A HISTORICAL CRITIQUE OF THE EDUCATION AND THE ENVIRONMENT INITIATIVE IN CALIFORNIA

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Thesis Project by
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ABSTRACT

**Purpose of the Study:** A historical critique was conducted in order to examine the history and decisions to create California's Education and the Environment Initiative (EEI)'s model curriculum. The lens that was used to analyze this history was based on the question: What are the most effective ways to teach children about the environment?

**Procedure:** A qualitative historical research approach was utilized. Data was collected from interviews with 15 experts in the fields of education and environmental education, relevant literature, EEI instructional units, and public documents.

**Findings:** The data analysis revealed eight major themes, ranging from compromises to strengths of the EEI. A framework used for the data analysis was the identification and discussion of the core pedagogical elements of environmental education.

**Conclusions:** This study demonstrates how the EEI represents both an impressive accomplishment and a missed opportunity for environmental education. Based on the interpretation of the legislation, the consultants chose to prioritize teaching the standards to mastery, resulting in a compromise of utilizing environmental education pedagogies.

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Chapter One: Introduction

The field of environmental education (EE) has significantly influenced my professional teaching career, academic studies at Sonoma State University, and the direction of my thesis. This thesis is the culmination of academic and professional inquiry into a question that remains at the foundational pillars of EE: In what ways should children learn about the environment? The lens used to answer this question has been shaped by my journey into the discipline of environmental education.

My formal teaching career began at the Marin County Outdoor School at Walker Creek Ranch, a week long residential program for elementary school students, teaching environmental education. Each week, I was assigned a group of 20 fifth-graders from both rural and urban areas of Northern California. The students became empowered and comfortable in the outdoors, while I taught them ecology and the origins of food, by using the landscape as a classroom. After waving good-bye to the students each Friday, I often wondered how the EE experience would be integrated into their formal education. This curiosity remained and led me to pursue a position at an elementary school, where I could work to integrate EE into the traditional public school curriculum.

Following employment with the residential outdoor educational program, I was offered a unique EE position as a school naturalist at a public elementary school in Marin County. Three years later, I continue to work in the same capacity. This position provided me with the latitude to create a personalized EE program, by teaching about bay, wetland and garden ecosystems. As the school naturalist, I experienced the challenges and advantages of implementing EE within the context of public school. I acquired new teaching skills, such as providing engaging lessons in inclement weather,
consideration of different students’ learning styles, and addressing the academic content standards through creation of a custom K-5 curriculum, while gaining a deeper appreciation and understanding of the opportunities for EE within the public school setting.

As I began my work as an elementary school naturalist, simultaneously, I started graduate school to attain an academic and more comprehensive understanding of the EE field and how it relates to the formal public school education system as a whole. Graduate courses fostered the development of my teaching philosophy, as well as best teaching practices, which I immediately began integrating into my profession. I also learned about the multitude of EE curricula available, ranging from Project WET to Life Lab’s Growing Classroom (Appel & Jaffe, 1990), and criteria used to critically analyze them, such as the North American Association of Environmental Education (NAAEE)’s Guidelines for Excellence (Archie, et. al., 2004).

During my first semester, I learned of California’s Education and the Environment Initiative’s (EEI) model curriculum, which is based on legislation passed in 2004, and its objective to blend EE with the academic content standards. The EEI’s developers intend to lead the nation in environmental literacy with the EEI model curriculum, which is based on a set of environmental principles and concepts. As an environmental educator, I was interested in EE becoming more widely accessible, across the state of California. As my academic and educational perspective developed, I began questioning how the EEI’s staff planned to implement EE within the current framework of the school system, as well as how it would be perceived by the professional EE
community. This thesis is the culmination of my experience teaching EE as well as my academic inquiry during my graduate education.

**Problem Statement**

The need to teach environmental education to elementary school students has been widely recognized (Sanger, 1997; Lieberman & Hoody, 1998; Orr, 1992). The purpose of having EE in public schools is to resolve the recognized need to provide students with environmental knowledge, awareness, and tools for action, as described by the NAAEE. However, the approach for implementation is unresolved. What are the most effective ways to teach children about the environment? This paper describes the critical components of EE pedagogy, which are agreed upon by educational theorists in the field of EE. Qualitative inquiry was used to gather the history of the EEI and analyze the curriculum decisions made for teaching EE in a formal elementary-level school setting. The EEI’s approach to implementing EE statewide was examined, based on its curriculum and suggested pedagogy, as well as the benefits and challenges of implementation in California public elementary schools.

**Significance of Study**

As noted in the National Environmental Education Act (1990), many policy-makers and educators have acknowledged that environmental conditions are only getting worse, and thus it is urgent to teach about the environment. David Suzuki, a leading Canadian scientist, explains the urgency of the environmental crisis at hand: “The warnings are everywhere . . . Weather and climate appear to be changing while water
tables are plummeting, deserts are expanding, forests are disappearing, and 25 billion tons of agricultural topsoil are blowing away annually . . . salmon are vanishing with astonishing speed . . . These signs should be taken as global analogues of the canaries that coal miners once took into the pits with them to warn of poisoned air. Except now, they indicate trouble on the entire planet” (1992, p. xxix). Therefore, it is critical that an EE curriculum is effective in providing students opportunities to build relationships and learn about their influence on earth. By examining the benefits, challenges, and limitations of the EEI, this study expands educational discourse for future teachers, college educators, curriculum developers, and those in the EE field. This thesis contributes to the EE discipline by exploring how the EEI was created, documenting the key players’ decisions during its development, and identifying critical components of EE pedagogy.

At the time of writing, this was the only independent analysis of the EEI. This analysis documents the decisions that were made about the choice of content, pedagogy, and other curricular options of the EEI. Other states may eventually adopt the EEI’s plan to integrate an environment-based curriculum into an institutionalized public school system. This analysis may serve future curriculum developers in other states, whose aim is to create EE curriculum. If so, those educators and curriculum developers will have the perspective of the EEI staff, EE experts, as well as an independent analysis from a graduate student, with professional EE teaching expertise. This qualitative study places the EEI into a broader context of educational philosophy and theory, within the field of EE. This study will also contribute to the advancement of the EE field by addressing how the EEI intends to negotiate between EE and mainstream school pedagogies.
The Education and the Environment’s Initiative’s model curriculum is a significant educational reform for public schools. However, the perspectives on how to reform education vary greatly, especially from within the EE field. There are many perspectives on what makes education environmental (McInnis & Albrecht, 1975). What foundational pedagogies, principles, and content does a curriculum need to include in order to be considered an EE program? This paper furthers academic inquiry of EE by exploring these important questions, regarding the EEI’s model curriculum.

Support for Study

In the field of environmental education, David Sobel, Richard Louv, and David Orr have been instrumental in advancing the understanding of environmental literacy, place-based education, and the human-nature connection. David Orr, a prominent EE professor, enriches my perspective of EE in the context of the education system and how ecological literacy plays a part in its reform. In Beyond Ecophobia, David Sobel (1996) describes the importance of developmentally appropriate EE curricula. Richard Louv’s (2006) latest publication, Last Child in the Woods: Saving Our Children From Nature-Deficit Disorder, has inspired a heightened awareness about the lack of direct exposure to nature that children have today. With these individuals and others as guiding experts, this discussion examines how the EEI reflects current pedagogical research on the implementation of EE.

There has been an extraordinary amount of research conducted over the past few decades in the field of EE. The following three examples highlight some of the most influential examples of the review of literature. The State Environmental Education
Roundtable (SEER)'s (1998) research on the environment, as a context for integrated learning is foundational to the study. This research has been widely recognized for demonstrating the academic achievements that have resulted from environment-based learning programs. Another influential perspective is the research conducted by Nancy Jennings. Nancy Jennings' (2005) study on place-based education in a standards-based era has provided a very helpful model for analyzing the convergence of standards and place-based education. In her study, she examines a case study in which students learn about the environment in a local context. The third theorist, Joy A. Palmer, in *Environmental Education in the 21st Century* (1998), succinctly describes the history of the EE movement on an international scale. She also analyzes the challenges and benefits of integrating EE into mainstream schooling. Palmer introduced a framework that became a critical part of my inquiry: questioning whether an EE curriculum emphasizes learning in, about, or for the environment (1998).

The review of literature ranges from significant research and literary analysis, conducted on the challenges of integrating EE into the traditional school curriculum, to studies that show the compatibility of the goals of EE and traditional schooling. Ellen VandeVisse and William Stapp are well-recognized individuals in EE research. VandeVisse and Stapp describe four major obstacles that EE faces when being integrated with the mainstream education system: "disciplinary vs. interdisciplinary approach, crowded curriculum, value questions arise, and shortage of teachers trained in environmental education" (McInnis, 1975, p. 93). These four obstacles appeared in the data of this study as well. Individuals highlighted the need for interdisciplinary study, but raised concerns about the abilities of the educators to squeeze the EEI into an already
crowded curriculum. In addition to crowded curriculum, these authors raised the point that many teachers are accustomed to lecturing to students who passively receive information. Yet, they argue that the lecture method is not appropriate for EE. Therefore, this poses a constraint for some teachers accustomed to this model (p. 94).

Another author, John Disinger, in *Economic Barriers to Effective EE*, stated that it was difficult to overcome certain obstacles because, “the formal education system is not considered competent to cope with the demands of adequate environmental education” (McInnis, p. 35). This is a potential constraint for a curriculum such as the EEI, which plans to integrate EE into mainstream education. Therefore, it is key to understand constraints, such as untrained teachers and introducing a curriculum that might express values different than the norm, as well as the goals of EE curriculum, because the potential constraints affect the scope and decisions of a curriculum plan such as the EEI.

On the contrary, there are those educators, researchers, and public citizens who claim that EE can be easily implemented in the public school setting (Appel & Jaffe, 1990, Lieberman, 1998). In addition to the increasing support of EE by educators and the public, there are many researchers, such as SEER (1998) who have documented the academic achievement of environment-based education. One of the major contributors to the EEI’s model curriculum, Gerald Lieberman, the primary consultant, has conducted influential studies independent of the EEI (1998). Some of these studies’ findings have steered the direction of the legislation and are used to support the objectives of the model curriculum. Lieberman’s organization, the State Environmental Educational Roundtable (SEER), has conducted research to demonstrate the behavioral and academic outcomes of environmental education.
In one such study, "Closing the Achievement Gap" (1998), SEER analyzed the benefits of interdisciplinary, collaborative, and experiential learning. This organization performed a large-scale study of forty schools, in order to demonstrate the measurable results of these various learning approaches. In an interview with Kim Flynn, a math teacher, about the use of the environment as an integrating context for learning, she stated, "When I taught the kids math skills like measuring, in the classroom, they forgot it and couldn’t make use of it. When the students had a chance to use these skills on our nature trail, they not only learned better but could apply and remember their math skills longer" (Lieberman & Hoody, 1998, p. 5). The final outcome for all of the schools was an increase in performance on standardized tests, increased engagement for learning, as well as a decrease in behavioral problems. This study revealed evidence that using the environment as an integrated context for learning can increase retention, academic, and behavior outcomes. Therefore, the primary consultant of this project has published data that demonstrates the importance of experiential learning, place-based application, and its impacts on learning in public schools. This is significant because it demonstrates the effectiveness of environment-based learning within the public school system, but the success is centered on experiential learning, that occurs partly in the outdoors.

Limitations

One limitation to this study on the history of the EEI was lack of time for an in-depth review of all of the materials, such as the EEI model curriculum's instructional units and the legislative proceedings. Although time constraints prohibited a complete review of all of the materials, a few units were reviewed thoroughly and were used as a
reference for this analysis. It was not possible to personally analyze all of the curricula materials and compare them with existing EE curricula materials.

The primary focus of the study’s data was to collect the perspectives of those key figures involved with the EEI as well as experts from the EE and science-education field. Although the 15 individuals involved in this study provided comprehensive data to help trace the history of the EEI, there were many other individuals who were not contacted to participate in this study. So, this study is intended to represent the 15 interviewees’ responses, but does not attempt to extrapolate for the others involved with creating the EEI, nor the views of all of those in the EE community.

**Chapter Two: Review of Related Literature**

In order to describe the history, strengths, and limitations of the EEI, it is important to understand the context of the EE field, with which it resides. There have been a substantial amount of studies conducted within the field of EE. The literature that informed this study provided a historical context, answers to emerging topics, such as the importance and role of environmental literacy, as well as the defining characteristics of effective EE.

The review of literature discusses the resistance to EE, the history of EE, variations on the meaning of EE, a discussion of the EEI in context of EE, as well as the nationwide movement to promote environmental literacy in schools. The resistance to the term, ‘environmental education,’ arose as one central theme. In order to understand this resistance, it seemed prudent to present the modern history of EE, as well as the variations on its meaning. One topic that emerged in the modern history was the various
perceptions of what environmental literacy entails and how it is implemented. This sequentially led to how the EEI would promote environmental literacy in schools and fit into the context of EE.

The inquiry into the field of EE and environmental literacy also included an examination of effective pedagogy. The pedagogical choices of EE programs, especially for an influential, statewide curriculum such as the EEI, ultimately dictate the manner in which the content will be taught to students. This section examined the critical components of EE pedagogy. An understanding of these critical components was essential in the analysis of the interview data, in order to effectively situate the EEI in relation to the greater EE field. In summary, the three major themes emerging from the literature review were defining EE, creating environmental literacy through the EEI, and identifying the critical components of EE pedagogy.

**History of Environmental Education**

One objective of the literature review was to examine the goals, objectives and defining factors of EE, in a historical context, which led to the modern field of environmental education. Joy A. Palmer, in *Environmental Education in the 21st Century* (1998) presented an international overview of the history of environmental education. Her work describes the dynamic and complex nature of the field, progress, and future of EE. Palmer’s writing provided insight into the challenges of increasing environmental literacy in today’s educational climate, as well as provides EE case studies from many different countries. The rich history that Palmer presents creates a context for the EEI curriculum, on a historical and international scale.
In addition to Palmer's influential work, many key organizations, such as the NAAEE and the Environmental Education and Training Partnership (EETAP) have also recorded the history of EE on a national level. The EE field developed from the work of many pioneering educators, philosophers and environmentalists. Edward McCrea (2006) chronicled these influential forerunners as well as notable historical events of EE in *The Roots of Environmental Education: How the Past Supports the Future*. In this publication, he acknowledged 17th century philosopher, Jean-Jacques Rousseau, 18th century educator, Louis Agassiz, and many other influential individuals leading up to Dr. William Stapp, who in 1969, was credited for formally publishing the first definition of "environmental education." One year later, in 1970, the U.S. Congress passed the National Environmental Education Act (NEEA), creating an Office of Environmental Education, (later to be reinstated as the NEEA of 1990) (McCrea, 2006). The following year, in 1971, The North American Association for Environmental Education was founded, a widely recognized EE organization. They later developed a well-known framework for creating an EE curriculum, which included providing knowledge, awareness, and skills, leading eventually to action (Archie et al., 2004). This framework became part of the lens for analyzing the components of the EEI's model curriculum.

In 1975, EE was widely introduced into the mainstream educational system, as a result of the Belgrade Charter created by the United Nations Educational, Scientific and Cultural Organization (UNESCO) (Archie et al., 2004, p. 1). During this conference in 1975 in Belgrade, Yugoslavia, representatives from sixty countries unanimously declared the following goal statement:

The goal of environmental education is to develop a world population that is aware of and concerned about, the environment and its associated problems, and
which has the knowledge, skills, attitudes, motivations, and commitment to work individually and collectively toward solutions of current problems and the prevention of new ones (p. 1).

Although there were numerous other events, reports, and individuals who made significant impacts during that time period, the Intergovernmental Conference on Environmental Education held in Tbilisi, by the United Nations, in 1977 was a landmark occasion. At this conference, the members laid out “the goals, objectives, and guiding principles” of EE that many environmental educators still use today. They outlined the objectives clearly as “awareness, knowledge, attitudes, skills and participation” (McCrea, 2006, p.6). These events were monumental in describing the goals and objectives of EE for large-scale international implementation.

McCrea (n.d.) stated in the NAAEE document, Perspectives-Foundations of EE, that, “Unfortunately many of the environmental education programs and activities that were developed in the wake of Tbilisi lacked a clear direction and were inconsistent or failed to achieve the goals set forth by the Tbilisi and Belgrade documents.” Hungerford, et al. (1980) responded to this lack of direction by developing a framework to direct EE curriculum development and defined this comprehensive goal for EE curricula:

...to aid citizens in becoming environmentally knowledgeable and, above all, skilled and dedicated citizens who are willing to work, individually and collectively, toward achieving and/or maintaining a dynamic equilibrium between quality of life and quality of the environment (p.44).

In 1990, United States Congress passed the National Environmental Education Act, declaring the need for improvements in EE in public schools, based on environmental concerns. In Section 2.a.2, the NEEA findings stated that, “There is growing evidence of international environmental problems, such as global warming, ocean pollution, and declines in species diversity, and that these problems pose serious
threats to human health and the environment on a global scale.” Since that time, countless numbers of formal and non-formal EE organizations have responded to the need for greater and more effective EE (Kirk, 1997). Environmental education programs’ formats, objectives, and pedagogies vary from school garden programs, service learning, and residential outdoor education centers, to nature-based field trips and classroom investigations (Palmer, 1998). Also, during this time period, many EE programs initiated a strategy to gain greater recognition within the educational climate of the 1990s. Gruenewald (2005) describes the movement to align EE programs’ curricula to the standards, in order to legitimize EE:

Many EE professionals recognized that conventional education had become beholden to systems of accountability based on content area standards and standardized tests. The response of many environmental educators and high status EE organizations (such as the North American Association for Environmental Education, Project Wet, Project Wild and Project Learning Tree) was to launch an enormous crusade to legitimize EE by aligning EE programs and activities to mandated federal, state and local curriculum standards (p.273).

In addition to this ‘crusade,’ many policy makers introduced legislation to bring EE into public classrooms.

