). But PBE seems to be even broader than this. Commonly reported characteristics of PBE are that it is interdisciplinary, experiential, “emerges from the particular attributes of a place” and ties people with their community (Ebersole & Worster, 2007; Gruenewald, 2003a; Howley et al., 2011; Woodhouse & Knapp, 2000, p. 4). Bioregional education, community-based education, ecological education, and service learning are terms heard alongside or in place of PBE (Jennings et al., 2005; G. Smith & Sobel, 2010; Woodhouse & Knapp, 2000). It is quite understood that while the term, PBE, is relatively new, the practice of making education local is not (Knapp, 2005; G. Smith & Sobel, 2010; G. A. Smith, 2002; van Eijck & Roth, 2010; Woodhouse & Knapp, 2000). Smith points out examples from the early 20th century in France of learning in a place-based context, but even earlier civilizations and indigenous societies learned in a place-based context (Dotts & Sikkema, 1994; G. A. Smith, 2002)

Overlap of PBE and EE

Authors in the literature mention the overlap between EE and PBE, saying EE is “inherently place-based” or PBE is “rooted” in EE (Sato & Staab, 2012; G. A. Smith, 2007; Takano et al., 2009). There is also a group of environmental education journals publishing articles about the usefulness of PBE for EE (Cole, 2007; Green, 2008). Cole finds that EE is too narrowly studied within the natural sciences, stating the importance of studying historical, cultural, and social issues in situ with ecological ones: “For my students to understand environmental processes and systems, we had to first come to terms with the human histories that contextualize, shape, and define those systems” (2007, p. 37). In fact, a significant amount of articles on PBE are published in EE journals (Howley et al., 2011; Meichtry & Smith, 2007; G. A. Smith, 2007; Takano et al., 2009).

Only a few authors; however, have discussed the PBE and EE overlap in detail (Howley et al., 2011; Woodhouse & Knapp, 2000). Woodhouse & Knapp (2000) looks at the connection between PBE, EE, and outdoor education, finding that the “variety of labels” “applied” to the approaches have “complicat[ed]” their overlaps (p.2). Howley et al. (2011) explains that the words, “environment” and “sense of place” have different implications for each approach. EE is said to look at natural systems while PBE looks at human and natural systems (Howley et al., 2011, p. 219; G. A. Smith, 2007, p. 190). In other sources; however, I have found environmental educators say that they look at both natural and human systems, using the word “total environment” to make this distinction (Hungerford, 2010; Stapp et al., 1997). Howley et al. continues that place-based educators focus on cultivating a stewardship of a particular area while environmental educators focus on cultivating a stewardship that can apply anywhere (Howley et al., 2011). However, PBE is also called ecological education and often discussed in relation to David Orr’s *Ecological literacy* (Gruenewald, 2003a; Orr, 1992; Woodhouse & Knapp,

2000). Ecological education looks at both natural and human systems through “grounding learning in a sense of place” (Woodhouse & Knapp, 2000). Despite this confusion in terms, PBE and EE both share common characteristics in instruction and curriculum development, such as experimental inquiry, community engagement, interdisciplinary instruction, service-project learning, investigation of issues, and real world problem solving (Howley et al., 2011). In my own literature review, I have found these instructional overlaps (Gibson & Puniwai, 2006; G. Smith & Sobel, 2010; G. A. Smith, 2002; Volk & Cheak, 2003; Yamauchi & Purcell, 2009).

Benefits of PBE and EE

Student improvement

Besides case studies that reveal student improvement in standard academic performance assessments, there is some discussion on its benefits for engaging students, particularly underachieving students (Takano et al., 2009; Volk & Cheak, 2003). In fact, PBE may be adopted out of concern for a particular group of students. For example, some educators or schools find the notion of weaving local culture into school instruction particularly important for the education of those with an indigenous background (Kawakami, 1999; Takano et al., 2009). Studies in Hawaii utilizing PBE and EE approaches have mentioned that the underrepresentation of native Hawaiian students in college and science fields was a deciding factor in creating more culturally-relevant curriculums (Gibson & Puniwai, 2006; Kawakami, 1999; Sylva, Chinn, & Kinoshita, 2010; Yamauchi & Purcell, 2009). In particular, Kawakami says that the lack of connection between Hawaiian students’ ways of learning/knowing at home and in their community to the ones promoted at school hinders their academic achievement (1999). Therefore, one of the expected outcomes of place-based education is the widening of students’ educational and career options after graduation (Howley et al., 2011, p. 231)

Building social and natural capital

Place-based and environmental education advocates claim that one benefit of their approaches is the cultivation of social and ecological skills not found in today’s schools. Smith and Sobel write that one reason to adopt PBE is its ability to build social capital skills within students (2010). Another perceived benefit of EE and PBE is building relationships between nature and children as well as children and their local communities. Smith describes PBE “solidif[ies] the relationship between children and the places where they grow up, [establish] bonds essential to both the care and the long-term sustainability of people’s home communities” (2002, p.593). David Orr, an authority on environmental literacy, describes the potential of education grounded on the natural environment to reconnect or forging a tie with children and the places they live in (Orr, 1992; G. Smith & Sobel, 2010).

Community engagement

PBE, in particular, may have the benefit of closing ties between communities and schools (Ebersole & Worster, 2007; Gruenewald, 2003a; G. A. Smith, 2002). It has been shown to support the sustainment or survival of communities (Howley et al., 2011; Takano et al., 2009), such as rural areas (Gruenewald, 2003a; Howley et al., 2011; Jennings et al., 2005; G. A. Smith, 2007). In America, there have been funded efforts, such as The Rural Challenge and the Rural Schools and Community Trust, who often utilize and advocate for place-based education (Jennings et al., 2005; G. A. Smith, 2007). In fact, most place-based education case studies in this literature review are on rural schools (Howley et al., 2011; Jennings et al., 2005; Takano et al., 2009; Volk & Cheak, 2003; Yamauchi & Purcell, 2009). Citizenship, both local global, and community participation are viewed as potential benefits of both PBE and EE (Cole, 2007; G. A. Smith, 2007; Takano et al., 2009; Volk & Cheak, 2003; Yamauchi & Purcell, 2009). Elaborating on this, Howley et al. writes "both approaches seek to equip students with transferable knowledge and skills that will enable them to make contributions to and assume responsibility for the health of their communities" (2011, p.219).

Implementation challenges for PBE and EE

Teacher confidence and preparation

There are several studies on utilizing place-based learning for teacher improvement in preparation programs (Ebersole & Worster, 2007; Meichtry & Smith, 2007; Sylva et al., 2010). Some studies actual reveal this is necessary as teachers experience difficulties adjusting from a traditional style of teaching to those deemed necessary for PBE and EE (Volk & Cheak, 2003). As a result of this and other difficulties, Smith suggests that very few place-based efforts achieve the intended "political and transformational vision" of the Tbilisi Declaration and Belgrade Charter (2007, pp. 202-203).

Program elements

Case studies in the literature have attempted to measure community and school relationships from utilizing these educational approaches (Howley et al., 2011; G. A. Smith, 2007; Takano et al., 2009; Volk & Cheak, 2003; Yamauchi & Purcell, 2009). They have found that the success of these educational efforts largely depends on the degree of collaboration between community groups/individuals and schools/educators as well as the amount of community support for these educational approaches.

Prevailing views in formal education system

In the literature, there is a good amount of criticism about the American education system (Gruenewald, 2003a, 2003b; Kawakami, 1999; G. A. Smith, 2002, 2007; Takano et al., 2009; Yamauchi & Purcell, 2009). Advocates of place-based education believe that there has been

too much focus on creating a one-size-fits-all curriculum promoting standards and testing (Gruenewald, 2003a; G. A. Smith, 2007). Authors mention the No Child Left Behind Act (NCLB) as a major hindrance for place-based and environmental education efforts (Gruenewald & Manteaw, 2007; Martina, Hursh, & Markowitz, 2009; G. A. Smith, 2007; Yamauchi & Purcell, 2009). In fact, No Child Left Inside, a movement for increased outdoor education in schools, was phrased after NCLB (Gruenewald & Manteaw, 2007, p. 186). Place-based and environmental education are thus viewed as peripheral, non-mainstream ideas in school curriculum and instruction (Jennings et al., 2005; Meichtry & Smith, 2007; G. A. Smith, 2007). This has developed an argument about whether localized and standardized curriculums are compatible. Some believe and have made efforts to demonstrate that the two can work together (Ebersole & Worster, 2007; Jennings et al., 2005). Others believe that the regularities of standardized knowledge need to be altered for the wider practice of place based and environmental education to occur (Gruenewald, 2003a; G. A. Smith, 2007). The debate over standards and place-based compatibility remains unresolved.