**Pertinent environmental education legislation.** State education agencies, such as the California Department of Education, face the significant challenge of reforming curriculum in order to address the environmental concerns of the 21st century and providing students an academically rich education. Some experts argue that school curriculum has changed very little over the past fifty years (Orr, 2004), while others claim that public school education is adequately responding to current environmental issues (Lieberman & Hoody, 1998).
Over the past few decades, there has been an increasing interest in integrating EE into the basic school curriculum, as a solution to reforming environmental curriculum to meet the needs of accountability, teaching academic content standards, and establishing a niche in education (McInnis, 1975; Gruenewald, 2005). One national example of this movement towards implementing national policy on EE was the No Child Left Inside Act (H.R. 2054 and S.866). This legislation would amend the Elementary and Secondary Education Act of 1965, to require states, in order to qualify for EE grants, to develop environmental literacy plans. These plans would have to demonstrate their plans for implementation, development, and measurement of environmental literacy (NCLI, 2005). The original bill, H.R. 3036, which would have amended the National Environmental Education Act, was passed by the House of Representatives in 2008, although it did not pass the Senate.

California has also created a variety of statewide legislations, in order to introduce EE into schools and respond to the environmental concerns of the 21st century. Chapter One of the Science Framework for California’s Public Schools document (Cal-DOE, 2004, p.18) described the response in California to address changing environmental concerns. “The public response to California’s environmental challenges has been profound as evidenced by the enactment of Senate Bill 373” (Chapter 926, Statues of 2001).

Another example was the initiative, A Garden in Every School, passed in 1995, which gave schools financial support and motivation to create a garden on their school grounds (Lewis 10). Some of the goals of this Initiative included providing gardens to: “create opportunities for our children to discover fresh food...offer dynamic, beautiful
settings in which to integrate every discipline...enriching the students’ capacities of observation and thinking...experience deeper understandings of natural systems and become better stewards of the earth” (Lewis 11). This initiative exemplified the value that California legislature had started to place on the role of EE in the public school setting. Also, garden-based learning is an example of an EE approach that offers many of the core components of EE, such as inquiry-based, hands-on learning, which takes place in the outdoors, often on the school grounds.

With the rise in demand for EE curriculum nationwide, the California legislature announced their support for the EE:

[We have] a moral obligation to understand the world in which [we live] and to protect, enhance, and make the highest use of the land and resources [we hold] in trust for future generations, and that the dignity and worth of the individual requires a quality environment in which [we] can develop the full potentials of [our] spirit and intellect. Toward that end LEAs [local educational agencies] and individual schools throughout California are contributing to the betterment of the environment in many ways, including replacing asphalt school grounds with gardens, recycling school waste, exchanging scientific data with the international community through Web sites, and restoring local habitats.

They elaborate on how California is contributing to the improvement of the environment and suggest that they hold EE in high regards, based on this Education Code passage:

Specific programs of environmental education enhance the learning of science at all grade levels. These programs enhance scientific and critical thinking skills, enabling students to perceive patterns and processes of nature, research environmental issues, and propose reasoned solutions. Environmental education is not advocacy for particular opinions or interests, but it is a means of fostering a comprehensive and critical approach to issues. Students get a personal sense of responsibility for the environment; consequently, schools are tied more closely to the life of the communities they serve (Education Code Section 8704) (p.19).
Their description of the benefits of EE suggests that the state values the field of EE. However, they begin their statement by saying that *specific* programs promote advancement of academic and life skills, which does not include *all* EE programs. They also clearly state that California is not promoting advocacy, but that they value the promotion of environmental responsibility, critical approaches, and building relationships with local communities. Furthermore, their set of guiding principles for an effective science education program highlights pedagogy, such as hands-on activities, investigation, and a comprehensive approach, which are core components of EE (Cal DOE, 2004). Based on these excerpts, which illustrate California’s support for students to learn critical thinking skills to enable them to “propose reasoned solutions,” the state’s education policy equates to an endorsement of environmental literacy.

**Environmental Literacy: What, Why, How?**

In addition to the state of California, there has been a strong nationwide movement to increase environmental literacy in the K-12 public school system (Coyle, 1995, p.17). Environmental literacy is defined as “the capacity to perceive and interpret the relative health of environmental systems and take appropriate action to maintain, restore, or improve the health of those systems” (Disinger, J., 1992, ¶10). The Campaign for Environmental Literacy, an advocacy organization, started in 2004 to strengthen national legislation for EE, has compiled an incredible wealth of information, including up-to-date information on statewide legislation, explanations of relevant concepts such as the components of environmental literacy, and links to EE research (Elder, 2007). They
distill the essential components of environmental literacy, which is depicted in the following diagram:

- **Capacity for personal and collective action** and civic participation
- **Problem solving and critical thinking skills**
- **Attitudes** of appreciation and concern for the environment
- **Knowledge** and understanding of human and natural systems and processes
- **General awareness** of the relationship between the environment and human life

(Elder, 2007, *What is Environmental Literacy?*)

A key aspect of their discussion of environmental literacy is that EE often focuses on one or multiple levels of this ‘ladder’, therefore creating confusion as to a clear definition of EE. They have found that, "Most important to appreciate is that environmental literacy cannot be achieved without all steps of the ladder; achieving any one step alone is inadequate and will not result in literacy" (Elder, 2007, *What is Environmental Literacy?*). This explanation of environmental literacy acknowledges the NAAEE’s establishment of the knowledge, to awareness, and action framework. Many experts have remarked that a proper scope and sequence, building on a depth of environmental knowledge and skills throughout the K-12th grades is necessary to achieve environmental literacy (Coyle, 1995, p.52).

As of November 2009, eight states: Alaska, California, Colorado, Idaho, Minnesota, New Mexico, Pennsylvania, and Wisconsin had passed legislation to create statewide EE program (Elder, 2007). The NAAEE (2008) created a document entitled, *Developing a State Environmental Literacy Plan*, outlining the benefits, elements, and
recommendations for implementations of a statewide plan. They recognize that each state has to develop a distinct program that fits their own needs, as well as meet certain needs. (2008) described that "the environmental literacy plan should identify and highlight for replication existing models for teaching about the environment." The first two examples that they suggested as models are:

- **Outdoor learning.** The best place to learn about the environment is in the environment. The environmental literacy plan should strengthen opportunities for getting students into the outdoors and connected to the natural world.
- **Service learning.** The natural world, particularly environmental restoration projects, offer superior service learning opportunities for students of all ages (p.6).

**Ecological literacy.** In addition to environmental literacy, *ecological literacy* is another term that is mentioned in regards to outcomes of effective EE. David Orr, a leading environmental educator expert, has enriched the critical perspective of today’s educational system and the relevancy that ecological literacy plays in it. In *Ecological Literacy* (1992) Orr asks, "How the discovery of finiteness affects the content and substance of education. Given the limits of the earth, what should people know and how should they learn it?” He skillfully examines current themes of sustainability, education, and even knowledge itself, in their relation to an eco-literate populace. David Orr (1992) argues, "Is environmental education an oxymoron?” Orr makes a valuable point that many people in the world living the most sustainable lives are not educated, and therefore questions the value of EE in itself as the solution (149).
Education and the Environment Initiative

A prime example of an education reform movement responding to current environmental issues is the Education and the Environment Initiative. This legislation was created as a modification to the School DEEL legislation, known by some as the 'original EEI.' The following is an overview of the history of the EEI, as agreed upon by the respondents involved with the creation and as stated on the California EPA’s website.

In 2003, Heal the Bay, a non-profit organization worked with assembly member, Fran Pavley, to author the bill, AB 1548 (Pavley and Torlakson-Chapter 665, Statutes of 2003), which was passed by Gray Davis. Then Heal the Bay worked collaboratively with state education agencies, such as the State Department of Education and State Board of Education, as well as the California Environmental Protection Agency (Cal/EP A) and California Integrated Wastewater Management Board (CIWMB) to create a model curriculum plan. Funding was secured for the Cal/EP A and CIWMB to develop a curriculum that “focuses on the relationship between humans and the environment and addresses various environmental issues, including sustainability, water, air, and pollution prevention.”

In 2005, the original legislation was revised and AB 1721 (Pavley, Chapter 581, Statutes of 2005) was passed in California. At this point, the state hired principal consultants, Gerald Lieberman, of the State Environmental Education Roundtable (SEER) and Jennifer Rigby, from the Acorn Group. They led the efforts to develop the model curriculum, define the environmental principles and concepts (EP & CS) during numerous stakeholder meetings, and train and hire the writers. There was also a unique
partnership with National Geographic, who provided support materials, such as maps and images. The units were piloted across California in 2008-09, and units were reviewed and revised by many parties, such as the Curriculum Commission. In January 2010, the goal is to have the curriculum on the agenda for California State Board of Education for approval, in order to have it ready for school districts to implement in the fall of 2010 (personal communications; http://www.calepa.ca.gov/education/eei/). As the first state to plan, develop, and implement such a large-scale environment-based curriculum, the agencies that worked to create this legislation, curriculum, and implementation plans had to make many pioneering decisions along the way.

As noted on the California EPA's website, The Education and the Environment Initiative model curriculum seeks to "teach both the state's academic content standards and the Environmental Principles and Concepts to mastery." What pedagogy did the EEI consultants, staff members, and writers choose to institute in order to accomplish the task of teaching students about the relationship between humans and the environment in public schools, in the 21st century? This question became one of the foundational questions in the questionnaire, and therefore in the data which was revealed from the interviews of this study. The expectation is that the Education and the Environment Initiative would fill a greatly needed niche for improving environmental literacy for all California public school students, thus increasing students' knowledge of the environment. In order to fulfill this expectation, school districts, and ultimately, educators, must choose to teach the EEI model curriculum units.

As part of the needs assessment for the EEI model curriculum, the EEI team completed a study to aid in the direction of the implementation. They surveyed 361 K-12
educators across the state of California (3.74 percent of the total 9,657 surveys were returned) (Lieberman & Rigby, 2005, p.15). This data was very useful in understanding the “teachers’ interests, constraints and perceived needs” (Lieberman & Rigby, p.15). “The typical respondent was a classroom teacher with 15 years of teaching experience” (p.15). Furthermore, the results showed that the top two criteria that were most important to the teachers were that it “require little preparation time and ease of use” as well as “emphasize hands-on instruction” (Lieberman & Rigby, p.25). These two criteria were rated higher than the other choices of “standards-based instructional plans, level of comfort teaching the content, availability of professional development, availability of in-service support, and approval by school board/administration” (Lieberman & Rigby, 2005, p. 25). 85% of educators responded that they would like to see student handouts included as part of the EEI curriculum materials (p.19). This response may have been perceived as a decision-making challenge, considering the important criteria of emphasizing hands-on instruction, since these two pedagogical elements are generally perceived as contradictory to one another.

This needs assessment study was integral to the decisions that were made to develop this curriculum. The data was surprising, in regards to the fact that less than four percent of the educator population in the state represent the attitudes of California educators, for the purposes of their needs assessment. Although the authors (2005) confirmed that this response rate resulted in “a confidence level of 95% with a confidence interval of +/-5.06% for the entire study population” (p.16). However, based on this study, it was clear that hands-on instruction was not only acceptable, but also selected as one of the top components for an environment-based curriculum that they would use in
Although the results of this study substantiated the EEI team's curricular decisions, the underlying goal was to teach California's K-12 students science and history/social science standards using the environmental principles and concepts.

**Environmental principles and concepts (EP & C).** In the original legislation, AB 1548, fourteen specific environmental topics were selected, as a guiding framework to create the subsequent EP and C. Next, individuals from over seventy government agencies, environmental organizations, public and private industries, and universities converged in a series of summit meetings to create the EP and C, under the direction of the principle consultant, Dr. Gerald Lieberman (Cal/EPA website). "California's Environmental Principles and Concepts (EP & Cs) are intended to examine the interactions and interdependence of human societies and natural systems. The nature of these interactions is summarized in the following five principles:

- Principle I: People depend on natural systems
- Principle II: People influence natural systems
- Principle III: Natural systems change in ways that people benefit from and can influence.
- Principle IV: There are no permanent or impermeable boundaries that prevent matter from flowing between systems.
- Principle V: Decisions affecting resources and natural systems are complex and involve many factors (EEI Model Curriculum Plan, 2005, p.14).

The original list of environmental topics was revised, and six prominent topic groups were determined in the meetings: energy, water, terrestrial ecosystems, marine ecosystems, pollution, and natural resources management. Following the development of the environmental principles and concepts, "the leadership team...developed...learning

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1 The Cal/EPA website details the topics under each of the groups, such as air and water quality, under the Pollution group: (http://www.calepa.ca.gov/Education/EEI/WorkGroups/EnviroTopics.pdf).
objectives to address California’s Environmental Principles and Concepts” (p.8). These learning objectives steered the focus for the writers of the EEI instructional units.

The writers of the EEI model curriculum units were an essential component of this program. They were selected from across the continent. As part of the application process to be selected as a writer, they completed the “Application for Appointment to the EEI Review Panel.” In this document, one of the four questions asked in the “Education/Experience” section was about “Training/Experience.” This question reads, “Please describe any specific training and/or experience in environmental education that you may have” (California Department of Education website). Also, in the Resume/Short Written Response section, on the California Department of Education website, the single question asks, “How will your background and experience contribute to the review of instructional units in the area of environmental education?” Based on the questions from the application, a background in EE was an integral aspect of a position as an EEI unit developer.

**Defining Environmental Education**

Since the inception of the discipline, influential individuals raised their concerns about the term, environmental education. One of those individuals, an educator and well-known advocate for nature study, Liberty Hyde Bailey, wrote in 1905 that, “it was imprecise, theoretical, pompous, and would always need to be explained” (McCrea, p.2). A century later, and Bailey was correct, there is still a considerable focus over the term. Despite the diversity of objectives and pedagogy of EE programs, the bottom line is that
teaching EE is integral for students to develop the knowledge and skills needed to make beneficial decisions that will impact their world, and lead to environmental literacy.

**Variations on the term environmental education.** There is a debate about exactly what defines the broad field of EE. Kevin Coyle, in the Environmental Literacy in America report (2005), claims that “What passes for environmental education in America is usually environmental information...True education nourishes a deeper understanding and an all-important ability to skillfully apply that knowledge; information simply makes one aware of a topic and goes no farther” (p.17). The literature revealed many terms for the field of environmental education: outdoor education, environment-based education, using the environment as an integrated context for learning, and simply, environmental education (Wheeler & Bijur, 2000; Palmer, 1998; Lieberman & Hoody, 1998).

There is a resistance for some individuals to use the term EE, because the term has had varied definitions, and inconsistencies in its practices and therefore the field is scrutinized by some (Wheeler & Bijur, 2000). Historically, EE as a field has not been highly valued, thus challenges existed for receiving financial support and large-scale recognition (McInnis, 1975, p.34). If a state, such as California, has an objective to bring environment-based learning into public schools, then they must make deliberate decisions to insure that any challenges, such as inconsistencies in the title, are minimized and do not affect approval by school districts. Therefore, there was an intentional decision made by the consultants to refer to the EEI as the Environmental Education Initiative, in order to distance this curriculum from its predecessors.
Environmental education, Environment-based learning, or Using the Environment as an Integrated Context for Learning (EIC); What is the difference?

The objective is not merely to define these three concepts, but also to recognize the role that each has played historically. Environment-based learning is the terminology used by the developers of the Education and the Environment Initiative. There is also reference to using the Environment as the Integrating Context for learning (or EIC) (Lieberman & Hoody, 1998). However, many individuals involved in this study, both directly involved with creating the EEI or those in the EE field, often referred to the EEI as an EE curriculum. In SEER’s study, Closing the Achievement Gap (1998), the Roundtable members described the following as examples of educational strategies used in the schools practicing the EIC model:

- Employing natural and socio-cultural environments as the context for learning
- Break down traditional boundaries between disciplines; provide hands-on learning experiences, often through problem-solving and project-based activities; develop knowledge, understanding, and appreciation for the environment-community and natural surroundings (p.1).

Kevin Coyle (2005) clearly articulated his comparison of environment-based education and environmental literacy programs in Environmental Literacy Report in America. This study, funded by The National Environmental Education and Training Foundation, was based on an extensive review of literature and a ten-year Roper research report. Coyle described environment-based education curriculum, which is aimed at meeting state standards, such as the EEI, as focusing on “the cognitive domain rather than the affective or behavioral domain” and therefore these programs’ “assessments typically pay attention to knowledge and skills gained; little or no attention is given to attitudes or behavioral impacts. This makes it difficult to determine whether environment-based
education that produces academic improvements in students also strongly improves students’ motivation and attitudes toward the environment” (Coyle, 2005, p.58).

The environmental literacy programs have a goal of creating an “environmentally educated student” and may also “yield wider academic improvements” (Coyle, p.58). He also clarified that attaining environmental literacy includes time, actual thinking and doing, as well as a depth of information. In addition, that “most real environmental education involves hands-on experience either in a lab or the field” (Coyle, 2005, p.55).

Contrary to Coyle’s definition for the 2005 NAAEE report, the same organization in 2001 defined environment-based education quite differently in the report, Using Environment-based Education to Advance Learning Skills and Character Development. In 2001, the NAAEE described environment-based learning as related to nature studies, and focusing for the most part on learning in the environment (NAAEE, 2001). They continued to add that it “emphasizes interdisciplinary integration of subject matter, problem- and issue-based learning experiences, team teaching, learner-centered instruction, constructivist approaches, and self-directed learning” (NAAEE, 2001, p.2). Therefore, even within the same organization, one term was given different meanings.