There are other challenges for PBE and EE that stem from the mainstream approach to education. Many critics from a diverse range of thoughts have pointed out that schools focus on cultivating skills for economic participation while ignoring other skills, such as social or service learning (Gruenewald, 2003a; Orr, 2004; G. Smith & Sobel, 2010; Stribbe & Luna, 2009; Takano et al., 2009). Their attempt of fill in this void within schools relates to another perceived failing of schools: the disconnection between the students' lived experiences and their school learning (Gruenewald, 2003b; Kawakami, 1999; Orr, 1992; G. A. Smith, 2007). Gruenewald elaborates that "the development of a context-free, homogenizing curriculum" ultimately "[denies] students and teachers opportunities to experience" place based-education (2003a, p. 3). Ultimately he and other place-based educators believe that the current system is restricting, denying them of vital experience whether outdoors or with their communities (Gruenewald, 2003a; Gruenewald & Manteaw, 2007; Orr, 1992; G. A. Smith, 2007).

Integrating indigenous culture into education

Studies have shown how formal school systems presentation of "dominant" or "western" culture in the classroom is largely separate from the home or community cultures of students of indigenous descent (de Souza & Rymarz, 2007; Kawakami, 1999). In response, efforts to integrate indigenous knowledge into education, particularly, science education, have occurred abroad (Sutherland & Henning, 2009) and here in Hawaii (Gibson & Puniwai, 2006). Place-based education is seen as a way to conduct an educational reform for the enhancement of indigenous students both abroad and in Hawaii (Takano et al., 2009; Yamauchi & Purcell, 2009).

Gruenewald (2003) combines critical pedagogy and PBE into a framework with two educational objectives, "decolonization" and "rehabilitation," that might be an outcome of integrating local

indigenous into education systems. Gruenewald writes, “from an educational perspective, [decolonization] means unlearning much what dominant culture and schooling teaches, and learning more socially just and ecological sustainable ways of being in the world” (2003, p.9). Drawing off of ecological education writers, Gruenewald finds that having an intimate sense of place ties into being able to living in a more nurturing relationship with that place.

Re-integrating the native Hawaiian culture into education since its disruption with the formal education system (Dotts & Sikkema, 1994) has been an ongoing effort since the late 20th century (Jensen, Ledward, & Kana'iaupuni, 2010; Kawakami, 1999).

Hawaiian sense of place

The language, practices, and observations of the people reveal that the Hawaiian people and their culture are intimately tied with the Hawaiian Island's natural surroundings. Films (Lee, 2005) and scholarship (Andrade, 2008; Ho'omanawanui, 2010; McGregor, 2006) have explored this intimate relationship between nature and the Hawaiian people. A common example of this relationship is through exploring the appearance of the root word for water, *wai*, in the naming of places (at least 64) and in the appearance of phrases with a significant connotation, such as *waiwai* (wealthy) (Info Grafik, 2007; NaMakaoka'Aina, 1992; Townscape, 2011; Wilcox, 1996).

Scholars also explain the particulars of having a Hawaiian sense of place. First, that is has a great deal to do with natural surroundings. One scholar writes of the meaning of a place named Hā'ena, “In Hawaiian ways of perceiving the world, Hā'ena is a place situated below the wind, close to the taproot of the earth, where the sun enters the sea at Halele'a (House of Pleasure), Kaua'i o Manokalanipo (Kaua'i of the legendary Manokalanipo)” (Andrade, 2008, p.26). Second, that place ties into self-identity, history and relationships. One writes “as a Native Hawaiian, a place tells me who I am and who my extended family is. A place gives me my history, the history of my clan, and the history of my people. I am able to look at a place and tie in human events that affect me and my loved ones” (Kanahale as cited in McGregor, 2006, p.5-6). As evident through the Hawaiian language and cultural practices, these scholars find that Hawaiians had a distinctive view of the world and one that was deeply felt in their lives.

Despite dramatic changes in the natural landscape during the 19th century, Hawaiian descendents still strived to maintain their sense of place and their intimacy with nature. McGregor (2006) introduces the Kua'aina in his book, *Na Kua'aina : Living Hawaiian Culture*. The Kua'aina refer to Hawaiians who continued to live in the traditional forms of their ancestors after the 19th century socioeconomic changes. McGregor finds the Kua'aina were “intimately

conscious of their 'āina-lands and natural resources where they live" (p.12). They lived in a time when the Hawaiian sense of place was in immediate danger of being lost. Kupuna (elders) who passed on their "knowledge and stewardship of their lands" to successors often said the following:

Ke ha'awi nei au ia 'oe. Malama oe I keia mau mea. A'ohe Malama, pau ka pono o ka Hawaii (I pass on to you. Take care of these things. If you don't take care, the well being of the Hawaiian people will end) (McGregor, 2006, p.5).

Integrating Hawaiian culture into formal education

Recent efforts to integrate Hawaiian culture into formal education have occurred in teacher preparation and professional development programs (Chinn, 2011; Ebersole & Worster, 2007; Sylva et al., 2010). These programs range from supporting teachers in Hawaii to localize standardized curricula to showing the value of indigenous science in teacher education. There are also a few studies that look at Hawaii school programs that seek to support at-risk, minority, and especially, students of Hawaiian descent, through Hawaiian studies or Hawaiian-values based programs (Hishinuma et al., 2009; Yamauchi & Purcell, 2009). Some of these studies, such as after school prevention programs, are the only ones to exist in the literature (Hishinuma et al., 2009). Studies on making science education more culturally relevant to Hawaiians are more prevalent (Ebersole & Worster, 2007; Gibson & Puniwai, 2006; Sylva et al., 2010). A recently published large scale study on Hawaii's schools (public, Hawaiian charter, and western charter) bolsters existing evidence that students, especially of indigenous descent, success is correlated with culture-based education (Jensen et al., 2010).

Gaps in the Literature

Much of the literature looks at PBE or EE at a particular school or education program (Chinn, 2011; Gibson & Puniwai, 2006; Green, 2008; Hishinuma et al., 2009; Howley et al., 2011; Sylva et al., 2010; Takano et al., 2009; Volk & Cheak, 2003; Yamauchi & Purcell, 2009). There are hardly any that look at PBE and EE efforts across an area, such as this one. In addition, there is hardly any literature that looks at PBE and EE in informal education, such as museum, nature centers, or government education programs. Efforts to explore the integration of Hawaiian culture in informal education are also sparse; teacher education and school program case studies are more prevalent (Chinn, 2011; Ebersole & Worster, 2007; Hishinuma et al., 2009; Yamauchi & Purcell, 2009). The benefit of this study is that it looks at the individual PBE and EE efforts by key players, such as natural resource experts, non-profit coordinators, curriculum writers, and individual school teachers. The study reveals new understandings on the benefits and challenges for PBE and EE experienced by Oahu teachers and organizations.

Chapter Three, Methodology

For this study, I investigated benefits and challenges of PBE and EE in Oahu. I used a qualitative research design to address my research question on what are the characteristics, benefits, and challenges of place-based and environmental education in Oahu. Specifically, I conducted semi-

structured interviews with a range of stakeholders. Interviews were an average 60 minutes and recorded. The recordings were coded and categorized according to the benefits and challenges observed.

History of PBE in Hawaii

Hawaii's history of colonization and U.S. annexation in 1898 established an education system that contained little to no instruction on the host-culture and ecology of Hawaii. In fact, it was a system that largely suppressed the learning of the familiar and the local (Chinn, 2011; Dotts & Sikkema, 1994). A poignant example is the ban on Hawaiian language from school instruction from 1896 to 1986 (Dotts & Sikkema, 1994).

Efforts to introduce a Hawaiian-grounded curriculum surfaced in the late 20th century alongside the Hawaiian movement that brought many cultural and spiritual practices into the forefront of society (Mullins, 1978, pp. 116-123). The Ohi'a Project, developed from in the late 1980s by a partnership with the Moanalua Gardens Foundation, the Bishop Museum, and the Hawaii Department of Education (HIDOE), was a major effort to create a comprehensive curriculum on Hawaii's ecology and culture. The curriculum is now said to be "the most popular environmental education curriculum in Hawaii" (Foundation, 2006). Other direct efforts in the public school system occurred that stirred education in the direction of the local culture. In 1999, the HIDOE introduced the Hawaiian saying, Malama I Ka Aina (care for the land that sustains us) as a standard. Unfortunately, this standard was taken out with the state standards revision in 2006. Standards; however, on Hawaiian history are required for Grade 4 (Education, 2005). The appearance of Hawaiian charter schools significantly grew and tacked PBE as a "pillar" of the charter school movement (Jensen et al., 2010, p. 3).