In summary, these three different frameworks each have merit and offer important learning objectives. Often, any one of these three terms is used interchangeably when speaking to the same individual. So, it is important to look beyond the label placed on a program or curriculum and delve into the pedagogy that is used to teach about the environment. Does the curriculum concentrate on learning about the environment, in the environment, or for the environment, or a combination of any of these three distinctions (Palmer, 1998)
Academic Content Standards and Environmental Education Curriculum

As a result of federal mandates, such as the No Child Left Behind Act of 2001, Gruenewald (2003) states that "accountability is an increasing emphasis on standards, testing, and classroom pedagogies that "teach to the test" while denying students and teachers opportunities to experience critical or place-based education" (p.3). He discussed how students are expected to think abstractly about places, while staying indoors. Gruenewald (2003) explains the limitations of a standardized curriculum in teaching place-based education,

With standards and testing dominating today's educational discourse, the suggestion that educators should create curricula designed to foster empathy and allow for the exploration of local places challenges current policy and practice—especially when the suggestion is for regular, coordinated K–12 experiences. Such a goal is usually not part of a teacher's job description nor do teacher education programs prepare teachers to teach this way. In place of actual experience with the phenomenal world, educators are handed, and largely accept, the mandates of a standardized, "placeless" curriculum and settle for the abstractions and simulations of classroom learning. Though it is true that much significant and beneficial learning can happen here, what is most striking about the classroom, as a learning technology, is how much it limits, devalues, and distorts local geographical experience (Gruenewald, p.8).

The fact that the introduction of EE into mainstream education poses a challenge for educators is widely noted in the literature (Palmer, 1998). There is clearly a paradigm shift that would need to occur for teachers to shift from the "dominant conception, organization, and transmission of knowledge" to an acceptance of a reformed way of teaching and learning (p.96).

In Gruenewald's (2005) article about place-based education, he revealed valuable insights about the attempt to integrate EE into a standards-based educational system. Gruenewald argued that "EE has infiltrated the standard school curriculum...by claiming to be an instrument of student achievement by the standard measures of schooling ...
[which] ... undermines its pedagogical possibilities” (p.263). He further discussed how EE professionals are attempting to “garner institutional legitimacy” in this climate of accountability by demonstrating “the fit between EE programs and activities and conventional standards.” Gruenewald presented that as a result of EE programs attempting to merge with standards, “EE educators are in danger of undermining their own transformative educational goals (e.g. improving the quality of the environment through experience, study and action)” (p.273). This “monumental effort”...“may actually reinforce the power of the current standards discourse”...preventing...“the emergence and development of more environmental and place-based education” (p.273). Gruenewald’s work provides support for the findings of this thesis study, which suggest that the decision that the EEI made to fit into the mainstream system compromised the pedagogy of the EEI.

The EEI represents the first statewide reform attempt to link education about the environment, which has previously operated apart from classroom-based learning, with the standardization of EE curriculum. Karliner describes how, “The organizations providing environmental education programming often operate in a fragmented and piecemeal fashion...Pedagogically speaking, environmental education is often quite isolated; rather than being integrated into curricula, environmental education is often seen as a supplement to it” (Karliner, 2005, p. 30). Therefore, according to Karliner and Gruenewald, EE is often considered a supplemental curriculum and this merge with conventional standards could undermine their fundamental goals. What will be compromised in a marriage of curricula with opposing goals and objectives, if an environment-based curriculum is standardized on a statewide scale?
The questions that remain are, ‘Did the EEI creators overcome the limitations of the paradox that exists between environmental education and traditional schooling?’ and ‘How did they respond to what Palmer refers to as, “the fundamental curriculum and pedagogical contradictions between environmental education and schooling” (1998, p.96)? The standards movement leads us in the direction of encouraging all children to receive the same education (Noddings, 2003). However, according to Dewey (1900), the “best and wisest parent...would want an education that is best for each individual child” (p.339). Therefore, “Understanding the institutional dynamics of schooling can help us to understand why reforms such as place-based education are so difficult to implement widely and may also provide reformers with clues to a strategy for change” (Gruenewald, 2005, p.266). Clearly, the pressures of the complex institution of schooling on educational reform are substantial. Yet, there are parents, educators, and policy makers that demand student-centered learning, and are optimistic about the inclusion of EE into the larger standards-based education system.

Context of environmental education in mainstream education. Nel Noddings argued that the rise of the standards movement negatively impacts the aims of education (Noddings, 2003, p. 86). Noddings stated “Specifying the entire curriculum as objectives before teachers and students begin to interact forecloses the freedom of students to participate in the construction of their own learning objectives” (p. 77). This point is very applicable to EE and its traditional exploratory, inquiry-based style of learning. Will this freedom to construct their own learning objectives be jeopardized when EE is folded into the academic content standards?

Certain individuals argue that EE must be included within the framework of the
greater education system. Gruenewald explains, in the following quotation, what this mainstream education system looks like today.

The isolated, segregated spaces of the classroom and school and the regulation of time into fragmented chunks of disconnected experiences at a school desk; these are the chief technologies of schooling. They are perhaps more instructive than any lesson or test. From a geographical perspective, the main pedagogical impact of these technologies is to reinforce the assumption that schooling is a placeless endeavor (Gruenewald, 2005, p.272).

Despite the daunting nature of the education system, many EE providers persist on establishing a place for EE in mainstream education. For example, in 2005, the State Environmental Educational Roundtable designed the School DEEL (Diversion and Environmental Education Law) Unit Plan program, which specified that schools “reduce waste and conserve resources” as well as “provide pupils with a hands-on learning experience” (SEER, 2005, p.1). They focused on creating “an effective strategy for making learning more relevant to students’ lives” (p.2).

There are experts that are critical of integrating EE into an institutionalized curriculum, because they view the two as fundamentally different. For example, Jennings explains that, “To the extent that standards-based reforms draw practitioners’ attention away from local needs and leave unexamined the impact that educating students toward externally derived standards has on local economies, standards-based reforms become incompatible with educating children to understand and sustain their own communities” (Jennings, 2005, p. 7). This historical study investigated whether it was possible to standardize EE but still maintain the origins of the rich, place-based experiential pedagogy.
Critical Components of Environmental Education Pedagogy

The pedagogy of a curriculum could be considered equally, if not more important than the content. Author David Orr confirms that, "the way education occurs is as important as its content. Students taught environmental awareness in a setting that does not alter their relationship to basic life support systems learn that it is sufficient to intellectualize, emote, or posture about such things without having to live differently" (Hernandez, 2000, p.60). This thesis examines how the EEI reflects current pedagogical research on the implementation of EE. To understand the decisions made about the pedagogy of this California based curriculum, it was first necessary to distill the core components of an environment-based education from a review of existing research.

There were five components of EE pedagogy that were continuously mentioned in the literature. Interdisciplinary, place-based, experiential/hands-on, inquiry-based/investigating, and outdoor learning became the five themes that served as the threads to weave together the fabric of this study. These five themes are considered instrumental in achieving the final outcome of an ecologically literate citizen. With these core pedagogies of EE as a lens, the plans for implementing the legislation and its objectives were critically analyzed.

Experiential/hands-on learning. How essential is to have direct contact with the outdoors in an environment-based program? Joy Palmer and Neal Philip (1994) describe, "There is no single 'right or wrong' way to approach the teaching and learning of environmental education in the primary phase." They proceed to say however, that "first-hand experiences of the environment are at the forefront of teaching and learning" (Philip and Palmer, 1994, p.37). So, based on these experts' conclusions, it would seem
that education pertaining to the environment would include some contact with the environment.

Richard Louv's (2006) latest publication, *Last Child in the Woods: Saving Our Children From Nature-Deficit Disorder* has inspired a heightened awareness about the lack of direct exposure to nature that children have today. As a result of the impact that Louv's research has made, the public may question if the EEI will provide a solution to this issue, and allow for more opportunities for students to learn outside. Richard Louv (2006) discussed the fears that inhibit kids from being outdoors: lack of time for parents' supervision, increase in video games, alarmist news reporting. How does this play into the fears of teachers, schools, school districts, and eventually the DOE who are making decisions about statewide curriculum that teaches students about the environment? Are we perpetuating this pattern by allowing students to learn about the environment within a classroom, or while looking at a computer or television screen, while there is an opportunity for them to learn first-hand, outside of their classroom door?

In order to answer these questions, it was helpful to review literature on child development associated with learning about the environment. This passage describes the importance of students having concrete experiences when learning about a subject.

According to Kolb's experiential learning model (Kolb, 1975 in Weatherford & Weatherford, 1987), concrete experience leads to observations and reflections that result in the formation of abstract concepts and generalizations of these concepts as well as the capacity to test the implications of these concepts in new situations. Piaget and other scientists have shown that a child's understanding is developed through his actions on the environment and not merely through language. Another unique point about experiential education is that it is based on the intrinsic motivation of the learner (Desmond, Grieshop, & Subramaniam, 2002, p.10).

**Inquiry-based learning.** Based on a study by researchers, Hungerford, Ramsey, and Volk, who argue that investigation and problem solving are important factors leading
to environmental literacy, they found that these two pedagogical components also led to increased critical thinking, environmental action, environmental knowledge, as well as a list of others (Coyle, 2005, p.60). John Barell (2003), in *Developing More Curious Minds*, described inquiry-based learning situations as those that “challenge students to identify their own questions and undertake a rigorous investigation to find answers” (134). In order to implement inquiry-based learning pedagogy in a classroom, a teacher must be open to the pathways that the lesson may take. If there is an end, such as an assessment test, which tests specific facts, than an inquiry-based learning style may not fulfill the goals of a standardized curriculum. Therefore, is it possible to have a statewide curriculum that fosters inquiry-based learning, while simultaneously being a structured, textbook-based curriculum?

Palmer and Philip (1994) described their view of student-centered opportunities for inquiry-based learning, “The knowledge, understanding and processes of related curriculum areas such as science, mathematics and geography should be developed through environmental experiences in the context of each pupil’s individual potential and natural curiosity” (p.37). Barell (2003) also describes how inquiry skills are included in many state standards in science. Thus, it would seem that inquiry is possible in a classroom, using a textbook based curriculum, if students are provided the opportunity to “formulate usable questions and hypotheses, planning experiments, conducting systematic observations, interpreting and analyzing data and drawing conclusions and communicating results” (135).

**Interdisciplinary learning.** Interdisciplinary learning has been well recognized as a core component of EE (Palmer & Neal, 1994). Joy Palmer and Neal Philip (1994)
outlined the EE goals and principles defined in the Tbilisi report in 1977, including, “a lifelong process, interdisciplinary and holistic in nature and application, and an approach to education as a whole, rather than a subject” (p.21). They highlighted the cross-curricular nature of EE and explained that it,

 Allows children the opportunity to understand the many and varied environmental issues that surround them, how decisions are made about the environment and how people can have the opportunity of participating in the decision making process. Work in EE represents a good opportunity for children to use a whole range of skills in a way that is both relevant to their lives as well as useful to their future as citizens. By stretching children intellectually and creatively, by asking them to communicate ideas and work in a cooperative manner on environmental issues that face them, it is hoped to produce adults provoked and challenged into making a positive and constructive contribution to the future and well being of the world (NCC Task group 1989, unpublished) (p.30).

**Place-based education.** In Place-Based Education (2004), David Sobel defines this approach of pedagogy as,

 The process of using the local community and environment as a starting point to teach concepts in language arts, mathematics, social studies, science, and other subjects across the curriculum. Emphasizing hands-on, real-world learning experiences, this approach to education increases academic achievement, helps students develop stronger ties to their community, enhances students’ appreciation for the natural world, and creates a heightened commitment to serving as active, contributing citizens. Community vitality and environmental quality are improved through the active engagement of local citizens, community organizations, and environmental resources in the life of the school (p. 7).

Gruenewald (2005) discussed the challenges of incorporating place-based pedagogies into current school practices.

 Although evidence exists that early schooling in the USA included frequent and widespread opportunities to experience and study the local natural environment (Pyle, 2001), the standardization and text-centrism that is the hallmark of today’s schooling practices makes such phenomenological place-based experiences rare and difficult to develop and sustain.

 He continues to add that place-based education is, “the process of connecting learners and their teachers through direct experience, reflection and action to the geographically
specific cultural and ecological dimensions of community life” (Gruenewald, 2005, p.263). Pedagogy of place allows students to become knowledgeable about the place that live in, become familiar with, and build relationships with their natural and built communities. “Moreover, a critical pedagogy of place ultimately encourages teachers and students to reinhabit their places, that is, to pursue the kind of social action that improves the social and ecological life of places, near and far, now and in the future” (Gruenewald, 2003, p. 7).

Often times, placed-based education is associated with outdoor, nature-based experiences. This is not always the case, however. A teacher could teach about the local area simply by showing students pictures of the local flora and fauna, without ever stepping outdoors. This question of where the suitable environment is to teach about/in/and the environment remains an open debate. James F. Passineau explains how, “Some claim it is essential that the student be moved physically from the classroom to a forest, a seashore, an industrial factory, or an inner-city ghetto. Others say it is the psychological environment that is most important. For some the use of strict discipline and formal texts is important. Others want to throw books away and give students the freedom necessary to investigate real-life situations and participate, firsthand, in the solving of environmental problems...Many factors influence the suitability of learning environments, and further effort is needed to develop adequate appraisal systems” (McInnis, 1975, p. 375).

John Dewey’s image of “learner as active constructor of meaning” reinforces the viewpoint of effective pedagogy in EE (Wilson, 2006, p.2). If the objective is to create environmentally literate citizens who will care for this planet, is it necessary for them to
develop a relationship with the natural world, as well as learning about the environment as a context? Dewey responded to this inquiry, "The real remedy is to make nature study a study of nature, not of fragments made meaningless through complete removal from the situations in which they are produced and in which they operate. When nature is treated as a whole, like the earth in its relations, its phenomena fall into their natural relations of sympathy and association with human life" (Knapp, 1980, p. 221).

"Curriculum not only uses place as a context for learning but has the support and sustainability of place as a goal. Given this focus, state standards and assessments are almost by definition antithetical to place-based curriculum" (Jennings, 2000, p.51). "Although Brooke still asserts that curriculum should be tied and connected to local culture—something difficult to achieve with state standards—it should do so because it makes learning more relevant, not because the learning itself should be about the local context. In this way, it conflicts less with standards in that the outcomes may not be incompatible" (p.51).

"Ideally, we would spend part of the day outside exploring with our students, but that isn't always possible. In this litigious age, it isn't only finding time that holds us back. We worry constantly about allergies, injuries, and threats from molesters" (Noddings, 2003, p.125). There continues to be a great debate about how and if place-based learning should be included as part of a standards-based education system. There are barriers and contradictions between the two systems that make this integration challenging. However, it is also evident that place-based education is a necessary component of generating environmental literacy.
Learning in the outdoors. Richard Louv (2006) has shown that children are decreasingly allowed unstructured time, consequently impacting their mental and physical health, well being, and awareness of their surroundings. Louv suggests that the “environmental attachment theory is a good guiding principle: attachment to land is good for child and land” (p. 303). There is a common saying, by Socrates, that students care for what they love (Noddings, 2003). “The values of ecologically literate and politically motivated adults are shaped by significant life experiences that foster connection...The idea that people need to develop mutually enhancing relationships with nature before they will act on its behalf is not a new idea” (Gruenewald, 2003, p.7).

Therefore, by allowing students to learn directly from the land, and build relationships with the flora and fauna that surrounds their school, neighborhoods, and towns, many would argue would allow them to, in turn, appreciate, understand, and respect it, and eventually make informed decisions to care for the environment. David Orr confirmed, “From a variety of sources, we know that the things most deeply embedded in us are formed by the combination of experience and doing with the practice of reflection and articulation...and ‘the sense of wonder’ requires childhood experience in nature and constant practice” (Orr, 1992, p.99).

In order to develop an intense consciousness of places that can lead to ecological understanding and informed political action, place-based educators insist that teachers and children must regularly spend time out-of-doors building long-term relationships with familiar, everyday places. The kinds of educative experiences students and teachers pursue depends on the distinctive characteristics of the places they inhabit, as well as on what learning objectives and strategies they employ (Gruenewald, 2003, p.8).

“Pupils in school, perhaps at primary level in particular, are fascinated by their surroundings and have tremendous capacity to build upon natural learning experiences
that take place within them. Aside from academic debate and jargon, the 'real world' experiences of a wide sample of educators show the vital importance of education in the environment as a prerequisite to a concern for it. The most valuable and readily available resource to all schools in the environment itself” (Palmer & Philip, 1994, p.33). The literature continued to describe how EE consists of education “for, about, and in or through the environment” (Palmer & Philip, 1994, p. 30). They described that a teaching and learning framework for primary grades should include tasks that “educate about the environment, for the environment, and that are accomplished in the environment.” Palmer and Philip (1994) expand on this point, “Within this framework, we identify the three crucial elements of personal experience in the environment, the development of personal concern for the environment, and the taking of action in and on behalf of the environment” (p.38).

In Beyond Ecophobia, David Sobel (1996) described the importance of developmentally appropriate and outdoor-based EE curricula. “What’s important is that children have an opportunity to bond with the natural world, to learn to love it and feel comfortable in it, before being asked to heal its wounds...Our problem is that we are trying to invoke knowledge, and responsibility, before we have allowed a loving relationship to flourish (Sobel, 1996, p. 10).

**Summary**

The integration of EE into public schools on a statewide level is a historical event in the EE movement. The EEI team created a curriculum to teach the academic content standards to mastery, in an environmental context. As a result, the goal is to improve
environmental literacy in the state. Margaret Mead describes the importance of such an act. “We must educate people in what nobody knew yesterday and prepare people in our schools for what no one knows but which some people must know tomorrow” (McInnis, 1975, p. 51).

A curriculum, by definition, includes both the content as well as the pedagogy. Therefore, the knowledge gained by the students is intended to address these objectives. The critical components of EE pedagogy that have been described are also an essential piece to the creation of an environment-based curriculum. These were carefully explored in order to provide a background to examine the pedagogies that have been used in the EEI curriculum, as portrayed in the data. For the sake of this study, because the EEI legislation has used both the terms EE and environment-based learning in their public documents, they are both used in the remainder of the thesis. However, there is a clear distinction made between hands-on learning that occurs in an outdoor setting and EE that takes place for students, through the context of textbook learning.