Since the late 20th century, the amount of organizations, schools, and efforts that promote PBE particular to Hawaii's ecology and host-culture have grown significantly. Now, there are several PBE funded projects, such as the Kūlia i ka Nu'u and PLACES (place-based learning and community engagement in schools). PBE in Hawaii is also related to a number of other educational terms in Hawaii, such as project-based learning and culture-based education.

History of EE in Hawaii

The first effort to create an association for EE in Hawaii was formed by an EE and outdoor education non-profit. The association "went strong" but eventually subsided for a while (environmental educator, personal communication, July 19, 2012). The association was renewed and changed into the Hawaii Environmental Education Alliance or HEEA. Some of the recent outputs of the current HEEA include a state-wide environmental literacy plan for EE improvement in Hawaii's schools,

http://heea.org/Files/eehi/2012/HELP_Report_401_FINAL_021312_lores_lock.pdf .

The plan outlines six major needs as well as improved public-private partnerships for EE in Hawaii. These needs touch on improving professional development for teachers, having sustained funding, aligning Hawaii Department of Education (HIDOE) standards with EE, generating public support, and utilizing more PBE instruction and curriculum techniques in

schools. HEEA also tracks organizations who promote EE in Hawaii (Sato & Staab, 2012). According to their website, www.heea.org, there are forty three such organizations in Oahu. Many of those organizations are ingrained in community and education efforts; they provide funding, professional development workshops, and community outreach events.

Funding for PBE & EE

Funding for PBE and EE efforts come from grants awarded by private and government funders as well as donations. The EPA has awarded seven grants for EE projects in Oahu since 2000 and the U.S. Department of Education's Native Hawaiian Education program has recently awarded three projects for place-based learning approaches. Non-government funding for EE includes the Kokua Family Foundation's mini-grants program.

Field trip Monies in HODOE (Hawaii Department of Education)

In the 1980s, HODOE budgeted \$900,000 for field trips, but that budget is virtually non-existent (Sato & Staab, 2012). Current costs for a field trip in Hawaii range from \$350 to \$800 depending on transportation, site, and substitute teacher fees (Sato & Staab, 2012).

Participants

I choose my participants through a purposive sampling and snowballing procedure, utilizing peer recommendations and online research to contact the first participants. Using the semi-structured format, I interviewed 20 individuals with current work or a background in conducting PBE and EE. Six of the participating individuals currently work in schools, (four teachers and two school directors or deans), another 10 currently work in a community organization or institution on an education or several education programs, and the remaining four I interviewed for various reasons (previous student of a Hawaiian charter school, field expert in a high school-community organization education program, farmer/informal educator, and prior coordinator of a university-K12 schools partnership). For more details on the participants, see Appendix II.

Setting

Interviews were conducted in person or by phone. In person interviews were conducted at the workplace of the individual (e.g. school, education center).

Measurement Instruments

Interview Protocol and Guide

The semi-structured interview sought to measure the participant's perspectives on the benefits and challenges of PBE and EE. The interviews typically lasted 60 minutes and all participants gave permission for recording. During the interview, an interview guide was utilized and has been previously reviewed by the project's faculty advisor. See Appendix I for the guide.

Data Collection/Procedures

Prior to commencing the interview, each participant was given an informed consent. The form explained the purpose of the research study; rights of the participant, including their right to refuse participation; and method for maintaining confidentiality of their records. At the beginning of each interview, I went over the informed consent and explained that the interview will be recorded pending on their permission. Most in-person interviews were recorded by a hand-held microphone. (One of the in-person recordings was cut out because of a different recording tool I used, Tape-a-Talk phone app). Phone interviews were recorded through a free conference call service, www.freeconferencecall.com. At the end of the interview, I expressed my appreciation for their participation, provided them with contact information for my advisor and IRB chair, and explained that a summarized copy of the final study would be sent to them.

I transcribed all the recordings into Microsoft Word documents.

Data Analysis

I coded the Microsoft Word transcriptions into a separate Microsoft Word master file. The data was first organized into a number of related issues participants observed. These issues were then categorized under benefits or challenges of PBE and EE. The categories were revised several times during the analysis.

Chapter Four, Results

There was almost an ending list of benefits described of place-based and environmental education. Benefits associated with student learning and performance; outdoor engagement; and student-community ties that are found in the literature were frequently mentioned. Participants also discussed benefits from tying in the host or traditional Hawaiian culture into PBE and EE. Moreover, participants shared a number of implementation challenges faced. First, I will briefly review the most commonly mentioned benefits. Second, I will discuss the benefits observed from PBE and EE rooted in the host-cultural context of Hawaii, which is not commonly discussed in the literature. Finally, I will go over three significant challenges educators and organizations face when trying to sustain PBE and EE efforts.

Commonly reported benefits of place-based and environmental education

Benefits for student learning & performance

Consistent with the literature, several of the participants mentioned these strategies had positive impacts on “disengaged” or “at-risk” students. While the literature focuses on students of Hawaiian descent, participants found that an outdoor learning environment was useful for students, in general, who do not learn well in a classroom setting. In fact, nearly everyone I spoke with described students, in general, showed more interest and engaged more in the learning content when it was “hands-on” or “project-based.” It was commonly explained that students engaged more because the learning content became more “relevant,” “meaningful,” or “real” to the students as Dewey described and Kawakami (1999) described for students of Hawaiian descent. Smith (2002) argues that when student knowledge is “directly related to their own social reality,” they are more engaged. Respondents in my study

concurred that because the content was grounded in local content, their “backyard,” students were more intrigued to learn. A few explained that the power of grounding learning in student’s “social reality” is so powerful that students start reaching (and very successfully) for the very tools of standards curriculum (curriculum writer, personal communication, September 7, 2012). This insight is not as expressed in the literature and adds to the debate on whether standardization is an obstacle for PBE and EE. Currently most PBE and EE proponents agree it does (G.A. Smith, 2007; Gruenewald, 2003a).

Participants felt that one of the school’s desires is higher test scores. They observed that PBE and EE are able to better prepared students for testing and raise their scores. Specifically that math and science scores improved. In fact, many respondents reported benefits related to student knowledge and skill sets. Especially in the area of science, student literacy, ability to conduct research, such as improved understanding and activity in data collection, analysis, the scientific method as well as making “evidence-based conclusions” were reported. Respondents reported that many times, students excelled higher than the common expectations of their grade. Volk & Cheak (2003) reported exceptional literacy and skill abilities in 5th and 6th graders of a Molokai school program that heavily utilized PBE and EE approaches. In my own findings, educators often shared anecdotes of student(s) of a PBE/EE program exhibiting high levels of knowledge and skills. For example, one educator described fourth grade students speaking eloquently about the role of nitrates and nitrites in fishponds (curriculum writer, personal communication, September 7, 2012). Another described an eighth grade girl carrying a two inch thick binder of scientific articles on micro plastics and their influence on turtle reproduction (middle school teacher, personal communication, October 30, 2012). A parent whose child attended a Hawaiian immersion school reported his child and other students carried a copy of all the state-mandated standards of their grade (parent, personal communication, September 12, 2012). This last example shows how PBE and EE program, when student-centered, can fulfill and in these cases, rise above, the expectations of school administrations and the national accountability agenda. Making curriculum locally relevant with a student hands-on approach gets students thinking about standards and excelling beyond perceived expectations is a warranted point of discussion in the literature where school agendas and “Hawai’i-oriented” curriculum are mainly characterized as conflicting (Chinn, 2011).

Only a few articles in the literature discuss the positive impact these strategies have on student’s self-esteem (Volk & Cheak, 2003), but it was related in my findings. For example, a watershed specialist supporting an upper elementary hike observed one of the students becoming very tired and agitated about continuing. One of the teachers stayed behind with the student, but later, the specialist described that “the next thing you know we turn around and she’s [right behind us] [walking] all proud” (watershed specialist, personal communication, September 18, 2012). The specialist felt strongly that educational activities like these are not just about students gaining knowledge, but also about them learning about themselves as they are challenged: “you get a better sense of yourself and what you can do instead of think ‘oh I can’t do that and not even try’”(watershed specialist, personal communication, September 18, 2012).