Many members of society would accept that traditional philosophies of education are outdated and need to be adapted to fit into the context of the 21st century paradigm. The Roper report found that 87% of those surveyed support EE in schools because they feel it will “help children better understand environmental issues when they become adults” (Coyle, 2005, p.66). David Gruenewald (2005) revealed a very informative look into the ‘real’ way that educators perceive standards,

When asked in private, beyond the gaze of the disciplinary power overseeing formal education, what goals, objectives and purposes environmental and place-based educators truly care about, all the educators I know respond with conviction that the standards prescribed by the state do not represent their actual teaching values. Many educators see the content standards as a minimum competency, easily met through creative teaching of many kinds. Again, there is nothing inherently
wrong with content area standards in traditional content areas like mathematics and literacy and I am not necessarily suggesting that all the traditional expectations of schooling be abandoned. The problem arises when: (a) These standards neglect the social and ecological dimensions of the places where people actually live and (b) high stakes accountability compels educators, school leaders and policy-makers to pay attention only to what is measured by traditional content area assessments (p. 273).

Gruenewald’s presentation of the dilemma posed when introducing environmental education into the mainstream education system is a fundamental thread that weaves through this thesis.

If education is not about people working together for the well-being of places, then what is education for? This is the question that local communities need to begin asking themselves, and then begin responding with a new sense of purpose in which places matter. It is unlikely that current educational leaders will begin this conversation (Gruenewald, 2005, p.281).

The foundation of this study is the data that was revealed through in-depth interviews of fifteen experts. How did the educators, policy-makers, and EE providers respond when asked about the attempt to create an environmental-based curriculum in California? How has the history of EE, critical components of EE pedagogy, and the EEI mandate informed and persuaded the goals and objectives of the EEI’s model curriculum? The words of the following interviewees eloquently articulate the historical story.

Chapter Three: Methodology

Design of the Investigation

This historical, qualitative research study has components of various research approaches: interpretative recounting of past events, purposeful sampling, emergent design flexibility, use of qualitative data, and naturalistic inquiry (Johnson and
Christensen, 2004). This research study is a historical recounting and critique of the Education and the Environment Initiative and its model curriculum. From a pre-implementation historical perspective, this qualitative study reveals the decisions that were made from the initial proposal of Assembly Bill 1548 (Pavley, Chapter 665, Statutes of 2003) to the changes with Assembly Bill 1721 (Pavley, Chapter 581, Statutes of 2005) and throughout the development phase of the EEI’s model curriculum.

Interview questions were designed to “recapture the complex nuances” and expose the ideas that influenced the development of the EEI (Johnson & Christensen, 2004, p. 392). The goal was to compile the perspectives, attitudes, and history regarding the creation of California’s first statewide environment-based curriculum, the EEI. Through careful analysis of the data, which will be described in detail in Chapter Four, multiple themes emerged, as well as an overarching essence. Although the participants are unique in many ways, they share at least one major perspective about the creation of the EEI: that it was created to increase environmental literacy for California public school students. The design of this study was aimed at exploring that essence, and utilizing a holistic perspective to understand how the other viewpoints interpreted the same sequence of events.

This study utilizes emergent design, by formulating inquiry of the unknown, with historical findings (Johnson and Christensen, 2004). Emergent design research approach fosters an evolution of understanding beginning with initial exposure to literature and public records, to data analysis of the interview responses. Similar to emergent design, a naturalistic inquiry methodology facilitated examination of the progression of the EEI legislation (Johnson and Christensen, 2004).
Although this study did not take place in a classroom setting, many parallels exist between the nature of this study and a naturalistic approach to classroom research. In *John Dewey and the Challenge of Classroom Practice* (1998), the authors outlined their technique for qualitative research in a Deweyan classroom, which they described as a qualitative or naturalistic approach (McCarthy & Fishman). For example, using triangulation, or several sources of information to compensate for the strengths and limitations that each may have, allowed for trustworthy results (McCarthy and Fishman, 1998). They describe how this approach compares researchers to “fishermen layering flawed nets such that the intact parts of some cover holes in others” (McCarthy and Fishman, p.116, 1998). This study used a variety of sources including, interviews, public documents, related website materials, my perspective as a researcher, and the EEI model curriculum. These sources were used in order to cross-reference and overlap any holes similarly to the “nets” metaphor described above. This fabric of information was instrumental in formulating the results. Interviews with professionals from different backgrounds provided a significant bulk of triangulation, allowing for different perspectives of the events. These sources provided cross-references in this historical analysis, to ensure validity of the data and lack of potential “holes” in the data.

*Johnson and Christensen (2004)* detail a sample methodology for conducting historical research in *Educational Research*. However, they also state that, “there is no agreed-on methodology for conducting historical research...and that these researchers “are constantly looking to other disciplines for methods or theories” (p.395). Although historical research served as the foundation to this methodology, the other qualitative elements, such as emergent design, a naturalistic approach, and purposeful sampling were
integral components of this study. Although data collection was as objective as possible, remaining neutral and unbiased during the interviews, it is important to recognize that often the "researcher is the primary instrument of inquiry" during qualitative studies (McCarthy, 1998, p.129). The role of the researcher shaped the design of the study, during the selection of specific respondents, the creation of the open-ended questionnaire, and the analysis of the data.

**Population**

Purposeful sampling was used as a primary method for collecting this historical data. Johnson and Christensen (2004) describe purposeful sampling as: "[people] are selected because they are information rich and illuminative, that is, they offer useful manifestations of the phenomenon of interest; sampling, then, is aimed at insight about the phenomenon, not empirical generalization from a sample to a population" (p. 362). The selection of the individuals, in part, decides the quality of the qualitative study. In this case, the respondents provide a rich account of the creation of the EEI. These individuals were specifically chosen based on their expertise in order to learn about the historical components of the initiative and its model curriculum, and therefore, constitute a key characteristic of the study.

Fifteen subjects were chosen as interview subjects in the qualitative study, which is a recommended sample size (Johnson and Christensen, 2004). This number of participants allowed for a comprehensive view of the creation of the EEI as well as a substantial amount of feedback from the larger educational community. The interview participants were selected based on several criteria. The fifteen key individuals were
selected based on their role with the EEI, knowledge of the implementation of the EEI,
and/or expertise in the EE field. The participants were also chosen due to the diversity in
professions, which range from curriculum developers, professors, business owners, to
individuals involved on the policy level with the EEI. Through EEI website information,
academic recommendations, and recommendations from those involved with the EEI,
five individuals were identified, who were influential in the EEI’s formation. The other
subjects were selected based on the reputation of the organizations or companies that they
worked for and their influence in the EE field. The individuals shared certain
commonalities with the whole population, but were divided into three subject groups,
based on their professions and/or specific roles with the EEI. The individuals have all
been given pseudonyms to maintain their anonymity.

The first group consisted of five individuals who had been involved in either
piloting the curriculum, networking with school districts to aid with the curriculum
dissemination, or was closely involved with the creation of the Initiative and its model
curriculum. Patrice works with a public organization that collaborates with both EE
providers and school districts. Harry is a public school teacher and a self-proclaimed
environmentalist. He teaches at an elementary school and piloted two of the EEI units.
Richard has held many high positions in the EE field and coordinates statewide EE
programs. Bethany has an instrumental role in a non-profit organization that has aided in
reviewing the EEI curriculum. Lastly, Melinda has worked in the field of EE for
decades. She has also contributed to the EEI as an editor and writer.

The second group consisted of administrative level individuals, who informed the
study with their knowledge of the development of the EEI initiative and the processes
involved in funding and creating a statewide program. These individuals consist of curriculum developers, policy makers, and administrative level individuals that were involved in the pre-implementation phase of the legislation. Lucy is at the administrative level, has had an instrumental role, and has been involved since the initial stages of the legislation. Rebecca works at a private-level, was hired for her consulting expertise and wealth of knowledge of EE curriculum. Wallace is involved at the policy level, and has been involved with the EEI and its dissemination in various capacities. Lisa works in an administrative capacity, managing the implementation of the EEI. Samantha worked in a high level educational position when the bill was first passed. These individuals provided the vision, inspiration, and initial plans for implementation. Their perspective helped determine the motivation and direction of the EEI initiative and its implementation.

The last group consisted of professionals in the EE or science education field. These five individuals each work with well-recognized, reputable organizations that are involved with public education programs in California. Susan has worked for many years with a non-profit organization, as the Education Program Director. Francesca has served as the director of a well-known national EE program. Sarah is indirectly involved with the EEI legislation, through her role as the Director of a science education center, which creates national curriculum. Anthony works with a public agency that has created nationwide EE for many decades. Reagan has contributed to the EEI and also directs a County Office of Education science program. Their responses were integral to the understanding of how this legislation might impact the greater community of environmental educators in California.
The selection of three different groupings of participants, their stories, the literature, and the instructional units themselves allowed for triangulation of data. By examining the information from each of the participants’ responses, this data was cross-referenced with the other participants’ responses for accuracy and comparison. Also, there were five individuals in each of the groups, providing a balanced view from three different categories.

Previous to the interviews, I personally knew one of the fifteen participants. In addition, prior to the interviews, I met three of the participants in person, at events connected with the EEI. I introduced myself, and notified them that I would be contacting them at a later date and requesting interviews. I contacted each of the participants by e-mail, requesting their involvement in the study. In the e-mail correspondence, I described the goals of the thesis project, the logistics of the interview, as well as notifying them of their anonymity in the study. There were no incentives provided for participation, other than aiding in the research of a graduate student.

Interviews were scheduled at the participants’ convenience, and the type of interview (phone versus in-person) was determined based on their geographical proximity and personal preferences. One very impressive element of this study was that out of all of the fifteen originally selected individuals, all fifteen agreed to participate in the study.

There were four males and eleven females, with an approximate age range of thirty to sixty-five years. Their levels of education held ranged from two Doctoral, five Master’s, and eight Baccalaureates degrees. All of the participants displayed a wealth of knowledge in their profession, and held high-level professional positions, in both the
public and private sectors. Their extensive backgrounds and knowledge are exemplified in their responses to the interview questions.

Treatment

This qualitative study consists of three major components, in addition to the identification of the research topic (Johnson & Christensen, 2004). First, a noteworthy amount of literature was reviewed and evaluated. The literature included the instructional units themselves, studies conducted by the EEI leadership team, and related legislation material. A questionnaire was developed, piloted, and approved. An extensive amount of data was collected through interviews, and subsequently synthesized. In addition to these three components, an observation was made at a public school that had piloted two units of the EEI in an elementary classroom.

Initially and throughout the study, I sought out research studies, literature, and legislation information to provide background about EE pedagogy, existing studies, and the legislative history for creating the EEI. The information in the relevant research and supportive data was collected to provide an overview of research on critical components of pedagogy in EE, as well as data collected from studies on integrating EE into a standardized educational system. Also, review of public records and meeting notes informed my understanding of the processes involved in the creation of the EEI in California. Public records, such as the legislation that described Assembly Bills 1548 and 1781, allowed for an historical perspective, as well as insight into the data the curriculum developers worked with in order to successfully meet all of the legislation
requirements. In addition, the draft units for the EEI Model Curriculum provided a valuable opportunity to understand the goals and pedagogy of the model curriculum.

**Questionnaire development.** There were three categories of questions, in the twenty-question, open-ended questionnaire, used for the interview (Appendix A). The participants’ backgrounds, including education, job experience, and role with the EEI was ascertained. The questions also included topics such as their philosophy of EE, understanding of the goals of the EEI, and views of effective pedagogy to teach environment-based education. The third category included questions intended to provide information on the strengths, challenges, and limitations of the pre-implementation stage of the EEI. Each category will be described in greater detail, with regards to the responses to the questions, in Chapter Four.

Five experts piloted the original questionnaire to insure its relevancy, comprehensiveness, and content validity. These individuals ranged from a manager of a non-formal EE program, a University professor, a Master’s in humanities, a Doctor who specializes in public health education, and an EE scholar, a former chair of NAAEE. Based on their feedback, the questionnaire was revised and eventually submitted for approval to the Sonoma State University’s Institutional Review Board and approved on May 12, 2009.

Next, a forty-five to sixty minute interview was conducted, administering the piloted questionnaire, with each of the key players described above. The participants answered a total of twenty questions, carefully crafted and organized to allow for open-ended responses and an in-depth amount of information, from the piloted questionnaire. Six interviews were conducted in-person, and due to location, there were nine
circumstances that dictated a phone interview. Interviews allowed for an in-depth perspective to be shared on the creation of the curricula, from individuals directly and indirectly involved with the EEI.

Third, a site visitation to a local school that field-tested the EEI’s model curriculum was conducted. One objective for this visitation was to make observations in order to describe the reality of the implementation of the EEI in public schools. This school visit provided validation of the research and helped to describe whether or not the research was supported by the observations of the implementation in a school model. During the observation, there was a plan to discuss the EEI with other teachers and project directors, but they were not available during my visit. However, informal conversations were conducted with ten students, and the school district liaison to learn about their perspective of the EEI units, which were piloted in their class. These discussions allowed for a well-rounded perspective of the implementation of the EEI curriculum, as well as the realities of incorporating an environment-based curriculum into their existing curriculum.

Data Analysis Procedures

After interviewing each participant, taking notes of their responses, as well as digitally recording each interview, each interview was transcribed. Following the transcription, which allowed for a second, focused review of the responses, the interviews were reviewed a third time. During these three occasions, themes, patterns, and essences emerged, and recorded for later coding. The interviews were printed as hard copies, and subsequently, a detailed analysis was conducted of the transcriptions. First, I looked for
stories with detailed descriptions to use as vignettes. Then, each participant’s response was summarized to capture the essence of each interview and to distinguish significant statements that emerged from the data. Next, a pseudonym was created for each participant. Finally, the interviews were coded for reoccurring themes, and the themes that were revealed during the analysis were selected and separated into their different categories, by theme.

Coding allowed for organizing the data into categories, in order to accurately reveal trends that were revealed through the subjects’ responses. These stories represented two historical perspectives. One was from individuals who were directly involved in creating the Education and the Environment Initiative. The other story was of the professionals, potentially influenced by the impact that the EEI might create in both the education and EE fields.

The themes that were decided upon during the substantial analysis of the transcriptions were: history, decisions made, expectations, compromises, power of context, defining EE, pedagogies of EE used in the EEI, challenges, and strengths of the EEI. Information was included from each of the fifteen interviews. Each interview provided informative perspectives about the history of creating a statewide environment-based curriculum.

Summary

The nature of this historical research methodology facilitated an insightful unraveling of the perceptions, attitudes, and decisions made about the creation of California’s EEI. Interviews with fifteen leading professionals in the EE field and in
professions directly linked to the EEI provided particularly rich and informative data. The process of coding and analyzing the data allowed the exploration of the data to culminate in a cohesive product.

Listening to and recording the stories and perspectives of the fifteen experts over a three-month period enriched my knowledge of the history, back-story, and opinions of the development of the EEI. Many of the individuals had imbued their experience and decisions into the creation of this curriculum. The EEI curriculum is the culmination of many individuals' knowledge and decisions. The second group of interviewees provided the unique story of their interpretations of this history, from a bystander's observations. In addition to reading through the instructional units and viewing the facts on the California EPA website, I had the fortunate opportunity to discover what went on behind the scenes of this monumental and historical environmental initiative. The following chapter documents what was shared during the interviews.

Chapter Four: Results and Discussion

Presentation of the Findings

During the initial analysis of the interview data, there was a focus on determining a common foundation that linked the interviews together. Two main principles were revealed during this stage. First, there was a common hope from all of the participants, regardless of their expectations of the curriculum, that it would promote environmental literacy in California's public schools, if it were successfully implemented. Secondly, there was a common agreement that it was a huge undertaking and that it was not the 'be-all, end-all' for teaching students about the environment. Although those two essences
wove through the interview responses, the remainder of the content varied considerably from their perspectives of its strengths, compromises that were made, and expectations of the EEI model curriculum.

**Demographics.** The first category outlined in the *Methodology* was the participants’ demographics. Table One summarizes the types of workplaces of the participants. This table revealed that the majority (60%) worked in a public setting.

**Table 1.**

<table>
<thead>
<tr>
<th>Workplace</th>
<th>Number of Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public</td>
<td>9</td>
</tr>
<tr>
<td>Private</td>
<td>2</td>
</tr>
<tr>
<td>Non-profit</td>
<td>4</td>
</tr>
</tbody>
</table>

**Table 2.**

<table>
<thead>
<tr>
<th>Length in Current Profession</th>
<th>Number of Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5 years</td>
<td>1</td>
</tr>
<tr>
<td>5-10 years</td>
<td>4</td>
</tr>
<tr>
<td>10-15 years</td>
<td>3</td>
</tr>
<tr>
<td>15-20 years</td>
<td>4</td>
</tr>
<tr>
<td>20-25 years</td>
<td>1</td>
</tr>
<tr>
<td>25-30 years</td>
<td>1</td>
</tr>
<tr>
<td>30+ years</td>
<td>1</td>
</tr>
</tbody>
</table>

Table Two revealed the length of time that each of the participants had spent working in their current profession. Based on these statistics, it was clear that the participants had a considerable amount of experience in their field, and therefore were deemed ‘experts’ for the sake of this study.

In Table Three, a summary of the participants’ level of education is displayed. All of the participants had graduated from college, with five continuing on and completing graduate school, as well as two holding PhDs. The final table (Table Four) examined the variety of professions of the individuals interviewed in this study. They ranged from program directors to public school educators.
Table 3.

<table>
<thead>
<tr>
<th>Profession/Job Class</th>
<th>Number of Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asst. Sec. of Ed.</td>
<td>1</td>
</tr>
<tr>
<td>Program Directors</td>
<td>4</td>
</tr>
<tr>
<td>Managers</td>
<td>2</td>
</tr>
<tr>
<td>EE Specialist</td>
<td>1</td>
</tr>
<tr>
<td>Consultant</td>
<td>3</td>
</tr>
<tr>
<td>Secondary Level Educators</td>
<td>1</td>
</tr>
<tr>
<td>Educational Coordinator</td>
<td>2</td>
</tr>
<tr>
<td>Administrative Level Educator</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 4.

<table>
<thead>
<tr>
<th>Education Level</th>
<th>Number of Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctoral</td>
<td>2</td>
</tr>
<tr>
<td>Master’s</td>
<td>5</td>
</tr>
<tr>
<td>Baccalaureate</td>
<td>7</td>
</tr>
<tr>
<td>Unknown</td>
<td>1</td>
</tr>
</tbody>
</table>

Coding themes. Eight themes were selected from the transcriptions, due to their reoccurrence and/or their relevance to the study. The first set of categories provided an overview of the history of the Education and the Environment Initiative, its goals and objectives, and pedagogical decisions. Also, a discourse was presented about the variations on the definition of the field of EE. Next, the strengths, challenges, and expectations of the EEI curriculum were revealed, as explained by the respondents. There were many variables that shaped the development of this curriculum. The power of context section explains these variables and their significance. Lastly, evidence was presented about the compromises and limitations of the creation of EEI’s model curriculum.

Discussion of the Findings

The data analysis consisted of a very extensive review of the transcriptions, determining the most relevant information revealed from each of the fifteen interviews. All of the data was based on the transcriptions of the interviews, which were conducted
between May 18 and July 20, 2009. The interview data is presented exactly as it was quoted during the interviews, however, in a few cases, when respondents answered with an overly enthusiastic tone, italics were added to represent this tone.

**EEI history.** A published sequence of events exists regarding the development of the EEI, the full texts of the legislations, and descriptions of those individuals involved. Redundant facts provided during the interviews was omitted from the data analysis, but can be located at the California EPA website.\(^2\) However, insights about the decisions that were made in conjunction with the EEI have not been published. This thesis study discusses not just the series of events that occurred, but also the reactions from those involved with the process, as well as observations from the greater education community about the process of creating this model curriculum.

To begin, Richard described, “It has been almost six years since Governor Davis actually signed the legislation and we are just now finishing the draft units. It has been almost 6 years...and it’s been hellacious, a hellacious process.” This is clearly one example and it demonstrates how the oral history can be quite valuable in understanding what occurred. However, as a disclosure, it is also representative of how “oral histories are confined to the experiences, memory, and interpretations of the individuals who provide them and might be biased by the passage of time and the selective memory of events” (Johnson & Christensen, 2004, p. 405). Lucy described that the law,

Evolved through a process of negotiation among different organizations and agencies. There was a non-profit organization, called Heal the Bay that was pushing the legislation initially with assemblyperson, Pavley. The first draft of the legislation that they wrote; people...were naive, and poorly written, and displayed a total lack of understanding, of the fact that there were other goals in the world. Mind you, I’m not saying this is the most important thing, as far as I’m concerned, that’s irrelevant. The point is that there are other agencies and interests

\(^2\) Further information related to the EEI history can be located at: http://www.calepa.ca.gov/education/eei/
out there, and to succeed, one must have to work with them. Their first attempt in
that first piece of legislation and their first naive goal was that they were going to
get in there and re-write the state of California standards.

After AB 1548 (Pavley, Chapter 665, Statutes of 2003) was originally passed, one
consultant, Rebecca, remembered her initial impression,

But then when we actually looked at the language of the bill, we realized the list
is by no means complete and a little funky. And originally it said that everything
had to be aligned and lead to mastery of content standards in mathematics. And
there is no way that a curriculum that is focused on the environment is going to
lead to content mastery. It is going to reinforce mathematics skills, but it is not
going to teach the entire process correctly, as to how you teach a division skill, no
way. And so there were certain things that had to be challenged, through the
curriculum commission, it was not us. It was raising our concerns, and having the
powers at be take a look at it and say, yeah, you’re right, there’s a problem here.
So, there was a clean-up bill that was passed, that literally cleaned up the
language, so that it was a tighter fit, more comprehensive, more realistic, etc.

Rebecca’s comments reflect the role of responsibility during this historical event.

Although she did not claim responsibility for actually challenging certain decisions, like
omitting mathematics standards, she did admit to ‘raising our concerns,’ and then having
others actually enforce the changes.

Lucy offered how the ‘powers that be’ felt about the process that ensued,

This law was passed after negotiation. There was a lot of frustration by education
entities in the state, by the DOE, by the State Board of Education. The governing
Secretary of Education wasn’t terribly involved, but was frustrated at that point
about this thing. The core of the frustration was that these people from the
environmental community, whether from non-profit, Heal the Bay, CAL EPA, or
CIWMB, were putting in a law, and Pavley and these agencies are going to come
tell you what to do.

Samantha shared her first-hand perspective about the EEI, as a top-level official at the
time,

I realized what an enormous undertaking it was, and I don’t think they understood
it. I appreciated their realization, that it’s a huge thing and one of things that they
need to do, and overtime, they have downsized over this, for instance. Writing
curriculum to meet the needs of all of our diverse learners in California is a huge thing.

**Standards alignment.** Although the revised assembly bill did not include rewriting the standards, there was a comprehensive standards alignment process, which occurred, in order to ensure that the EEl would teach the selected science and history/social science standards to mastery, utilizing an environmental context (Lisa, personal communication, June 25, 2009).

Lucy explained the emphasis on the state standards,

No question, their priority is to implement the state standards, period. Not, and this, and this. The responsibility of the state board of education and DOE, and the core of it, is to assure that students are educated and come up to a level of proficiency in the state standards... Because that is their job, if one goes in and doesn’t recognize that, then you are going to fail... Over the course of many, many meetings, they got to the point that they understood that we understand their goals and their institutional and legal responsibilities to implement those standards.

These excerpts explain that the revised assembly bill did not mandate that the standards would be revised to include EE standards. Reagan describes her understanding of this situation,

The difference is that the state standards are mandated by the state. The state says, the kids are supposed to learn this stuff, the EP and C. They are also saying, they should learn this stuff, but they are not saying, you have to teach this in your history or science class. They are just saying, these are things that kids ought to know... I think in the Education code, there is something that says that kids are supposed to learn about environmental stuff. It’s just one of those things that is in there, that nobody knows it... I don’t know if these EP and C really have a lot of weight in terms of requiring teachers to do them. What is happening with the EEl is that all these units are being produced, and they will be available for teachers, but nobody is going to say, you have to do this.

Lisa described the specific guidelines of the mandate that directed the curriculum:

The law is very specific, it is very clear that we are to be providing information to students in a series of areas of environmental topic areas. It is quite obvious because of the explicit mandate in the law that we will support California’s academic content standards, and that we will teach these standards, we will not
duplicate, or conflict from them. It is clear that we are not advocating one way or the other. The curriculum itself, which is a provision of the law, has to be supportive of the standards, of the framework and clearly something that can be used by teachers in California.

The interpretation of the legislation became the framework, which directed many of the decisions that were made.

**AB 1721 (Pavley, Chapter 581, Statutes of 2005).** The next section reveals possible outcomes for the model curriculum that will be implemented, based on the revised legislation in AB 1721, including the relationship with publishing companies. Bethany revealed, “The curriculum that they have developed is somewhat an interim curriculum, until textbooks fully take on the EP and C ... Hopefully, publishers will be interested in some of the pieces of these units.” Rebecca adds, “The EP and C are showing up as criteria as textbook adoption. Therefore, any publisher, who doesn’t want to spend a whole lot of money wasting their time, is going to show those EP and C, and integrate them into their textbooks as they are being developed.” Lisa commented, “They are replacement units for textbooks, currently. And there is a provision of the law that the EP and C, with the State Board of Education approval, will be incorporated into textbook adoption criteria.” Clearly, one of the objectives was to have the textbook publishing companies adopt the environmental principles and concepts, which were developed by the EEI team. Therefore, rather than revising the academic content standards themselves, this would be used as another approach.

Anthony provided input as a representative of the EE community about this decision, “EEI is taking a totally different approach. The EEI have created a series of principles *(which is really nothing new under the sun)*, identified principles based on the
legislation, picked out standards that matched those principles, designed lessons to teach that concept.”

**Key players.** Along the way, there were many individuals that played key roles in developing the legislation, the plan for the model curriculum, as well as actually writing the units. Richard recalled,

You had the writers, the reviewers, you had the vignette writers that did the California Connections, and the other writers did the teacher background and all of the lessons. There were paid and non-paid reviewers. We were looking at the accuracy of the content, for History/ Social Science and Science and review, on the pedagogical side. There was a lot of review. All of the work that they’ve done with National Geographic, getting all of the images, was another whole part, the layout, and it is multifaceted. It has been incredibly challenging for all of them, I know.

It was evident that the writers had a great responsibility, since it would ultimately be their words that would be included in the curriculum, to be disseminated to the schools. There were many different writers with varying backgrounds, involved in writing the instructional units. Bethany explained,

What was unique about how these units were written is there were many different writers. You didn’t have one writer write all three Kindergarten units or all first grade units. So, because you have so many different writers in there, although their layout, and a lot of what they did is the same, approaches and writing styles and the way they are going to come up with their lessons, and do things that are going to be more inquiry-based and student-focused, versus having more of a strict lesson, where you are really learning these main points, and answering these same questions...It all really depended on the writer.

Richard explained that the background that the writers had was important, but the training process and the resources that were used also determined the outcome of the curriculum. They all had to understand the EP and C and the learning objectives that were originally written in the model curriculum plan. So, this is the standard we want to master, these are the learning objectives that need to be folded into that unit... that work had been done by the technical group that actually wrote the EP and
C. That was quite a lengthy process, the whole technical side, of the science and social science piece of it that went into the model curriculum plan. With that, at least, they had a framing for what had to be included for the content. The template changed for the lessons several times, but at least the basics are going to be there.

For resources... They did go through an extensive, one-week training: all writers went through it. That was to make sure they all had the same point of reference; from the EP and C, the learning objectives, how we want these to look, and what we want the whole process to be. That training was pretty essential to get writers on the right path. Also, what helped them was as they were developing a unit, there were stages to it. They would complete stage one, submit the work, and get feedback on it. The feedback loop served as a resource, on every stage of their work. Some writers were really good, some required significant editing, and some writers were eventually let go. The submission of work with feedback loops is an important process in curriculum development.

Then, they were using, from a content standpoint, whatever was out there, they had access to the textbooks that are adopted by California. As they were working on a particular standard at that grade level, they could see what Houghton Mifflin, Holt, Prentice Hall, was covering in content. They could see the adoptions in disciplines, to get a sense of what was covered. We think there is more depth on these topics, in EEl, than there is in the textbooks.

Richard described that beyond textbooks and their personal backgrounds serving as resources, he hoped that they had “training in the guidelines for excellence from the NAAEE.” Although he was not sure if this was part of the training, Richard felt that an important part of their background should have included “the key components of good EE, that came out of the Tbilisi declaration and the Belgrade Charter.” In his expert opinion, he explained that, “awareness, knowledge, and attitudes led to environmental literacy.” Evidently, it was difficult to standardize all of the units, due to the diversity of writers. Some of the writers may have had EE backgrounds, while others may not have had curriculum writing training in the EE field. Ultimately, the backgrounds of the writers, the template provided, in addition to extensive editing and review of the draft units determined the final product.

One of the writers, Reagan, explained her experience of the writing process,
It was a long time ago, and an intense time. I wouldn’t say that there was a lot of emphasis for it to flow from grade to grade...So, they are set up, each writer is assigned a standard and some concepts to teach with it, and we were sent off to do our thing...
We were given a template. We were told these are the things that need to be in your lessons and in your unit. So, we all had the same template. Actually, that template evolved...The people I know that were involved; we tend to, be ‘let’s do some hands-on activity kind of things, rather than just reading, paper and pencil sort of stuff.’

Although the consultants clearly made integral decisions along the way, Rebecca describes how her philosophy played into the decisions to develop the EEI:

My philosophy, if it is or isn’t reflected, it’s not germane. And frankly, it is, but that was not the goal, and nor was it my privilege. The EEI requirements are very specific. And that decision is codified by law in the state of California and it came with very specific guidelines. The problem is that it was not well thought out when we first saw it, and really examined the language. There was a lot of stuff missing. We had the benefit and the opportunity of going in academically, and really broaden the perspective.

An additional strength that Lisa included, which occurred during this process, on the agency level was, “that the methodology that we developed, to pull from a law, the language of a law, into the tangible development, let alone implementation, is something to be replicated.”

**Goals and objectives of the EEI.** Respondents provided answers to Question 2, “How would you describe the goals and objectives of the EEI?” Melinda gave an overview, from the perspective of a consultant, with an extensive EE background, and also involved with the EEI.

To teach the standards, to teach selected science, and history, social science standards, using environmental education, using the environment as a context so that you are melding both the standard and these EP and C, that have been approved and decided that these are the environmental literacy. Basically, the idea is to increase environmental literacy while simultaneously teaching standards. So, using the environment as a topic/broad theme to tie together and show how they relate to broader environmental principles.
Lisa, Samantha, and Lucy described agency level perspectives of the goals and objectives of the EEI. Lisa and Lucy agreed that it is not an advocacy or "environmentalist" curriculum that is meant to influence the public. The goal is to teach the EP and C, Lucy explains, which are "the big ideas about how humans relate to natural systems...the big ideas of how people are connected, to depend on their environment."

Lisa also added that,

The umbrella purpose would be to bring education about the environment into California’s public schools.... The units are provided to inform, to be informative, to be credible, to bring the environment, so to speak, to life in the classroom, whether it be a history/social studies unit, where we tie past history with current events. And the fact that this is a California based curriculum, even though there is some transferability in approach and design and content.

Samantha described the goals, in her analysis, which included how this curriculum will be expansive in nature, and influence others as well:

To make sure that children and hopefully their parents absorb it too, have a better understanding of the environment, and how they can protect the environment, how to be more productive members of society, in terms of those goals. The idea was to do it through a model curriculum...not just being a science curriculum but also a curriculum that folded in English/ language arts and social science.

Sarah offered the voice of an outsider from the science education field.

I think the goal is to formalize EE and make sure that all students are environmentally literate. It’s taking a scope and sequence approach, articulating what kids should know K-12...The big goal is to incorporate more EE into the classroom curriculum into schools across/throughout the state. The specific objectives have been to define environmental education through really defining the content associated with EE, through the EP and C’s, and then to translate those content goals into a curriculum module that can be taught, at every grade level, K-12.

In summary, the process of developing the EEI model curriculum was extensive, complex, involved a great number of individuals, from writers, to scientists, to California
educators. Therefore, many people informed the final outcome of the EEI curriculum. The overall goal was to ensure that as a result of this curriculum’s dissemination into public schools, students would have an increased environmental literacy. The conversation revolved mostly around content during this first section. The next section, Pedagogy of the EEI will bring another element into this system, describing pedagogical choices that were made along the way.

EEI and pedagogy: the gap between theory and reality. At the root of the inquiry of this thesis was the question about the methodology of introducing this environmental content into California public schools. Respondents provided discourse on the benefits and challenges of place-based, hands-on, experiential, inquiry-based, and interdisciplinary learning pedagogies. Also, individuals shared their judgment about the role of the teacher and student, learning styles, relevancy of the curriculum to the students’ lives, and a systems thinking approach. Information emerged about the components of a textbook-based, indoor classroom setting to teach about the environment. Lisa explained that, “in terms of pedagogy, the teachers clearly provided that feedback for us, let alone the curriculum and content reviewers for these units.” In Lisa’s experience, the teachers’ feedback as well as reviewers persuaded the decisions about pedagogy.

There were four questions that specifically asked about the pedagogy of the model curriculum. Question 8 referred to the presence of experiential learning and question 9 asked if the curriculum promoted inquiry-based learning. The next question (#10) asked if the EEI was interdisciplinary in its design and the last question attempted to determine
the importance of a place-based curriculum. In response to the questions about EEI pedagogy, Patrice described,

It's not just reading comprehension, it's interpreting maps, there is discussion, reflection, it's not all just a quick lesson. They are using critical thinking, comparing and contrasting, analyzing... It is a structured curriculum.... This is classroom curriculum, it is textbook-based, it's content. It's identifying... when you look at Blooms' taxonomy, it's the knowledge base, the content, the comprehension. There is application and synthesis as well, there is critical thinking... This is traditional curriculum. There are assessments, masters, and student copies... They tried to make it simple, not so complicated for teachers.

When asked about the teacher's role, Melinda mentioned that there were “certain limitations because you are looking at a teacher who mostly teaches out of a textbook.”

Also, she stated that,

It's not that much independence, on the part of the student. The teacher is still a very critical leader in the process, and a very strong role in the process. But again, because they've got materials that explore different viewpoints and explore perspectives on things, the teacher is still helping to develop critical thinking skills and things besides just read your textbook and take a test.

Rebecca, who was closely associated with the creation of the curriculum, described the role of the teacher,

The role of the teacher is part facilitator, part sage; reading the unit and making sure that it is done so in a way that reflects the integrity of EEI, meaning that there is a lot of the good pedagogy that you would want to see: cooperative learning, team-based instruction, inquiry where we could afford to integrate it, language rich opportunities; and all those good things. So the teacher as facilitator is expected, with training, to really make the maximum come out of EEI. The student is not a passive participant but much rather a very active learner, if this is done the way it is supposed to be done.

The conclusion from these quotations is that the teacher is the bearer of knowledge, responsible for imparting it to the students, but the curriculum occasionally takes a constructivist approach, providing opportunities for the students to learn by doing.
The Power of Pedagogy, Leach & Moon (2008) define constructivism as “Learners need to be enabled to construct their own knowledge by testing ideas and approaches based on their prior knowledge and experience, by applying these to a new situation, and then by integrating the new knowledge gained with pre-existing intellectual constructs” (p.58).

One criticism that was expressed about the pedagogy of the EEI was from Anthony, who has created EE curricula for decades.

It’s not really using the whole environmental education process. It’s more desk time, learning about what the concept is all about. It’s a completely different approach. It hasn’t been tested yet. We don’t know if it will really advance children’s understanding of the environment and have them process the knowledge to master the standards.