Achieving natural and social capital skills

Some of the literature discusses the natural and social capital skills PBE and EE achieves (Smith & Sobel, 2010). Those I spoke with described students taking on a sense of stewardship for their community and natural environment with phrases such as, gaining an appreciation, taking ownership, genuinely caring, exhibiting concern, becoming proactive, and deciding places need preservation. Malama-aina, a Hawaiian phrase that means to care for the land, was one of a group of Hawaiian phrases used to describe the desired outcome of stewardship for the natural environment. One science teacher described an increase in science projects on local environmental issues while others mentioned engagement in service learning projects. In fact, student and student families becoming or increasing their involvement with community projects, organizations, and issues was also identified as a beneficial outcome. Students were commonly observed to return to an organization visited on a school field trip and bring their parents. Sometimes, the student will start volunteering at that organization, gain an internship, or even work for the organization. Some mentioned parents will start contributing to organizations their child was exposed in a place-based or environmental education activity. Since many of the community organizations and issues are centered on the local, natural environmental, place-based and environmental education was observed to impact students' and their families' sense of place alongside their sense of environmental stewardship.

Mutually beneficial student and community ties

Many I spoke with told me about the mutually beneficial relationships developed between students and community members through the place-based and environmental education activities. Educators found that students benefitted from being exposed to experts in the field. For example, their view of their own career after high school was able to be impacted. In fact, one person told me part of the goal of a specific project was to encourage students to see the value of higher education through engaging with experts in the field. Another person believed exposure to field experts enabled students to "realize they [could] be change agents" as well. Career options, educational pathways, and even the value of volunteering were all identified as aspects positively influenced by students meeting and working with community entities. Some also felt that students benefitted from just striking up a personal relationship with others from these activities. Community entities also saw a benefit in these relationships. For restoration activities, students were identified as "providing a service," getting work done that otherwise would not have occurred. One observer felt too that it opened up a community organization's outreach potential as exemplified when the parents or families of the child get involved.

Place-based learning and environmental education in an indigenous cultural context

Everyone I spoke with described Hawaiian cultural components tied into Oahu PBE and EE. Bringing in the host culture was often seen as a must for place-based learning in Oahu. While it may not have been said to be a must for environmental education in Oahu, many agree and environmental educators mentioned tying in the host culture is almost unavoidable. Reasons given for this often came down to the admired relationship Hawaiians had with the natural environment, sometimes described as "intimate" or "sustainable." It was revealed that rooting

PBE and EE into Oahu's host-culture has multiple benefits, including enhancing the learner's sense of place, making environmental stewardship meaningful, promoting interdisciplinary learning, and adding value to students of Hawaiian and non-Hawaiian descent.

Hawaiian cultural components in Oahu place-based activities

Place-based learning in Oahu incorporates the Hawaiian culture into its learning content. For example, Hawaiian place-names, mo'olelos (stories, legends, histories), and Hawaiian values are often utilized to explain natural areas. To help students remember the names of native plants, they will often learn how the Hawaiians used that plant along with the meaning or the mo'olelo attached to its name. Mānoa, for instance, means vast. This was learned on a tour of Mānoa valley when explaining the valley's unusually flat landscape that made its natural environment valuable for agriculture and now housing. Values, such as lōkahi (harmony), kuleana (rights and responsibility) and aloha 'āina (love of the land), are also utilized in Oahu place-based learning. One outdoor, place-based organization has visiting groups begin their work by conducting an aloha circle. The circle is where introductions are made between the land and the visitors: "the aloha circle is where we introduce this land and the name of this ahupua'a ...and the`ili (smaller unit within an ahupua'a). We give the names of the land and introduce the 'āina to everybody" (Youth Coordinator, personal communication, July 24, 2012). Also exchanged in this aloha circle is the names of the participants, where they are from, and introduction of a kapuna (ancestor) or family member they brought with them. Thus, one can see through these activities that names and words in Hawaiian culture have a significance attached to them. Names describing natural areas are inherent to the characteristics of that place; they help reinforce a sense of place. An educator with nearly 30 years of teaching Hawaiian place-based education elaborates on the significance of place-names:

"Hawaiian place-names will tell you about the place you're in. It might describe the land or it might describe an event that happened in that land or it will be connected to the gods or it's a simple translation of the name or it's more of a tradition that explains the meaning of the land, it's really important" (Educator, personal communication, August, 7, 2012).

School teachers not originally from Hawaii that heavily conduct place-based learning utilize Hawaiian words in instruction. One elementary teacher says she conducts "opala hunts;" students search for trash (opala) on the school. They collect the trash, record what they found, make graphs, and present the findings to the school. While the overall objective is to teach students about an environmental issue of waste, the Hawaiian cultural component is used to support that objective. The same teacher has students say "Uuuuuuu" or Ua (rain) when trying to teach them the importance of rain. Another teacher hands out what she calls a kapuna assignment where students interview a family member or kapuna about sustainability.

Hawaiian culture is also commonly embedded in field trips to Oahu's many outdoor education sites. Common to how Hawaiians would enter and exit places of significance, school groups when entering and exiting these sites, such as a forest, recite an oli (chant). The purpose of a series of field trips might also be to reinforce the concept of an ahupua'a or the mauka

(mountain) to makai (ocean) connection. (An ahupua'a is a section of land that includes the upper portion of the mountains, the source of the rain flow, then everything the stream flows through including the outer portion of the ocean from which the stream empties into.) In Oahu place-based learning activities, students may also visit restored lo'i (taro fields), familiarizing themselves with its significance to the Hawaiian people and gaining tangible experiences as they work in them. A retired educator described a previous nutrition program that sought to alleviate obesity among children in Hawaii by teaching them and their families about the foods Hawaiians and other ethnic groups of Hawaii eat. In one of the activities, the students went to a lo'i, took the plant back to the classroom, and prepared it as traditionally done.

An environmental educator describes the prevalence of the Hawaiian cultural aspect at an outdoor education site: "The kids here, they get to work in the lo'i. They get to pull taro, pound it, make poi, eat it...we have Hawaiian games...we like to use a lot of the Hawaiian values...malama 'āina, lōkahi, and we do teach about the ahupua'a...[so] we're quite immersed in Hawaiian things" (Environmental educator, personal communication, July 19, 2012). A service learning director described her private school's kindergarten through 8th grades all have projects that are "rooted in Hawaiian culture" (private school education director, personal communication, September 26, 2012) Sixth graders grow native plants, seventh graders "work in the lo'i" and eight graders visit the natural area preserve Kae'ena point. Thus, the cultural aspect of Hawaii's host people is a part of Oahu's place-based learning both in the school and out in the community.

Environment & Culture taught together in Oahu place-based learning

Oahu place-based learning often ties the culture of Hawaii's people with the environment, resulting in a groundswell of in situ cultural and environmentally learning. One of the reasons for a bay restoration and education project was silt pollution, invasive species crowding, and loss of historical significance: "hundreds of years ago [the bay was] one of the largest fishponds in all of Polynesia and now it is [a marina]...[so the project is about] having kids understand and having teachers understand the historical significance of what this pond actually was" (science education coordinator, personal communication, July 31, 2012). At the same private school where each grade from K-8th experience a place-based learning project, those projects are described as "connected to environmental stewardship and Hawaiian culture" (private school education director, personal communication, September 26, 2012). In a Hawaiian studies academy, learning was describes as "two tracts of knowledge." One focused on the significance of native ecosystems and the other on Hawaiian archaeological sites. In both tracts, preserving areas of ecological and cultural importance were implicated and that in helping students to learn this, it was important to explain the cultural and environmentally reasons (Hawaiian studies teacher, personal communication, June, 19, 2012).

Stewardship of Environment

Many of the place-based learning teachers involved have a stewardship objective. These teachers find that acts of stewardship, such as clearing out invasive plants, become more

meaningful as well when rooted in a cultural context. One teacher who annually takes her students to conduct restoration work at field sites says

“If I just take them and say ‘ok we are going to go pull some weeds or we are going to go saw down some invasive plants’ some of them see it as labor, but if you tie it into them and their future and the past and the idea of sustainability of not only the environment, but people and culture, I think that’s when it connects and they understand that them sawing down a tree in the hot sun means more than just an hour of labor” (middle school teacher, personal communication, October 30, 2012)

Tying in culture-science education

Often Oahu place-based learning ties various sciences, environmental or physical, with Hawaiian culture. A science education coordinator created an overnight camp project where students by day track marine debris and at night utilize a star compass built by the Polynesian Voyaging Society to learn about early navigation or wayfinding. This transition was described as “kids take it from sort of that science and conservation vein and take it to more of a traditional vein” (science education coordinator, personal communication, July 31, 2012). The program wanted to inform students of celestial body patterns, but approached it from the local, cultural grounds of Polynesia. Some Hawaiian based educators often make it a point to weave in the host-culture with the science:

“from the very beginning we’ve always taught science as well as culture weaving the culture into the science so if you’re teaching Hawaiian geology, you’re not just talking about ...the hotspot, plate tectonics and all that kind of thing but you’re also teaching the cultural beliefs as to why this mountain is here [and] what’s its name” (Educator, personal communication, August, 7, 2012).