However, he goes on to say that “Experience in different shapes and forms would be significant, having a traditional approach, as well as experiential. I don’t think we should leave it all to school, it’s a societal thing.” Therefore, the pedagogy is not ideal, but school should not be the only source of information and experience about the environment.

**Experiential learning.** Many respondents agreed that a critical component of teaching about the environment involved direct, experiential learning. Richard explained,

From a pedagogical standpoint: hands-on, minds-on. You can have a balance. I’m not knocking textbook stuff or Internet, or even virtual. But there is nothing like the real thing; you can live anywhere, because everywhere has an environment. So, one of the things that we could do better to teach our teachers, is how to use their schoolyard and neighborhood to teach about the environment.

Melinda declared that, “I like hands-on, involvement, real world. EEI doesn’t necessarily give all those, but it does a pretty good job of simulating a lot of that... by trying to tie to California, and make things real.” It was common for respondents to mention that the California Connections element provided a useful simulation of hands-
on, experiential learning. However, Jean Piaget explained that in order to learn about a
phenomenon, “at the heart of this process is discovery, and understanding is built up step
by step through learners’ active involvement” (Leach & Moon, 2008, p.58). Piaget and
John Dewey were both proponents for action-oriented education, in which students were
literally experiencing the particular phenomenon, if possible. “Knowledge and ideas,
[Dewey] argued, only emerged from situations in which learners had to draw them out of
activities that had meaning and importance to them” (Leach & Moon, 2008, p.58). Lucy
articulated the strengths and weaknesses of the EEI, in terms of pedagogy.

If you ask me if EEI teaches in a hands-on, out of classroom, experiential way,
no, it’s not about that... This is definitely taught through an environment context.
At the same time, it is not broadly experiential. Are there hands-on activities?
Are there experiments that students do? Yes. Observe? Yes. Is that happening
at every lesson? Absolutely not. In every unit? No. But is it happening in a
context, in a pedagogy that allows teachers, encourage teachers that will allow
them to use it? I sure hope so.

Rebecca agrees, “It’s experiential within the confines of the classroom. It’s just not
experiential education, as we both know what that means.”

**Critical components of effective environmental education curriculum.** In
response to the interview question (#7), “What are the most effective ways to teach
students about the environment?” most of the experts mentioned getting outside as a
critical component. This question exposed a contradiction between respondents’
opinions of what the critical components of an effective environment-based curriculum
are, compared to the realities of what should be included with the limitations presented
by a public school statewide curriculum. This section describes what critical components
they suggested were present in the EEI curriculum. Sarah responded that the most
effective ways,
have to do with going outside and getting in the environment, and experiencing it first hand, whether on a schoolyard or wilderness area. I think that that is a critical component of environmental education, and something that is currently missing from schools; and this idea of providing a context for science and history/social science, providing the environment as a context is also a very effective strategy.

Anthony similarly expressed that direct experience was an essential component,

I really believe being in direct contact, having direct contact, even if it’s an issue, going out and hearing about it, talking to people about it, see what they are thinking. There is nothing more salient about going to a landfill, and looking at it, if you are worried about what is happening with solid waste, and too much consumption.... It’s more than direct experience... creating a curiosity from that direct experience.

**Hands-on learning.** When asked about the role of hands-on learning, participants were in disagreement about whether the EEI included this as pedagogy to teach students about the environment. Bethany felt, “Many of the lessons do incorporate some kind of experiment, some hands-on learning, but a lot of it is the more traditional lesson plans, that they are kind of used to already. A lot of it is worksheet oriented, read something and then answer something.” Melinda, who was closely involved with the curriculum units said,

EEI doesn’t necessarily get kids outside, doesn’t necessarily provide hands-on experience in the out-of-doors, which is vital. It doesn’t do a good job of project based, or service learning, or any of the things that apply skills to real situations that I think is critical...What it does do, it rides the intersection between natural and human systems, which I think is critically important, it shows us how people interact with the environment- and why that makes a difference. I think in many ways, that is one of most important things, in terms of philosophy of environmental education. There are things that it doesn’t do, but I also think that it is and will be a very effective tool for the teacher that isn’t dedicated to EE, for the Joe blow classroom teacher. And I think it offers one of strongest tools that we’ve seen, for somebody that doesn’t have that predisposition.

Melinda had strong feelings about the critical elements of an EE curriculum, but justified the absence of these elements, due to the realities of who would be using the curriculum.
Lucy, also intimately involved with the curriculum described,

We did what we could do, in terms of hands-on, and frankly, it is not the correct measure for whether we have done a good curriculum or not. Everything cannot be done hands-on. The purpose of the EEI curriculum is to teach those principles and concepts, that knowledge... Well, would I like to have it have more hands-on experience with soil and stuff? Yes. Ultimately, that’s what we want them to be capable of doing: understand their relationship, their interdependence, how their actions influence, how their decisions should involve all of these factors. That’s why I keep say it’s conceptual to you. Other people do that job; we’re not trying to take that over.

There is a great expectation on “other people” or non-formal EE programs who will be responsible for more hands-on, experiential learning. This reoccurring theme suggests that it is acceptable to compartmentalize these pedagogies, allowing the students to participate in this type of learning, in specified experiences during the year. This also assumes that students will have the opportunity to participate in these other programs.

From the perspective of one of the unit writers, Reagan described the challenge of including hands-on, inquiry-based learning in the units.

When it came down to actually writing the activities, we discovered or I discovered, that they really... for example, I remember clearly in an activity where kids are supposed to learn how electricity is generated. There are these little hand-crank generators you can buy, for $40-50, where you can actually see the thing turning inside...
Well, it came back that they didn’t want me to use that, because not everybody has one of those things, and not everybody has forty to fifty dollars to buy one. So, in terms of pedagogy, we were limited... by trying to make it something that anybody could do, in any classroom, in the state.
I’m confident that most of the science writers tried to use as much inquiry as possible. We’re talking about a K-12 curriculum, and there are writers from all over the country.

Noticeably, the resources needed for the lessons submerged as a limitation to requiring that all schools acquire the necessary materials for each lesson.

**Inquiry-based learning.** As presented in the *Review of Literature*, inquiry skills are included in many state standards in science, including the California Science
Frameworks. The California Department of Education declare that these curricula should be:

Based on standards and use standards-based instructional materials, develop students’ command of the academic language of science used in the content standards, reflect a balanced, comprehensive approach that includes the teaching of investigation and experimentation skills along with direct instruction and reading...Hands-on activities compose at least 20 to 25 percent of the science instructional time in kindergarten through grade eight (Cal DOE, 2004).

Melinda portrays her sentiments about whether or not the EEI pedagogy includes inquiry,

There aren’t a lot of situations when you get to the real solid, ‘What is inquiry-based learning?’ When you are just letting kids come up with their own questions, and their own way of pursuing a solution to a question or an answer to those questions; it’s not as open as that. But there aren’t prescribed answers. There are a lot of open-ended situations, there are a lot of things where how they decide how to solve a proposed questions, is open, and that is the rudimentary inquiry-based learning.

Rebecca details the limitations when confined to a classroom,

There in lies the rut, you and I know both know that that is the best way to teach. The reality is that we were stuck with the reality of the confines of the classroom. There is no money for field trips. There are all of the restrictions in the classroom. There are teachers who are not prepared to teach this stuff in that capacity. So we tried to merge the best of all worlds. I will go on record in saying that this is not designed as an inquiry-based, hands-on program. Try as we might, to make the lessons very engaging, and very different than your classic textbook based activity. It’s not Project WET. However, it is designed to be engaging, real world, taught in a creative manner, literature-based, language-based, steeped in science, and history/social science. It is very much a multi-disciplinary approach. It is not always hands-on, it can’t be by definition, nor is it based in the field. However, at the end of each unit, there is a web-link to a portal that identifies those agencies and organizations and programs that are out there that offer hands-on, experiential, outdoor based opportunities, or supplemental curricular activities, that would complement the unit.

Again, respondents, such as Rebecca described how the EEI fits into a larger EE picture, and how it is fulfilling a certain niche to bring environmental literacy into the classroom,
but the EEI is restrained in its pedagogies. In response to this question, Sarah shared her definition of inquiry-based learning,

It looked like there was more of an emphasis on reading things and figuring things out, rather than doing things and going out in the environment. Making their own authentic questions, coming up with their own questions, designing investigations, and going and trying them out, and finding their own answers. The materials that I looked at did not include inquiries, as in that way, that I just described.

Sarah then added excitedly, when asked whether it was possible to have more inquiry-based learning in a statewide curriculum,

Yes! There is one on the adopted materials list in science in California that is largely inquiry based: the FOSS program. So yes, I think it is possible to have materials that are inquiry based, adopted, and implemented across the state of California.

**Interdisciplinary learning.** Another theme that arose from the literature review, which was represented as Question 10 in the questionnaire, regarded using interdisciplinary learning in the EEI. Anthony succinctly revealed, “They were not asked to be interdisciplinary, but to teach a standard.” Melinda included,

It does have a strong disciplinary piece to it. But within that, they're doing a lot of reading, writing, a lot of basic science, a lot of basic social science stuff, putting things in context. So, that they are getting a lot of different experiences. The younger grades pick up on a lot of, even some music. There is a certain degree of arts and other forms of expression, particularly in the younger grades. So, yeah, I think they are interdisciplinary.

Reagan felt that certain components, which may be seen as peripheral, might have an impact on the effectiveness of the curriculum,

The graphics are nice. It is an attractive thing to use. It sounds superficial, but it is real. The fact that we are trying to make it interdisciplinary is really important. Also, to get into the teachers' and kids' and community's minds, that environmental stuff isn't just something that happens in your high school biology class. It is in our lives everyday and everyway, and that it belongs in the Social Science and Language Arts classrooms. It is a step for getting EE into other than science curriculum.
Bethany explained the ease of creating a curriculum that integrates different disciplines, but that there is more flexibility in the accountability of non-formal EE programs,

There are ways to really link all the disciplines. I think they do try to do that but they are really trying to focus on what they could hit; again, to mastery as well as what would be the strongest match-up. In the informal world, you are allowed to be a little bit more, ‘oh, we align, but not necessarily teach to mastery, but we align to these things, or this will help you, we are using math to do this experiment, so we can link up to that,’ but they had much more restrictions or very specific goals they wanted to meet.

Richard remarked, “Math is embedded. There is a lot of English Language Arts. Kids are writing, reading, doing oral presentations; it definitely supports that.” He continues, “Most people look at EE as interdisciplinary. It has still been a challenge for teachers to connect EE with literacy, and mathematics, or the relationship with human systems, which is what the EEI does very well.” Finally, Lisa replied, “Certainly at the lower grades, we have combined both science and history/social science with English language arts development.” Wallace also added, “I like the fact that this focuses on fourteen to fifteen different elements. It’s not all about recycling. That is very helpful, so a broader range of subject matters.”

**Place-based learning.** As David Sobel (2004) described, place-based learning is defined as, “the process of using the local community and environment as a starting point to teach concepts in ... subjects across the curriculum” (p. 7). Some of the respondents mentioned the California connections element and use of maps as influencing the place-based nature of the curriculum. Bethany suggested, “They did a good job, especially because of the California connections piece. Although it is not necessarily regional or regional specific.” Rebecca, “we tried to make it place-based by the very nature of the maps that are used. Where students are constantly referring to the maps: where their
school is located, what that location means, what it looked like 100 years ago, how it has changed.” The maps are used as a simulation to expose students to where they live, from within the confines of the classroom.

Also, the following respondents agreed that teachers and local EE providers would have to help to make the curriculum relevant to the students. Richard said, “I think the EEI, across the units, has covered the key bioregions; and then it is up to teacher to make it relevant, locally.” Melinda mentioned, “I would certainly wish that there was more hands-on activity in the local community and getting outside.” In regards to place-based curriculum, Wallace responded that it “is really important. It makes the kids more interested, because they can relate to it, particularly if they can take the EEI, and combine it with a local provider, to connect all the dots. I also think it is really good for California, because we are so diverse, not only diverse in population as well.” Rebecca expressed that place-based education was, “more relevant in history/social science, especially at the primary grades. We definitely, where we had the capacity, we did use it.”

From the viewpoints of environmental educators, Sarah explained that in her perspective, place-based education about their local area was not a critical criterion for the curriculum’s effectiveness. “I think even young kids can learn about places in context that are far away.” However, she added, “I would add more of an emphasis in the curriculum of getting kids outdoors-and really making that a focus of the modules.” Also, Francesca had a similar opinion, “We spend so much time teaching 2nd and 3rd about rain forests. That is important, but at the same time, they may have never walked to their open space in their neighborhood. I do think place based education makes it more real, but I
wouldn’t limit it to that.” Anthony compared local and global learning, in regards to place-based education,

I believe in place-based learning always, but not so provincial, that we’re not learning about the rest of the world. We are a global society. We are so interconnected... I think you should be completely involved in your own place, but that shouldn’t be the only paradigm when you planning children’s education. Learning in place is a really, really good way to do it if you can. I think it is extremely important, to make use of whatever place they are that, to learn how to use that school ground community, school park, in that education, but also to take them to other places.

Richard concludes that,

The California connections piece supports my philosophy in EE. To make it relevant to home there is relevancy in terms of place-based, it’s teaching kids the ecological concepts; but using examples of California. The units do have depth to them. They have anywhere form six to eight lessons. So, when you have a specific standard, there is enough instruction to take a standard to mastery. If you build the foundation for them, of how to take things deeper, that agrees with my philosophy of EE, is depth to the curriculum.

**Learning styles.** Many participants shared their knowledge of different teaching strategies that meet the variety of learning styles and commented on whether or not these were addressed in the EEI pedagogy. Bethany proposed, “I think they definitely looked at different teaching strategies, ways to reach English language learners, and different learning styles to do that.” Richard, who was well-versed in this topic, suggested, “Look at Gardner’s Multiple Intelligences. You are going to have the auditory, kinesthetic, interpersonal intelligence. I think the EEI, whether it was intentional or not, it does fold in some of the different intelligences, in how children learn. I think that is embedded in the curriculum that will address the different learning styles.” Melinda justified the quality and use of the numerous handouts in the curriculum,

It does an adequate job of looking at different learning styles. There is a lot of reading material. I often found myself going, is there any way we could be
teaching this without giving them some handout to read? There are an awful lot of hands-outs to read. They have tried throughout to:

Number 1: those handouts are always pretty darn age-appropriate. They have been tested and modified. Teachers have looked at them and everything else. They should be grade-level pertinent. You are not asking them to read some whole huge thing, and you are asking them to read something that they are doing something with. It's not read it, and take a test. It's read it; use that information to answer a question. And by answer a question, not a test question, a bigger problem-solving question, like give a context. There are a number of sort of role-play things.

Within the confines of being a basically, alternative to textbook, but still a textbook based instructional method. There is probably not a whole lot for, really solid, kinesthetic learners. There is not a lot of playing with things, and getting to experiment. It’s very hard to do in this format.

Wallace also agreed with Melinda that,

A lot of it is reading and writing. But a lot of it also, is they are trying to break up into groups, and get kids to think independently, and work as a group, and projects and that way. Where it lacks, and this is the question I think you are asking, there aren’t scientific experiments. It doesn’t include, take a local hike, and it can’t, because this is geared for all of California, so that is where the teacher needs to add that in there.

**Content relevancy.** These responses revealed an overall, holistic impression of this curriculum. These comments discussed whether the EEI curriculum presented itself as being relevant to students’ lives, engaging, age-appropriate, and appropriate to the current environmental climate. Rebecca touched on many of these elements,

First of all, it has to be age-appropriate: no drama or tragedy before 4th grade. We tried, and frankly, I lost a couple of battles, there. We tried to keep it local, happy, simple, uncomplicated, non-controversial, through the primary grades. Secondly, I really do not like a doom and gloom approach; again, I tried to keep it as uplifted and uplifting as I possibly could. I did not always win that battle. I think it has to be based on experiences, and examples that are readily accessible to a student.

Keep it relevant to the students’ base of knowledge and reference points. Try as best for multiple abilities in each of the lessons: so everybody is made to feel competent; easily able to access the material and the info, try to keep it as graphically as beautiful as you can possibly make it, try whenever possible to have teacher as facilitator and have the students switch their roles occasionally and become the teacher; definitely keep it focused on student learning in the most interactive of all possible ways.
Realistically, you’ll open it up, and you’ll say, oh, this doesn’t look like what [she] is talking about. It’s okay, it happened, and it happened for reasons that I completely understand. Am I happy about it, no? But I understand it.

In order to create an effective environment-based education, Samantha offered, “I think infusing readings, and historical perspectives about the environment, are all good ways. The more we can do to make the learning come alive, especially in today’s sensory-rich environment, they are more likely to take it in.” There was a general assumption that environmental based learning leads to positive outcomes, such as the opportunity to “connect people to those basic things, which then will make them more connected to what sustains them, and will help make them better citizens” (Francesca).

Richard claims that the EEl will help resolve a limitation of the EE field. “I think EE needs to move into a direction of greater relevancy for students. If it doesn’t make sense to you, or if there is nothing relevant, then how can you really grasp it? How can you move towards eventually understanding all of those ecological issues, well enough to act on them? I think that is one of the benefits of the EEL.” Although respondents mentioned that EEI was not intended to advocate, Richard did feel like the EEI would inevitably contribute to environmental advocacy. “If we can keep environmental issues in the general public’s eye, than that will help. I think it is important, on the non-EE, but more on the environmental advocacy side of things.” Reagan also added that the relevancy to students’ lives was key, “in order for people to care enough about environmental issues to make changes, they need to understand the importance of them in their daily lives, and I think that is part of the EEI.”

**Textbook modeled curriculum.** Many participants described the pedagogy that was used as a textbook-based curriculum. What opportunities are involved in ensuring
effective learning about the environment in a textbook-based curriculum? Melinda answered:

I think to the best of their ability, for a textbook-modeled curriculum. The activities involve students in learning. They give students a lot of responsibility for thinking things through, and applying things, in role-plays, in sort of those fictionalized situations, as opposed to applying it to real community situations. The student as learner is doing a lot of reading, a lot of interaction with other students, sharing ideas, exploring different perspectives on things, and hopefully coming out of that with the understanding of not only the content, but also process, and critical thinking skills, that help them apply these to other situations.

Rebecca commented about replacing textbook units with these EEI instructional units,

It is not a Foss kit; you’re not going to open the trunk and see the 14 sponges, ice tray, and cue cards...We can’t expect teachers to procure all those materials. It wasn’t our focus to develop another Foss Kit. This is a textbook substitution type program. We would hope that teachers would literally put down the textbook, and we’ve aligned all these units to adopted textbooks. So that if the teacher is using Houghton Mifflin, and said, gosh, this would be a really good chapter to just, kind of, replace with the EEI, they can literally put down the publisher’s book, pick up the unit, and seamlessly keep on teaching.

How would replacing units from other textbooks with EEI units affect the pedagogy of the curriculum? Sarah described her concern with the recommendation of replacing current units with the EEI units:

Replacing portions of the adopted curriculum may interrupt the scope and sequence of that curriculum and remove experiences from those modules that really are essential. And so, for instance, FOSS is one of the adopted curricula in science in California. The EEI modules suggest which lessons, in the FOSS modules, which teachers could not do. If they teach the EEI module and some of those lessons that are suggested to not do, involve hands-on activities, and experiments, investigations, with kids having real experience with phenomenon, sometimes live organisms. Frankly, in those cases, I would rather have the kids doing the FOSS activities than the EEI activities. If we are talking about reading a chapter in a textbook, I don’t have as much of a problem with replacing that reading of the chapter with the EEI activities, which look to be very good.
The EEI is more than just the materials and even the content, but it also includes the pedagogy that will be used to teach the environmental content in the classrooms.

**Systems-thinking approach.** Susan represented an organization that has been doing very progressive work in terms of EE. She described the systems-thinking approach, with which she examined this curriculum,

> From what you have shown me, there are huge pedagogical differences, but the content looks pretty good. We take a systems thinking approach for everything that we do, so I'd be looking at whether that is true in their materials. It looks like it is very much the thinking end of things. I didn't see much cooperative learning, or relationship emphasis, emphasis on networks and relationship...It focuses on objects, rather than systems. Because it doesn't look like it emphasizes broad ecological principles or systems thinking. It looks like it approaches it pretty traditionally... objects rather than relationships. It doesn't look like its' looking for patterns. This assignment where they are creating a toy, this is based in consumption mentality. It's a fun activity, but why not have them make a product that improves the environment. That's what I mean by systems thinking, a change in thinking. It looks very old-fashioned. I would stay away from traditional student worksheets, try to open it up to more complex thinking, and make sure that it addresses learning styles. It really does look a couple of decades old. It doesn't seem... a lot of its' layout, font, all of that, has a look of old-fashioned, very traditional textbook. It looks textbook-ish.

**Defining environmental education.** Although there was no direct question asked about the discussion of whether or not this curriculum is considered EE, this theme emerged in most of the interviews. What arose was that people defined the concept of EE differently, and had varied opinions about whether or not this was a traditional EE curriculum. They discussed the components of an EE program. Also, participants provided very informative comments about the effectiveness of using the environment as a way to teach the academic content standards. Anthony commented that,

> They clearly say, if you talk to... some of the people associated with it, they have not described it as traditional environmental education. It's using the
environment to teach concepts. You have to scratch your head a little about that. It doesn’t apply a lot of experiential learning. It does and doesn’t. It’s more looking at pictures and reading things, rather than going out and mapping things in the schoolyard, counting carrots growing in the garden.

However, he added that, “Knowledge is a great big part to teach what the awareness to action is about...EEI will help on the knowledge level, provide information, but it doesn’t foster going outside, spending time fooling around outside.”

Bethany’s definition of traditional EE assumed that “the environment” was included as part of the learning process. In her words, “The environment isn’t included in there, as a context for learning. It is not what typical environmental education is...[EEI] is one key component to a much larger EE picture.” Rebecca added, “It’s the evolution in the thought, and it’s not that anything has really changed, as much as the strategy is much more refined and sophisticated, and really is bigger bang for the buck.”

Many participants compared the EEI to the research conducted by SEER, using the environment as an integrated context for learning (Lieberman & Hoody, 1998). Lucy described,

This isn’t the EIC, I know that. This is not that. But it is distinctly using the environment to teach the standards...it is clearly environment-based education. It’s not based in... At the core of our pedagogy, and our research, in what we do with SEER is ourselves, involves things like community-based investigation. Students going out there, and actually coming up with a problem, and the study based on a real world situation. So I get all that. That wasn’t the opportunity here, but the limit was using an environmental context to teach history, to teach science.

Anthony commented on how he would define the EEI in terms of whether or not it was EE.

It’s a state mandated legislation to bring environmental education...well, it’s not exactly environmental education. It’s education using the environment as a context. I don’t think the EEI staff considers it environmental education. It’s more classroom experience through teaching concepts about the environment. It
really does not use formalities that have been embraced by environmental education. It’s more teaching concepts, standards through using the environment, selected standards in science, and history.

For my learning and association with environmental education, there has been this 30/35-year long dialogue among those who practice environmental education, about what environmental education is, or should be. There are the guidelines from NAAEE: that represents a consensus of discussion of what environmental education is. Simply, more of a process: bring people into an awareness, build up knowledge and skills, and help them apply critical thinking to be able to make decisions about the environment, and lead them to take action on their decisions too. So, it’s more of awareness to action process.

Even for the experts, there was an uncertainty about the definition of EE, because later in the interview, Anthony did label the EEI as EE, but defined it differently. “Given the constraints, that each of these lessons is supposed to be done by anyone, anywhere, it is more EE-where they are learning about the environment usually in their classroom.”

Environmental education pedagogy. In order to describe what defined EE, participants mentioned that beyond the content and knowledge, the pedagogy also contributed to the definition. Wallace contributed his definition,

I see environmental education as more hands-on, getting out of the classroom, or having stuff brought into the classroom, definitely touchy-feely, hands-on. Where ours, I even make that distinction when I would go out and do our teacher training things, this is not to replace environmental education that you are going to go outside and get. This is using the environment to teach...the subject. To me, there is a distinction. This is not to replace, getting out on the boat on the bay, the discovery boat. That is really important. That just reinforces what you learn. I think they could work together.

It was also evident that respondents valued non-formal EE, but they described a distinction between the EEI curriculum and non-formal programs’ pedagogies. For example, Lisa disclosed,

I personally think that the combo of classroom teaching and hands-on experiences, whether they are inside or outside the classroom, in terms of the environment, is providing a strong breadth of experience. The EEI curriculum is geared specifically for the classroom, but we want to support and do support the opportunities that are there for teachers to take student outside, to provide those...
very hands-on, environmental experiences, that support what is being taught in
the classroom.

**Critical elements that define effective EE.** Participants described the critical
elements of an effective EE curriculum. Bethany felt that, “getting out into the
environment” was important. She added,

> I am a huge proponent of just being involved and engaged in the outdoor setting. I
> think people really learn by doing something, so if you can do those field trips, or
> link up any kind of any kind of field trips or any kind of outdoor learning experiences, even if it’s on the school yard, or on the play yard, or in the neighborhood that the school is located in. Anything to actually to get them out of the classroom and actually doing something. I think it will be a great way of really assisting them in truly understanding, and thinking beyond a simple photocopied paper approach to learn.

Richard contributed,

> There are so many facets for me for good environmental education. It needs to be taught in many places: in our formal classroom, in our after school programs... offered in all of our providers’ programs: be it the zoo, aquarium, our state parks. It needs to be taught in business and government. Environmental education really needs to be taught everywhere, and it can’t be superficial and cursory. There needs to be depth to it; that is pretty monumental to get that. It needs to embrace the whole cultural diversity piece. He also described inquiry-based education as an essential component.

> That is one of the keystones of good EE—that it is inquiry based, it teaches kids to critically think. Environmental education is supposed to be presenting all sides of an issue, and helping kids think about it critically, and formulating opinions for themselves. Environmental education is not advocacy.

Harry questioned the amount of time that students were exposed to EE.

> I wonder what percentage of teachers actually does environmental education? How many teachers do environmental education in the classroom? Or they say they do, or they do a couple of field trips, or they do that one outdoor education and that is it for the year. And I don’t think that is good enough, in my book. I think it has to be all the time. It has to be every day.

Melinda excitedly shared that an essential component was, “getting out in the
environment, which unfortunately EEI doesn’t do!” She went on to describe,

> I think garden programs are miraculously important. Such a good ways of getting kids engaged, and learning science, and how plants grow, and why that is
important, and what role they play. I really like garden programs, I really like anything that get kids outside. I like programs where kids are doing community problem solving, older kids for the most part, but it doesn’t have to be high school. But to take a situation, explore the different perspectives on it, come up with a solution to the problem, and try to implement that solution, and learning all the civics and science that goes into it. Whatever it is: learning in context, I think is the best way to do this.

Francesca commented that,

Being in an outdoor environment brings on questions. You don’t have to do much teaching. You have to do a lot of questioning and setting up for questions. It takes the right type of educator to do that.... You teach something from a textbook, and it is just a page from the book, and yeah, there are photos and that has its affect. But to make learning real, to use teachable moments in the environment, it’s a type of learning that students direct themselves. It’s a type of learning that brings on questioning, which to me is the basis of learning. It’s multi-sensory too.

**EEI: an environmental education curriculum?** There was a hesitancy to refer to the EEI as environmental education. What was the reluctance behind labeling a curriculum as EE? The participants in the study commented that history, inability to teach state standards, and lack of a clear definition all contribute to the hesitancy.

Richard presented evidence that,

Environmental education suffers at this time in education from the standpoint, that it is often very connected with science instruction, because so much of the foundations of the environment, basic scientific and ecological principles, are based in science. With science instruction, especially at the elementary level, weighed down in terms of instructional minutes, with the NCLB act, and school accountability, there has been the big push for literacy and math skills. Both science and history/social science have really taken the back seat.

Also, Rebecca pronounced,

It is not called the Environmental Education Initiative, and there is a very specific reason why it is not called that. A lot of people call it the Environmental Education Initiative, because they like to label things. It is most calculatedly not that, for one specific reason. I’ve been working in the field long enough to be able to call it as I have seen it. Because this results in a curriculum package, that is actually going for state board of education approval, which is unprecedented.
The state board historically has not looked upon environmental education favorably because they have seen it as extraneous to the core curriculum, and not relevant to the content standards.

Richard agreed that, “with the reduction in instructional minutes in science at the elementary level, it is harder to get EE in formal classrooms.” Based on Rebecca and Richards’ viewpoints, there were two options: either label the EEI under a different name or label it as EE, reclaim the name, and help to restore the foundation of EE. However, if this curriculum is “most calculatedly” not EE, then what are the contradictions and are there any commonalities that exist? Patrice felt that understanding the bigger picture of relationships was a difference:

I think the EEI has come into the picture, because environmental education as a term has had a rough go of it. So, this is the Education and the Environment Initiative. Taking that approach, and letting students become thinkers and critical thinkers about how our behaviors impact the environment and letting them see, and learning about natural systems, and securing a foundation in that, so kids can see how our behaviors change those systems.

Lucy declared with resolution that her goals were not as narrow as those in EE,

I don’t do environmental education. I don’t do what most people call environmental education. I have been working in the field of teaching students about the environment, if you want to call that environmental education. I am an outlier. In other words, I don’t go to NAAEE meetings. I have been to a half dozen. My goals are not that narrow. So, I have been involved in developing materials to teach students and adults about the environment for about 30 years.

After claiming that her goals were not as narrow as those of the field of EE, she adds,

The diversity and quality of materials that are around this state and nation, and labeled as environmental education is mind-blowing. As in, the quality goes from: you wouldn’t want to expose anyone to that material, to this is really good. It’s based on accurate science and unbiased. I don’t know what environmental education is. That’s one of the core issues there. As long as I’ve been in this business, I’ve gotten sick of being in discussions of people sitting there trying to define it.

Sarah explained how by referring to EE as science education, it is more easily accepted.
Its been more readily accepted in the science education community, or its been easier to get in to schools and classrooms, calling it science education, rather than calling it environmental education. Because science is a subject that has been taught in schools, and EE has not been really, in any consistent way, for many years at least, in California. There is a pedagogical reason that has to do with integration of curriculum, showing complex relationship across disciplines.

Reagan had a slightly different conception of EE, and its relation to exposure of the environment:

Environment based education is not exactly the same as environmental education in my mind. From both perspectives... environmental education is education about the environment. You can do some of that in the classroom. So, environmental education is learning about our environment, our role in the environment, how it affects us, how we affect it. Ideally environment-based education is education that is based out in the real world, in the environment, that makes you go out in the field. As much as possible, you do environment-based education, where you are getting kids out in the real world, because that is when it becomes real to them. Environment-based education is a component of environmental education.

Teaching the standards through the context of the environment. Anthony, Francesca, and Lucy all provided their perspective of teaching standards through the context of the environment. Lucy gave a very extensive explanation of the debate between a curriculum that teaches the standards to mastery and one that does not,

There are not many, (no criticism), Project Learning Tree doesn't go out and get a district to sign-on, and say, okay, we're doing this. And therefore, we're going to train all of our teachers in this. That's not the way they operate, that's not a criticism, that's just not a reality. I don't think what they have to market would lend itself to that either. It's not standards-based. It's not driven by teaching the standards, whether they're a more flexible state, or district, or California. They are still not focused on teaching standards. They do these alignments, yeah, but the difference is...that they (I draw this all the time). You can take a series of PLT, or whatever EE lesson, and put them down the left side of the matrix, and put standards across the top, and that's what we see, crudely speaking, as an alignment matrix. Well, [what do] one of the environmental education groups wants to do? Their goal is to teach those lessons on the left side. The school districts and teachers, and state board of Education, their goal is to teach those columns, those standards. It's a simple example, if you do this activity/environmental education lesson; there is something in there that the student is going to read. Now, with doing that, we can
tick off reading, because there is something to read. That’s fine, I’m glad, there is an opportunity for that student to read. But that’s not teaching reading. It’s not teaching to mastery. It’s not even teaching reading, it’s giving a reading opportunity. It’s not teaching de-coding, not teaching rhyming, or whatever. It’s giving opportunity, and it’s a good thing to do that. Again, it’s not criticism. But it’s not what the standards are trying to achieve. They don’t say, ‘go have your kids read’. They say, ‘have your students be able to decode this, write a 5-part paragraph, blah, blah, blah.’ I see why I am an outlier, why I don’t consider myself an environmental educator.

On the other hand, Anthony pointed out that perhaps some of the supplementary EE curriculum does teach to mastery, depending on the definition. “It depends on your definition of teaching to mastery. You can’t discredit all supplemental material to not teaching to mastery.” And furthermore, “if the teacher is convinced that a lesson is missing one step that teaches to mastery, they shouldn’t be discredited, disallowed from using the materials. Those are big philosophical arguments.” From a non-formal perspective of using the environment to teach standards, Francesca explained,

There are constraints, and testing, and that does make it hard. But that doesn’t mean taking them outdoors can’t reinforce the learning you are supposed to be tested on. It’s a fine line of ... if you are under constraints, making sure that your outside time is used to reinforce the concepts that you are responsible for, for standards and for testing. Environmental learning is the basis of everything. There is nothing that we teach or do that doesn’t stem from the environment. It’s where we are grounded. We are here; we are stuck. We live off of it, we walk on it, we smell it, we breathe it, and we eat it. Why not?

In conclusion, Lucy shared that non-formal environmental educators had one goal: to teach their lessons, and even though they might align to the standards, they do not teach them to mastery. Anthony, on the other hand, argued that supplemental EE material might teach standards to mastery. Francesca presented how learning in the outdoors can reinforce learning that is required to past standardized tests.
Benefits of using the environment as a context. The essence that was derived from these interviews was that all of the individuals agreed that there were benefits of using the environment to teach environmental content, although the pedagogical decisions differed. The following quotes demonstrate why the environment is an effective context. Bethany’s description defines environment as a geographical place and includes an element of learning about the local place,

I think using the environment is a great way to engage students, to get them incredibly interested in what they are learning about, as well as providing examples that are local to them, so they can connect to it a lot better, and relate to it.

Richard contributed that this type of learning will allow students to become more involved with environmental issues,

If students are invested in their own learning, they will generally move in the direction of wanting to save the planet ... There are clearly local, regional, state, national, global environmental issues: some are at crisis stages. If we can connect each American with those environmental issues, how they can relate to them and their daily lives, we will see the changes that are needed to positively influence those crisis situations.

Richard continues to explain that Americans understand the value of EE, and by having it be a part of the education system, it is kept in the public light. “If you look at the National Environmental Education Training Foundation Roper STAR study (Environmental Literacy in America, September 2005) that says that 95 percent of Americans think that kids should have EE in schools, we need to keep that kind of a high profile.” Melinda suggested,

Students... adults as well, are more engaged with learning. It has more applicability to their everyday lives; they can understand the meaning of what they are learning. It gives it a context that has significance to them, they can relate to it. The more we can do that, the more kids learn. They don’t feel like they are learning in isolation, their learning is connected to what is happening
around them. That, of course, hopefully, gives them the knowledge and skills that they need, to make better decisions and ultimately improve environmental quality.

Rebecca responded with this fact,

Based on the research that has indicated that that is a framework that has worked for two reasons. It is a very sensible, rational approach to basing your instructional approach on material related to the environment. It is readily accessible to the students, very real, tangible, and very interesting; but grounded in the content that they are expected to learn. It has always proven time and time again to be an extremely effective way at addressing two, sometimes opposing, goal sets.

Furthermore, she included,

I am concerned for personal and professional reasons, that we truly have an environmentally illiterate society making decisions on the whim and voting in certain ways that have absolutely no bearing or reflection on a knowledge-base that would say: that this a good, informed decision. I have always been concerned about the lap in literacy. I have also been concerned that the way that we have done business in environmental education for a so long, and I'll be the first to call it out. I'm in that same group. We all have challenges with it, that it required a radical reassessment of how we've been doing business as environmental educators. Because for thirty years, it's been doing business as usual, and it's been ineffective.