The tying in of traditional culture with commonly taught science subjects justifies other modes of “sciences” in front of the students. The education coordinator of the star navigation activity commented that navigation or wayfinding “[Polynesian navigation] is in no way any less a science than the other sciences that we’re teaching” (science education coordinator, personal communication, July 31, 2012). In fact, the prevalence of Hawaiian culture in science learning suggests these educational efforts bolster a continuum of the Hawaiian renaissance, repairing the negative impacts of colonization.

Those who have worked closely with Hawaiian immersion schools also describe that tying in the science is just as important as tying in the culture and this has to do with an approach to teaching of the indigenous community. A close worker with a successful Hawaiian immersion school observed that “one of things that the [specific Hawaiian charter school] science teachers do is not only teach students about the Hawaiian perspective of *kalo*, its genealogical value and its stories ...but also incorporate the knowledge of scientists” (personal communication, November 21, 2012). When I asked the interviewee if this worked like a partnership between experts of Hawaiian culture and science, she responded that that is one way to look at it, but explained it really has to do with how teaching is approached from an “indigenous perspective.” Teaching is not perceived as “easy,” but rather as “multiple intersecting units... that incorporate

stories.” Those units include the host-culture, history, and western disciplines. Therefore, PBE and EE within an indigenous, here a Hawaiian, context supports a teaching approach that is not brings together science and culture, but overall an interdisciplinary approach.

A rich, curriculum unit

Those who have worked closely with Hawaiian immersion schools find that tying in different disciplines into a learning context exemplified with science-culture, is more a successful learning method for indigenous peoples (Kawakami, 1999). One person described a watershed curriculum unit utilized by a Hawaiian immersion school that was created by a team of 8-9 people. She explained that each person had a “different disciplinary background informing that curriculum” because the content, water and water systems, have a number of components: “a lot of science, a lot of chemistry, a lot of civil engineering... it’s a lot of a lot of things” (Dean, personal communication, November 21, 2012). Many found that this type of curriculum design provided a rich, multidisciplinary unit that was not designed to meet a standard, yet ends up meeting standards.

Oahu place-based learning in a cultural context benefits all learners

Consistent with the literature (Kawakami, 1999), teachers acknowledge the learning benefits of creating a cultural context for students of Hawaiian descent. A long time practitioner of place-based learning and environmental education believed using Hawaiian terms have a greater appeal for students of Hawaiian descent than common textbook terms. She says using a “term like ecosystem,” is inconsequential-“like who cares?!-” but explains “if you’re starting with the [term] aina [or] aloha aina...they’re hooked!” (science teacher, personal communication, September 4, 2012). Another teacher found that placing subjects in a cultural context is an instant “hook” for student learning, but also had a more profound explanation for why the cultural context was especially important for students of Hawaiian descent. The teacher explained how the colonization of Hawaiian people led the ancestors of the students of Hawaiian descent “[to believe] their culture was inferior [and encouraged them to] become more like a western person.” Over generations, he describes, this subjugation of culture “lead to a crisis of esteem” that he found was underneath the health risks, incarceration levels, and the educational performance people of Hawaiian descent struggle with today. He finds that addressing these lingering historical consequences is an outcome of teaching the Hawaiian culture: “I don’t think [Hawaiians today] have that appreciation as a culture awareness of who they are so part of this [education] is suppose to instill that” (Hawaiian studies teacher, personal communication, June, 19, 2012).

However, even for students of non-Hawaiian descent, rooting learning in a cultural context is also seen as beneficial. Ho’omanawanui of the University of Hawai’i at Mānoa also concurs “non-Hawaiian learners can (and do) also benefit from learning about Indigenous cultures, knowledge, and perspectives”(2010). A science middle school teacher observed that “when there is a cultural connection, when the kids can see the value of a place and the value to it in Hawaiian culture or they can tie it to their personal cultures, then I think there is an increase in their science literacy” (middle school science teacher, personal communication, October 30,

2012). Besides this teacher finding that teaching culture and science together benefits science literacy, she also finds that the role of culture in education is beneficial for all learners. In fact, another interviewee provided an account of how the host- cultural context in learning had a profound impact on his daughter. When his non-Hawaiian family had moved from the mainland to Oahu, he enrolled his teenage daughter in a Hawaiian immersion school. He described that she did not enjoy many of the Hawaiian cultural aspects, such as eating the food, reciting the oli, or canoe paddling. She, he described, was resolved to move back to the mainland after college, but through the school, he witnessed a number of benefits for her. She excelled academically, knew all the Hawaii Content and Performance Standards she was required to meet (as all students he believed did at this school), and by her graduation, had change her decision to stay in Hawaii for college. The interviewee felt completely confident that the immersion school impacted her decision to stay (parent, personal communication, September 12, 2012). His account suggests the school helped fostered a sense of attachment to place in her even if it was not in an obvious way, such as liking or disliking the Hawaiian cultural traits. Dean of a Hawaiian studies university school with extensive work in indigenous communities believed that benefitting the education of those minority groups benefits all others. In a Hawaiian context, she describes this as “when you do something for that particular Hawaiian community about place and science and place and you have a variety of other nationalities there, they benefit from that education” (personal communication, November 21, 2012). The Dean describes that it’s about being a “critical learner”, not about being a certain ethnic group that really reveals the value of place-based and environmental education approaches.

Reasons why Hawaiian culture included

The importance of creating an education that incorporated the Hawaiian’s ways of knowing has long been argued (Kawakami, 1999). Its emphasis was always on its significance for students of Hawaiian descent. Charter and Hawaiian immersion schools also have a similar objective in this pursuit, but not all Oahu place-based learning necessarily begins with this objective. There are many other non charter, Hawaiian immersion programs that integrate the host-culture. An environmental educator tries to explain the difference between her environmental education organization and Hawaiian studies “our mission is to foster awareness, appreciation, and understanding of the environment...so we are focused more on the environment” (environmental educator, personal communication, July 19, 2012). However, this educator (as well as others) agreed you cannot get away from the cultural aspect of Hawaii’s host people, stating “but you know in many ways, of course, we end up including things about Hawaiian culture” (personal communication, July 19, 2012). The environmental educator believed that you couldn’t get around talking about the culture when talking about the environment in Oahu “because Hawaiians were so intimately connected to the land.” Knowledge from learning about Hawaiian culture is seen now as valuable knowledge for the complex problems of today. One science teacher exclaimed “we focus primarily on the Hawaiian culture because their indigenous technology is helpful for us trying to manage the ecosystems and the biodiversity and our own livability and sustainability” (high school science teacher, personal communication, September 4, 2012). Another elementary teacher explained that a reason place-based learning

“is important in Hawaii is because of its indigenous history. The ancient Hawaiians were the ultimate resource managers...they were in an isolated, sustainable community for thousands of years” (elementary school teacher, personal communication, September 7, 2012). The elementary teacher believed that modern society will eventually revert back to the ways indigenous people lived.

Implementation challenges

While it is reasonably said that there are a number of positive outcomes from PBE and EE in Oahu, the organizations and teachers conducting those efforts also confront several challenges. Funding, logistics, and the valuation others place on place-based and environmental education are often described as one of those “speed bumps” organizations and individuals grapple with.

Inconsistency of funds

While a handful of groups did not report funding as a challenge for their PBE and EE efforts, a larger amount did claim it was a significant challenge. The majority of those who did find it a challenge were either non-profits or individual teachers. Non profits identified the challenge lies in how funders give out grants. They tend to fund new projects and rarely provide continuous funding to previously awarded projects. Sometimes this poses a real challenge for non-profits:

“In general, funders do not want to fund ongoing programs. So if you got a program that is working and doing well, they don’t want to fund it. They want to fund something new so it’s really a challenge to develop projects that complement what you’re doing and be of value to your program and yet allow you to get funding” (Educator, personal communication, August, 7, 2012).

Some educators find this frustrating as they believe new things are happening in the programs: “a lot of [funders]...what to fund something new...even though we are doing new programs...and go to new places...they always want to fund the brand-new thing you’re doing” (environmental education, personal communication, July 19, 2012). Unused curriculums were identified as a consequence of this funding process. A coordinator stated, “I think that is why you have so many curriculums that are sitting on shelves because no one is out there advocating and helping to sustain them. They’ve had to jump on to the next project in order to stay funded” (curriculum writer, personal communication, September 7, 2012). (This person suggested the government should start providing implementation grants.) Some thought it forces creativity while others believed it leads to mission drift (environmental education coordinator, personal communication, August 21, 2012). Overall, those in the non-profits found the funding situation unstable and that is makes organizations “vulnerable.”

Teachers also suffer from the instability of funders. In one interview, I spoke with a coordinator who provided participating schools with financial assistance for an overnight camp program. In another interview, I spoke with one of the participating teachers who explained that in the first two years of participating, she received financial assistance, but that the coordinator was unable to secure funding for the upcoming year. Therefore, the teacher was in the midst of

looking for other sources of funding, stating securing a grant in time would be unlikely and now it would depend on if parents were willing to pay. Even one of the teachers I spoke with who was the coordinator of a government funded learning center felt “if we didn’t have [the consistent funding], paying for buses and subs would be hard” (science teacher, personal communication, September 4, 2012).

Those who did receive consistent funding were either part of a private foundation or were tied into legislated monies.

Charging fees cuts participation

One approach organizations have taken is to charge fees for their programs, but this is unanimously recognized as not enough to cover the full costs. “There really is no way that you can charge enough to pay your expenses,” one educator said (environmental education, personal communication, July 19, 2012). Teachers, as in the example before, can also cover fees and often have to by passing off the costs onto parents. However, there was universal acknowledgement that charging affects participation. Some schools cannot afford the program or the buses for example. Sometimes, they can only partially participate. Organizations explain that this is not a desired reality, but one that definitely affects participation.

Difficult covering field trips costs

A field trip is a common way teachers and schools engage in place-based learning and environmental education; however, the cost of one field trip, the equivalent of two classes, can be over \$400 (science teacher, personal communication, September 4, 2012). Others estimate \$800 to \$1000 (community director, personal communication, August 17, 2012). The costs can be less as well, but this depends how much the buses are, if substitute teachers are needed, and if the site has participation fees. (Buses are generally agreed to be the highest cost of field trips). Sato (2012) pointed out that the HODOE field trip budget has dramatically decreased from \$900,000 in the 1980s to almost nothing today. The teachers and community organizations I spoke with are trying to make these educational field experiences happen with what little budget schools can provide and what outside sources can be obtained. One of the organizations I spoke with allowed school groups to participate in their program for free and provided partial assistance for buses. The organization, being in Manoa, believed a lot more schools from the west side of the island could participate in their program as a result of this financial assistance (personal communication, Nov. 12, 2012). Unfortunately, not all community organizations are able to provide this assistance, especially if they are dependent on inconsistent funders as described above. Teachers within schools as well might have to ask parents for help covering costs or providing transportation to sites. While the funding situation can vary largely, it is nevertheless a limiting factor of Oahu place-based learning and environmental education.

Economic conditions exacerbate

Individuals mentioned general economic conditions affect funding for PBE and EE. Some found that non-profits and government agencies are impacted the most when economic conditions

turn for the worse. Specifically, donations become scarcer and it was identified that this can impact schools and teachers participation in programs.

Logistical Challenges

There were logistical challenges observed from the standpoints of teachers, the schools, and the community organization.

Adequate transportation

When coordinating field trips, some found the biggest challenge was providing adequate transportation. One teacher who ran program where students went out in the field on a weekly basis found the transportation situation changed every year. Sometimes parents would volunteer to support, but often he said he relied on the partnering community organization. Access to a site might also be a transportation challenge especially if the site is not accessible by bus. Charter vehicles can be rented, but are often more expensive than buses.

Adequate coverage

Participants I spoke with involved in coordinating field trips and gardening programs mentioned gaining adequate coverage as a logistical challenge. One middle school teacher explained that whatever her grade did that year had to be coordinated with the other teachers. Introducing a series of field sites into her grade was her idea and she explained it was a regular challenge to get other teachers to help chaperon them. The coordinator of a local school garden explained their program needed a minimum of two volunteer per grade level. "Gathering volunteers," she explained, was "always a challenge" (school garden coordinator, personal communication, October 4, 2012). She also added that it is a "constant effort to keep people engage and keep those volunteers returning" (personal communication, October 4, 2012).

Adequate time, liability, and regulations

Community organizations also explained not having adequate time, the need to get liability addressed, and some HIDEOE school rules are roadblocks. One community organization struggled with the time frame give by schools for student field trips. At 9am, students were picked up from school, but it takes 45 minutes till the drop off point from which students have to hike an hour to the site. The school wanted the students back by 1pm so the organizations only had around 45 minutes for the actual field experience.

The valuation of PBE and EE

The value that others place on PBE and EE can be a challenge for those conducting PBE and EE. For example, teachers and principals may have different views on what is good education and how students learn best that challenge teachers conducting PBE and EE. Parents may have views or habits that conflict with the learning content of PBE and EE teachers as well as fears and anxieties about PBE and EE field trips. Others, such as custodial staff, can impact school gardens by whether they see the value of the garden or not. The rigidities of formal education systems also influence the value others have of PBE and EE. Some of my interviewees find the

lack of value can be surmounted and does not necessarily stop efforts; but, many also encountered others who could never be “convinced” of PBE and EE’s value. Ultimately, it was understood that there needs to be someone who values PBE and EE enough for PBE and EE efforts to be sustained.

Encountering the view that PBE and EE are not real learning

One science teacher explained that one of the biggest challenges she encounters is how her peers view PBE and EE. When asking teachers on her grade’s team to chaperon a field trip, a math teacher responded that they would never go on “service learning or environmental field trips” because they “*actually* teach kids” (middle school science teacher, personal communication, October 30, 2012 with emphasis). Viewing PBE and EE as not a serious or real way of learning is also a belief held by students. A Hawaiian studies academy teacher felt his students had a misconception that PBE and EE strategies are not “academic” or that they are for “special kids.” He found that they believed “smart kids” learned in traditional classroom settings (personal communication, June 19, 2012).

“Set in their ways”

Those conducting PBE and EE feel that there are some who never would give PBE and EE a try. A private school teacher described a recycling program she has conducted for eight years at her school. Teacher participation in the program grew “markedly,” but she says that some still “don’t want recycling bins in their classrooms because of taking up space or smell” (personal communication, September 7, 2012). She was optimistic that the example she sets for EE was being noticed by others despite being “set in their ways.” A long time coordinator of PBE and EE felt a little differently:

“it’s hard to convince people that this is the best way for kids to learn if they really feel like the best way to learn is to be inside a classroom. The only way to discover that is to let go of the models of teaching they’ve been using and to explore ones that don’t have classroom walls. There are lots of people that discover that and there are those you will never convince” (personal communication, September 26, 2012).

This director’s hint at the need for teacher preparation in EE, PBE, and outdoor learning is apparent in the literature (Ebersole & Worster, 2007; Meichtry & Smith, 2007) as well as mentioned by several others in this study, but whether the teacher sees the value in trying is a remaining obstacle.

“Buy in” and “attitudes”

Having a supportive educational leader at the school who values place-based and environmental education approaches was seen as pivotal for successful PBE and EE implementation. One called it “first and foremost” (Dean, personal communication, November 21, 2012). School garden coordinators, for example, spoke about principals as key factors in a school garden’s implementation. A coordinator for many years said at one school, the principal was very “enthusiastic” that they “pretty much got [her] anything [she] wanted”

(personal communication, November 3, 2012). Several of the teachers interviewed explained having a supportive principal helped them carry out PBE and EE programs. Having a supportive educational leader; however, is just a first step. Many listed that gaining “buy in” from others, such as the community, parents, and even custodial staff (in cases of school gardens) is important. One put it as “you need people and attitudes” (dean, personal communication, November 21, 2012).

“Not on board” “Tried to stop my field trips”

Lack of parental value on PBE and EE can be very challenging. A private teacher believed the “learning content is not as powerful when families are not on board or supporting the learning” (private elementary teacher, September 7, 2012). Even a few individual parents can have strong opinions about a teacher’s PBE and EE efforts. A middle school teacher explained that in her first year of teaching she encountered a small group of parents who “tried to stop [her] field trips” by making “outrageous things,” such as “what if a drop of water [from stream] falls into my child’s eye?” (personal communication, October 30, 2012). While parental opposition was strong, it did not stop the field trips (the teacher received strong support from the principal). Some teachers felt parental anxieties about field trips could be related to what part of the island they were from. A teacher in a very rural area felt parents there were very “trusting” of teachers, but hears those who teach in more urban areas of Oahu experience otherwise.

It should be made clear that interviewees did not overshadow the importance of safety on field trips. In fact, one of the interviewees was a previous student of a school who conducted daily hikes. The student explained they had gotten threatened with a knife on one of the hikes by bullying peers and says none of the teachers on the hike was supervising them.

Core classes, college requirements, and sequential learning

A private school director felt the biggest challenge was valuing PBE and EE as much as core classes: “If we were able to say that this is as important as ...core classes, I think it would happen more often” (personal communication, September 26, 2012). The director saw that incorporating PBE and EE in elementary and middle school was easier than in high school because of the appearance of college testing and core subject classes. Other interviewees reported that class time disruption for testing or core subjects due to field trips are viewed as a drawback of PBE and EE. In fact, one interviewee saw a drop in school participation for full expense paid field trips because of a renewed and aggressive testing emphasis in the HODOE. Values of PBE and EE at the top, such as HODOE, trickle down to the schools. A coordinator of thirty years experience explains many schools have sequential learning programs to increase test scores. In these schools, she explains the hesitation about PBE and EE: “[they’re] afraid to open up their classroom to something that is new and unstructured and a lot of student engagement in projects...they’re just afraid of what that would do to their test scores” (personal communication, September 7, 2012). PBE and EE organizations and teachers have tried to get around these fears with some success.

Conclusion

My study revealed that there are many benefits associated with PBE and EE efforts in Oahu. More importantly, those involved in the educational efforts frequently utilized Hawaiian culture, seeing it as important to their learning objectives, such as teaching about science or sustainability. When questioned, most also said that incorporating the host-culture benefitted all learners despite their ethnic background. Despite the value educators and coordinators placed on PBE and EE efforts in Oahu, they also reported several implementation challenges. The key implementation challenges centered on adequate funding, logistical support, and the lack of valuation others place on place-based and environmental education. Furthermore, my findings revealed that “agencies and organizations outside of the school” are largely supporting PBE and EE efforts (G.A. Smith, 2003). Only four of the people I spoke with worked in schools, the rest worked for a community organization or large agency. These findings may be useful to areas with a strong indigenous presence i.e. Australia and New Zealand.

Appendix I: Interview Guide

Educators

1. Description of their experience(s) with environmental education (EE)
2. Description of their experience(s) with place-based education (PBE)
3. Benefits they observed from their experience with EE and PBE
 - a. Discuss different benefits according to groups: those for students, parents, educators, and the school or organization or community
4. Drawbacks or negative outcomes they observed with EE and PBE
 - a. Probe them about issues of fusing EE/PBE into their curriculum while fulfilling their teacher requirements...Do they find they can integrate them without much effort or that integrating PBE/EE conflicts with national or state mandates?
5. If they reveal they were in a program or project that promoted PBE/EE, probe them about issues of funding the program, school or organization's administrative support, and the efficacy of their collaboration with outside organizations

Program Coordinators or Organization Directors

1. Description of their experience(s) with environmental education (EE)
2. Description of their experience(s) with place-based education (PBE)
3. Benefits they observed from their experience with EE and PBE
 - a. Discuss different benefits according to groups: those for students, parents, educators, and the school or organization or community
4. Drawbacks or negative outcomes they observed with EE and PBE
5. Probe them about issues of funding PBE/EE programs, where they get most of their support and where they lack support for such programs, the efficacy of their collaboration with outside organizations

Parents

1. Description of their experience(s) with environmental education (EE)

2. Description of their experience(s) with place-based education (PBE)
3. Benefits they observed from their experience with EE and PBE
 - a. Benefits observed in child(ren): grades, behavior, critical thinking, investigation, emotional or attitudes changes
 - b. Discuss benefits onto themselves from child or their own participation in PBE/EE program
4. Drawbacks or negative outcomes they observed with EE and PBE
 - a. Drawbacks observed in child(ren): grades, behavior, critical thinking, investigation, emotional or attitudes changes
 - b. Discuss drawbacks they personally experience from child or their own participation: fear of safety due to program activities, length of time of activities

Appendix II: Details on Participants

<i>Participant</i>	<i>Current position</i>	<i>Those with 20 or plus years of experience</i>
1.	After-school garden coordinator & parent of Hawaiian Immersion school students	
2.	Director of a private school center	28 years or more developing place-based, outdoor education programs in Hawaii
3.	School garden coordinator	
4.	Youth outreach coordinator at community-based non profit	
5.	Curriculum program coordinator for government conservation area	
6.	Education director at community-based non profit	
7.	Education coordinator at government natural resource agency & chair of an environmental educator network	
8.	Program director at community-based non profit	Almost 30 years developing place-based education in Hawaii
9.	Curriculum specialist at nature center	More than 20 years developing environmental education programs
10.	Lead educator at community based organization	29 years as educator on Hawaii
11.	Retired place-based educator of school nutrition program	
12.	Middle School science teacher	
13.	Private elementary teacher	Has 20 years of teaching environmental education both in Hawaii and elsewhere
14.	High School Hawaiian studies academy teacher & program coordinator	
15.	High school science teacher and learning center director	29 years of teaching science
16.	Watershed specialist partners with community organization and high school academy	
17.	Dean of university school on Hawaiian studies	More than 30 years of experience with education, including work with indigenous communities in and outside Hawaii
18.	Lead curriculum writer & education consultant	Around 30 years of developing education programs on Hawaii

19.	Organic farmer & school garden coordinator	Around 20 years of developing school garden programs
20.	Previous student of Hawaiian charter schools	

Glossary of Relevant Terms

Ahupua'a: An ahupua'a is traditionally described as a section of land that stretches from mountain to sea (Mueller-Dombois & Wirawan, 2005, 293; Townscape, Inc, 2011). Included is the upper portion of the mountains, the source of the rain flow, then everything the stream flows through including the outer portion of the ocean from which the stream empties to. For educators, utilizing the concept of the Ahupua'a is often a useful tool for getting across messages about natural processes. Sometimes the Ahupua'a is referred to as making the mauka (mountain) to makai (ocean) connection, the fact that activity in the mountains affects activity in the ocean. An ahupua'a is often useful when trying to teach about watersheds.

Aloha 'āina: love of the land

Lōkahi: harmony

Kuleana: rights and responsibility

Malama 'āina: to care for the land

Mo'olelo: Usually how something is named has a story behind it and thus mo'olelos (stories, legends, histories) are often described when discussing the Hawaiian name of a land or water structure.

Oli: Oli means chant. It is common to open and close activities with an Oli (Hishinuma et al., 2009). The "chant [is used] to request permission to enter the stage for hula competition, classrooms, forests, etc." (Ho'omanawanui, 2010). Reciting an oli when entering and exiting a forest may happen on a PBE and EE activity in Oahu.

References

- Andrade, C. (2008). Hā`ena : Through the Eyes of the Ancestors Retrieved from Ebrary database
- Bertrand, Y. (1995). *Contemporary theories and practice in education*. Madison, Wisconsin: Magna Publications.
- C&CofHonolulu. *North Shore's Role in Oahu's Development Pattern*. Retrieved from <http://honoluludpp.org/planning/NorthShore/NS1.pdf>.
- Chinn, P. W. U. (2011). Develop a sense of place and an environmental ethic: A transformative role for Hawaiian/indigenous science in teacher education? In J. Reyhner, W. S. Gilbert & L. Lockard (Eds.), *Honoring our heritage: Culturally appropriate approaches to indigenous education* (pp. 75-95). Flagstaff, AZ: Northern Arizona University.
- Cole, A. G. (2007). Expanding the Field: Revisiting Environmental Education Principles Through Multidisciplinary Frameworks. [Article]. *Journal of Environmental Education*, 38(2), 35-45.
- de Souza, M., & Rymarz, R. (2007). The role of cultural and spiritual expressions in affirming a sense of self, place, and purpose among young urban, Indigenous Australians. [Article]. *International Journal of Children's Spirituality*, 12(3), 277-288. doi: 10.1080/13644360701714951
- Dotts, C. K., & Sikkema, M. (1994). *Challenging the Status Quo: Public education in Hawaii 1840-1980*. Honolulu: Hawaii Education Association
- Ebersole, M. M., & Worster, A. M. (2007). Sense of Place in Teacher Preparation Courses: Place-Based and Standards-Based Education. [Article]. *Delta Kappa Gamma Bulletin*, 73(2), 19-24.
- Education, H. S. D. o. (2005). Hawaii Content & Performance Standards III Database. from HIDEO http://165.248.30.40/hcpsv3/search_results.jsp?contentarea=Social+Studies&gradecourse=4&trand=&showbenchmark=benchmark&showspa=spa&showrubric=rubric&Go%21=Submit
- Foundation, M. G. (2006). Ohia Project Curriculum, from <http://www.mgf-hawaii.org/HTML/School/ohia.htm>
- Gibson, B. A., & Puniwai, N. (2006). Developing an archetype for integrating native Hawaiian traditional knowledge with earth system science education. *Journal of Geoscience Education*, 54(3), 287-294.
- Green, M. (2008). From Wilderness to the Educational Heart: A Tasmanian Story of Place. *Australian Journal of Environmental Education*, 24.
- Gruenewald, D. A. (2003a). The Best of Both Worlds: A Critical Pedagogy of Place. *Educational Researcher*, 32(4), 3-12. doi: 10.3102/0013189x032004003
- Gruenewald, D. A. (2003b). Foundations of Place: A Multidisciplinary Framework for Place-Conscious Education. *American Educational Research Journal*, 40(3), 619-654. doi: 10.3102/00028312040003619
- Gruenewald, D. A., & Manteaw, B. O. (2007). Oil and water still: how No Child Left Behind limits and distorts environmental education in US schools. [Article]. *Environmental Education Research*, 13(2), 171-188. doi: 10.1080/13504620701284944
- Hishinuma, E. S., Chang, J. Y., Sy, A., Greaney, M. F., Morris, K. A., Scronce, A. C., . . . Nishimura, S. T. (2009). HUI Mālama O Ke Kai: a positive prevention-based youth development program based on native hawaiian values and activities. [Article]. *Journal of Community Psychology*, 37(8), 987-1007. doi: 10.1002/jcop.20344
- Ho'omanawanui, K. u. (2010). Mana Wahine, Education and Nation-building: Lessons from the Epic of Pele and Hi'iaka for Kanaka Maoli Today. [Article]. *Multicultural Perspectives*, 12(4), 206-212. doi: 10.1080/15210960.2010.527587
- Howley, A., Howley, M., Camper, C., & Perko, H. (2011). Place-Based Education at Island Community School. *The Journal of Environmental Education*, 42(4), 216-236. doi: 10.1080/00958964.2011.556682

- Hungerford, H. R. (2010). Environmental Education (EE) for the 21st Century: Where Have We Been? Where Are We Now? Where Are We Headed? [Article]. *Journal of Environmental Education*, 41(1), 1-6. doi: 10.1080/00958960903206773
- Info Grafik, I., EMA, Inc. & Honolulu Board of Water Supply. (2007). *Water for Life: The history and future of water on O'ahu*.
- Jennings, N., Swidler, S., & Koliba, C. (2005). Place-Based Education in the Standards-Based Reform Era-- Conflict or Complement? [Article]. *American Journal of Education*, 112(1), 44-65.
- Jensen, U., Ledward, B., & Kana'iaupuni, S. (2010). Culture-based education and its relationship to student outcomes. .
- Kawakami, A. J. (1999). Sense of Place, Community, and Identity. *Education and Urban Society*, 32(1), 18-40. doi: 10.1177/0013124599032001002
- Knapp, C. E. (2005). The "I - Thou" Relationship, Place-Based Education, and Aldo Leopold. [Article]. *Journal of Experiential Education*, 27(3), 277-285.
- Lee, E. (Writer). (2005). The Hawaiians: reflecting spirit [videodisc]. In J. Mueller (Producer), *National Endowment for the Humanities*. Honolulu, HI: FilmWorks Ltd.
- Martina, C. A., Hursh, D., & Markowitz, D. (2009). Contradictions in educational policy: implementing integrated problem-based environmental health curriculum in a high stakes environment. [Article]. *Environmental Education Research*, 15(3), 279-297. doi: 10.1080/13504620902770337
- McGregor, D. P. i. (2006). Na Kua'aina : Living Hawaiian Culture Retrieved from Ebrary database
- Meichtry, Y., & Smith, J. (2007). The Impact of a Place-Based Professional Development Program on Teachers' Confidence, Attitudes, and Classroom Practices. [Article]. *Journal of Environmental Education*, 38(2), 15-32.
- Mullins, J. G. (1978). *Hawaiian Journey* Mutual Publishing
- NaMakaoka'Aina (Writer). (1992). Ahupua'a: a Kanaka Maoli system of natural resource enhancement, utilization & preservation. In N. Minton (Producer).
- Orr, D. (1992). *Ecological literacy*. Albany, NY: SUNY Press.
- Orr, D. (2004). *Earth in Mind: On education, environment, and the human prospect*. Washington D.C.: Island Press.
- Sato, P. I., & Staab, J. (2012). Hawai'i environmental literacy plan: HELP for Hawaii. In H. i. E. E. Alliance (Ed.), (pp. 55-60): HEEA.
- Smith, G., & Sobel, D. (2010). Bring It On Home. [Article]. *Educational Leadership*, 68(1), 38-43.
- Smith, G. A. (2002). Place-Based Education. (Cover story). [Article]. *Phi Delta Kappan*, 83(8), 584.
- Smith, G. A. (2007). Place-based education: breaking through the constraining regularities of public school. [Article]. *Environmental Education Research*, 13(2), 189-207. doi: 10.1080/13504620701285180
- Stapp, W. B., Bennet, D., Bryan, W., Fulton, J., Swan, J., Wall, R., & al., e. (1997). The concept of environmental education. *The Journal of Environmental Education*, 1(1). Retrieved from Hidden Corner website: http://www.hiddencorner.us/html/PDFs/The_Concept_of_EE.pdf
- Stribbe, A., & Luna, H. (2009). Introduction. In A. Stribbe (Ed.), *The handbook of sustainability literacy: Skills for a changing world* (pp. 9-16). Foxhole, Dartington: green books.
- Sutherland, D., & Henning, D. (2009). Ininiwi-Kiskanītamowin: A Framework for Long-Term Science Education. [Article]. *Canadian Journal of Science, Mathematics & Technology Education*, 9(3), 173-190. doi: 10.1080/14926150903118359
- Sylva, T., Chinn, P., & Kinoshita, C. (2010). A culturally relevant agricultural and environmental course for K-12 teachers in Hawaii. *Journal of Natural Resources & Life Sciences Education*, 39, 10-14. doi: 10.4195/jnrise.2008.0040k

- Takano, T., Higgins, P., & McLaughlin, P. (2009). Connecting with place: implications of integrating cultural values into the school curriculum in Alaska. [Article]. *Environmental Education Research*, 15(3), 343-370. doi: 10.1080/13504620902863298
- Townscape. (2011). *Ko'olau Poko Watershed Management Plan: Pre-final draft* Retrieved from http://www.boardofwatersupply.com/files/02_KPWMP_Ch%202%20Watershed%20Profile_PRE-FINAL_Sep11.pdf.
- UNESCO. (1977). *Intergovernmental Conference on Environmental Education Final Report (Tbilisi Declaration)*. Tbilisi, Georgia: UNESCO Retrieved from <http://unesdoc.unesco.org/images/0003/000327/032763eo.pdf>.
- UNESCO. (2005). *United Nations Decade of Education for Sustainable Development (2005-2014): International Implementation Scheme*. UNESCO Retrieved from <http://unesdoc.unesco.org/images/0014/001486/148654e.pdf>.
- van Eijck, M., & Roth, W.-M. (2010). Towards a chronotopic theory of “place” in place-based education. *Cultural Studies of Science Education*, 5(4), 869-898. doi: 10.1007/s11422-010-9278-2
- Volk, T. L., & Cheak, M. J. (2003). The Effects of an Environmental Education Program on Students, Parents, and Community. [Article]. *Journal of Environmental Education*, 34(4), 12-25.
- Wilcox, C. (1996). *Sugar Water : Hawaii's Plantation Ditches*. Honolulu, HI, USA: University of Hawaii Press.
- Woodhouse, J. L., & Knapp, C. E. (2000). *Place-Based Curriculum and Instruction: Outdoor and Environmental Education Approaches*. *ERIC Digest*.
- Yamauchi, L. A., & Purcell, A. K. (2009). Community Involvement in a Place-Based Program for Hawaiian High School Students. *Journal of Education for Students Placed at Risk (JESPAR)*, 14(2), 170-188. doi: 10.1080/10824660902854458