Rebecca commented,

[SEER]'s work comes to mind, because it is based, in part in California, and it was really the first time that very different dependent variables were being looked at, from the perspective of, does teaching this environment stuff actually do anything about what we care about... and lo and behold, look at what it did to test scores, truancy, student behavior, and parenthetically, knowledge of the environment. So, all of sudden that was really the lightning rod research that started a lot of people that had been naysayers realizing that this manner of teaching has tremendous benefits; not least of which, is to raise test scores.

Susan described an example of a non-profit organization and their work,

The Center for Ecoliteracy (CEL)'s work is based on that every citizen needs to be ecologically literate in order for us to create sustainable societies. For [Center for Ecoliteracy, they] turn to nature to learn how to be sustainable. Since nature has sustained itself for billions of year, it seems like the right role model for us to engage in. That's why [CEL's] work is embedded in the environment.
Susan also described how EE curriculum can be created to be place-based, with a broad methodology, which makes it an effective context for teaching about local places, “There are themes across environmental education that hold true. We teach ecological principles that hold true, no matter where you are, that fundamentally guide the environment and so that kind of approach can be applied anywhere.” Sarah explained that using the “environment as a context for learning provides a platform for teaching science in a more integrated way across the disciplines of science.” Anthony and Reagan explained that using the environment to teach would increase environmental literacy. Anthony: “In environment education, we allow all sorts of points of views to be embraced. If it helps them to understand ecological concepts, which it should, then it should have a role to help the long-term dynamic process for them to become environmentally literate.” Reagan concurred,

One of my feelings about the value of environmental education or science education or whatever, is that it is a way of putting things in context, which will facilitate kids learning it...It maybe will provide some motivation, because they are learning about stuff in the real world...Part of it, so that kids can learn it in a way that makes sense; the other thing is just that, for many kids, it is interesting. It adds to the value of their life.

In conclusion, many participants agreed that the EEI is a textbook-based curriculum, as opposed to a traditional field-based, EE curriculum. The differences resided mostly in the pedagogy, and not the content. The main reason for this decision was that the EEI team prioritized teaching the standards to mastery. This was evidently the result of the educational climate and the power of the context, in which the EEI was developed.

**Power of context.** How did the power of context affect the course of the curriculum, and how did the factors effect what was ultimately created? The Education
and the Environment Initiative was not created in a vacuum. To the contrary, there were numerous variables that existed to create this curriculum. Therefore, the question that emerged was, what circumstances existed that influenced the direction of the EEI model curriculum? The variables, such as existing in the state of California, available funding, and educational climate are elucidated and their significances discussed.

**Accountability.** The first sub-theme that emerged was the fact that this curriculum was created during a setting of high accountability expected in public schools. Participants spoke of the impact of No Child Left Behind, challenges for program improvement schools, and test scores pressures. Richard provided,

> No Child Left Behind has created instructional issues in the classroom for accountability. You have many schools now that are considered program improvement (PI) schools. A PI school that is so focused on their benchmarks. Right away, a barrier goes up for a PI. Where I think EEI would be perfect for a PI school, because it might get kids motivated and teachers motivated to assess better in those other areas, but it clearly serves as an obstacle.

Melinda expressed the challenge of working within the limitations of the variables, such as the school board and the traditional classroom climate:

> There is so much about EEI that is prescribed by what already happens in the classroom, and what school boards will and will not accept. Or what people who aren’t... necessarily, environmental educators, think is important, in a climate where the three R's are what is important, and achieving high scores on standard based tests is what is important. That is confining. So if you are going to play within those confines, if you are going to function within those rules and goals and climate, then I think it is very hard.

Wallace admitted that there was no question, “Because the schools are so bound by NCLB and test scores, we have to tie it into the academic standards.” Clearly, many decisions were based on the assumption that EEI considered the pressures placed on the teachers, in regards to accountability issues.
The reality is that we have content standards, API scores, assessment requirements. We have NCLB. We have the rigors and contracts that challenge teachers on a regular basis, in terms of how does one teach creatively with all of these burdens on the classroom teachers, vs. my heart has been in this for many decades (Rebecca).

Also, Wallace explains that some program improvement schools may not have attempted to use these units, because they were threatened by the content and time pressures, “the biggest issue in the rejection of trying it was the fact that they just wanted their test scores to come up. They didn’t want to waste any time or experiment with anything.”

**Statewide implementation in a California setting.** The creation of an environment-based curriculum in a state as diverse as California was an important element. The following evidence exhibits the influence that this factor played for the creation of the EEI. Patrice summarized, “We are a big state, a lot of students, and a very diverse population. We have a lot of work ahead of us.” Similarly, Lucy expressed that diversity was a variable that was considered, “this curriculum has to be developed in any school, and has to be implementable in a way that has to be doable in any school, in any socio-economic setting in the state.”

On the other hand, Wallace views this context as an advantage, “We are very, extremely fortunate in California, because we have the diversity we have in our landscape, geography, our topography, weather. It is very unusual.” Susan spoke to the fact that the ecological diversity would require additional consideration if they wanted to create a place-based curriculum, “they are trying to cover California. I think that it would be great if they designed lessons that a teacher could apply to their specific place. It would have to be somewhat open-ended because we have so many ecosystems and
microclimates in California.” Apparently, creating a statewide curriculum for a state that is the most geographically diverse in the country, has the largest state population (which is also very culturally diverse), and has both the second largest metropolitan area in the nation and one of the most productive agricultural regions in the world, could present challenges for making an environmental-based curriculum, specific to each student. ³

Samantha contributed her perspective from working as a top-level representative in a state agency, “You’ve got a lot of people to please (on a statewide level). Schools in Northern California are very different...so many different populations, than the schools in Southern Cal for instance... some of it is incumbent upon the teacher to take it to the next level, or the school site.”

School districts. The EEI was created by a handful of agencies that do not generally collaborate nor make decisions together, making a unique experience for developing the EEI plan. This context was perceived as both a positive variable as well as a challenge, which impacted how decisions were made. Lucy illustrated the significance of this collaboration, “since California is an adoption state,” they had to demonstrate what adopted material is tied to each unit. She continued, “Most of the time, the teacher will be using their adopted series.” This was an essential decision-making element for Lucy. She explained how the needs and perspectives of an institution, such as the Department of Education, as well as their unique set of goals and objectives, acted as driving forces, since they intended to cooperate with them.

Is there a base of interest for them to have students learn about the environment? Yes, but it’s not a driving force for them. It’s not their goal. It’s not even an

objective for them. That’s why it’s really never been on a larger scale basis, [EE] has not been implemented in any state.

She continues by saying that after developing the curriculum, a critical step is to get the school boards and districts to accept it and ultimately implement it in their districts.

Wallace explained her judgment of the school boards, and how they steered the EE1:

One thing I like about it too, we try to present it neutral. We are here to educate, not advocate. That has pros and cons, because some people don’t like that. If you get a lot of...some of the EE providers are very strong in their beliefs, and so they think we should be teaching it that way. But the problem is, really, with school districts they are pretty conservative, because they have to deal with everybody.

Academic content standards. The context that was most referred to, therefore exhibiting the greatest amount of power, over the planning and implementation of this curriculum, was the fact that this curriculum was intended to teach the standards to mastery. When asked about the importance of certain pedagogies, such as having hands-on learning, Lucy presented her analysis of the critical aspects of context:

So, I’d argue that that’s pretty conceptual, you end-up, you do your analysis. It’s not about having hands-on activities, every place, and every time. That’s a severe limit, because people don’t have the equipment or tools. It’s real. We could wish it were a different way. I could tell you about the school that I would fantasize about because I have written about it, done professional development across the country... what schools should look like. The EE1 is in the context of a state that has an education system that is more driven than any other state to master the standards. That context is pretty darn critical to success.

Melinda agreed that, “In today’s climate, I think that it teaches the standards to mastery is a strength. And again, that is because of the constraints to today’s climate, it’s not that it’s the ideal, but it’s the reality.” Likewise, Sarah added, “If you want something to be taught in California, they have to be in the standards.” Although the standards are integral to the curriculum, Lucy inserted that it was not the only consideration:

We’re not focused just on teaching the standards with the EE1. We have those two parallel and mutually functioning goals: helping students to achieve the
standards, but at that same time, and through environmental principles, get to those standards.
Because EEI is a state program, the silly way I state it, ‘The State of California had, and still has, and will have for quite a while, has a set of education goals at the core, and those are the standards. We have those goals, because this is a California state endeavor.’

Bethany described the difference between an environmental curriculum that is created under the scrutiny of state agencies, attempting to teach academic content standards to mastery and one that is not, “In our field, we usually do more hands-on, trying to get kids out of the classroom more, and so we are thinking from the non-profit point of view of things, rather than the typical school district point of view of things.”
Sarah posed an interesting inquiry about how we will know if the success of this curriculum is based on the decisions that were made internally or on the uncontrollable external variables,

There are so many variables at the moment. There is the normal dauntingness of the California education system, and the standards, and publisher politics and instructional materials criteria and review. And the whole system is incredibly complex. And on top of that, our current economic environment and reduction in funding for schools, makes it even more challenging and difficult to understand and predict.
The EEI may be a brilliant or flawed strategy, and both the sands are shifting so quickly, we’re never going to know: if it’s successful, or if it’s not successful.

**Consideration of the educators.** Ultimately, the success of this curriculum will depend on the usage by public school teachers. Interviewees provided evidence as to what the response has been during the pre-implementation stage. This evidence describes the context of the current overall climate of teachers’ abilities, desires, and time to teach EE in the classroom.

From the perspective of a teacher who has piloted EEI units, Harry describes, “Teachers are all freaking out. They are trying their best to not make it hard on teachers,
to make it possible to do. And this is very possible to do. When you start getting all of
the hands-on materials, then a lot of teachers will shut down. I personally don’t, but a lot
of teachers do.” Patrice shared, “This is meant for someone who has never done EE, but
can at least get the content. They are getting the content and issues out there, to create
environmental literacy, in a structure that fits within the school parameters.” Patrice then
added, “It is good for classroom integration, given the constraints that the classroom has
and all of the standards that the teachers have to address. So, the experiences come from
the non-formals.” She continues,

It’s like an adopted textbook style. I think this is a great opportunity for EE in the
classroom. Given the existing structures, the constraints of teachers, of time, of
the California state standards. I think this kind of just fits all of those pieces. The
constraints of districts, and getting environmental content into the curriculum.
Just awareness about these issues. They’ve addressed 15 issues, getting that in a
structured curricular fashion, to help our student population to understand the
issues that they are facing right now. And the way that they are using it, it is a
systems-approach. So, it’s not politically heated, where some teachers, or district
folks, or principals, might stay, oh, we can’t teach it this way.

Melinda touched on the sentiment that the units were too long and potentially going to be
just “one more thing” for teachers to have to absorb into their lesson plans,

Schools are slow to change and teachers are under tremendous pressure; so it is
hard to introduce something new and not have them feel like something is added
to their plate, and they don’t want to hear about it. The rigor of the standard-
based and the testing climate makes it very difficult to bring something new and
convince them that it won’t add time. I also think that what we were hearing form
teachers: that the units are too long.

Wallace worked directly with teachers to get feedback in order to make this a successful
curriculum. His experience was that,

Teachers in general are extremely overwhelmed with everything they have to do,
and so there immediate response is, ‘I don’t want to try anything more.’ But
there is the flip side. There are the teachers that are thrilled to try something and
are very excited about it. So, you have extreme sides. But in general, a lot of
teachers are overwhelmed. They have had nothing but additional layers of work required of them, and there is a time element, especially, in the K-6 with the science, because that is kind of optional. They would love to teach it, but they say, they are too overwhelmed. They have too many other things to cover.

Susan describes some of the constraints that teachers face to manage a class outside of their classroom,

You have to be realistic about what a teacher can do. I think offering suggestions of what to do, especially at the elementary level, in the real world is helpful. You have to realize that it’s difficult for teachers to get kids outside of the classroom. All kinds of hurdles: class management issues, especially as class size grows. It’s hard to manage thirty kids outside.

Susan expressed her hope that the EEI would provide, “teachers the material, the what they need, to be allowed to teach about the environment, even encouraged to. It gives it the validity to address this in the classroom using instructional minutes.”

Francesca understands the challenges of teaching students outdoors, based on her personal experience after decades, she shared, “Being that it is geared towards classroom teachers, it can’t be all outdoor education. It would fail if it were that, because most teachers aren’t prepared to take their kids in an outdoor environment. Most teachers are prepared to be in a classroom, and have their management strategies indoors.” Patrice, who was quite familiar with the inner workings of the EEI, thought that, “This all comes out of the needs assessment, the state requirement. They did that and came up with... they tried to develop these based on that, and what teachers wanted. And it was easily obtainable materials. When you look at the materials, it is a pretty short list, that a novice teacher could go grab, out of the science supply room.” Samantha summed up a common sentiment from the interviewees, “A curriculum can’t be the be all and end all. It can be a place to begin.”
Strengths of the Education and the Environment Initiative. The question pertaining to the strengths of the EEI was ascertained because it was important to understand what the experts felt worked well. This question also led to suggestions regarding possible areas of improvement for the development and implementation of such a curriculum. The strengths provide evidence of essential implementation elements of a statewide EE curriculum.

A common factor that many respondents mentioned pertained to whether or not this curriculum would create environmental literacy in California. This was a stated goal of the EEI, to create environmental literacy in California. Also, nationwide, the movement to pass the No Child Left Inside legislation would introduce EE into schools and mandate that states create a detailed plan for environmental literacy (Elder, 2007).

Creating environmental literacy. Patrice described, "I think it is going to give teachers another tool that they can use to teach environmental literacy. It's going to make EE more accessible to students...I think more teachers are going to become more able to teach EE." Harry included,

They are going to grow up knowing about the world around them, and it does talk about human impact on the environment. It definitely goes into that, that we are impacting all systems, on this planet, a big impact. So they are going to be aware of that, and maybe it doesn’t cover absolutely everything and what to do next, but it absolutely gives them a background. So they are going to grow up with a bigger awareness. So many people don’t get anything like that. If everybody got it, it would be a good thing.

Patrice was hopeful that by using a systems approach, that environmental literacy would be increased,

Students are going to, if they are studying this stuff, they will have info on the environment, when they leave school, K-12 instruction. I think the systems approach has been a really good way to integrate EE too. It’s the impact...human and natural system interaction, where we interconnect in the environment, and
what results from that, without any heated political issue. It's just looking at, how nature works. What are the ecological principles of how nature works? How do we work? How do human systems work, and do those two combine together, interact and create new systems. And what are those changes?

Bethany responded, “I think that the EEI curriculum...it is a really good first step to getting districts, schools, and so many organizations involved, into starting to think about the environment, and getting into the classroom, and not seeing it as an extra thing, but rather seeing it as this wonderful tool to teach interdisciplinary approaches.”

Richard and Lisa emphasized the fact that the EEI would be covered throughout their education, “The EEI does attempt to do that, to take a look at a life long process of learning about the environment through some articulated units...Kids benefit from something that looks at their entire education career.” In Lisa’s words, “By the time that they graduate high school, they would have received 85 units, that build off one another sequentially and there is certainly an improvement of environmental literacy, and also, certain higher achievement just for general learning.” Rebecca stated that the EEI would define environmental literacy, “This program very overtly chose to take EP and C. So, they are ultimately defining what the 12th grade exiting the school student, who has gone through a K-12 public instructional program in the state of California, needs to know about the environment, to be environmentally literate, and a fully functioning member of society.”

**Standards-based.** The fact that this curriculum teaches the standards to mastery is clearly a major strength for many people. In the ‘Defining Environmental Education’ section, respondents discussed how using the environment to teach standards based education. In this section, participants explain why they believe teaching standards is an asset of the EEI and how it will help ensure its success. Richard discussed,
Another thing that is good for the EEI, in terms of the formal classroom process: the fact that it is a standards-based one, that it teaches standards to mastery, will also get the district to support it.

EEI can’t be everything; and one of the important things, is that it does focus. And does this really well. If we tried to make it everything that an English Language teacher needs, or everything a differentiated instruction needs, or everything that math needs, then it would be a shallow curriculum, so I would rather it exclude some of those areas and focus and do this well.

That it is standards-based, the first of its kind for California. That it has good pedagogy. That it is relevant to California. That teacher professional development will be available. That the... from an economic standpoint, that we will be able to give it to you for free.

Patrice described how the EEI presented a more engaging way to teach the standards,

And because, they do tie into the standards, and teachers have to teach that. It gives providing a more creative and interesting way to teach standards and there are units at every grade level, and there are units in both science and history. So, that they’re just seeing it more. And maybe even subconsciously, it just becomes a part of what they learn throughout their education. It’s just an integral part, which I don’t see how that cannot create a more environmentally literate student body.

You can substitute what is in your textbook; and say, here, it’s going to have the stamp of approval, that says, you can do this instead of the textbook.

Lisa confirmed that, “I think that standards alignment, making a concerted effort to understand the constraints as well as the opportunities in California’s schools was something as well to be replicated, that we think is a strength.” Lisa also felt that these factors would positively influence the teachers to use the EEI units, because of “their support of the standards, and the teacher feedback has indicated to us, that we are definitely on the right track and it’s material that can and will be used in the classroom.”

Wallace confirmed that the California Connections piece, as well as teaching the standards to mastery were the two biggest strengths, in addition to using the environment to teach. He added that, “the whole focus anymore in education is teaching standards to
mastery, it’s really sad.... we have to do it that way, because otherwise, you don’t even
get in the front door.” Lucy felt that some of the strengths of the EEI were,

It is engaging students; it is easily adoptable by teachers. The core strength is it
helps teachers and schools and districts achieve their core goals of teaching the
standards, at the same time as teaching the principles and concepts. But, it
intends it to be very easy for teachers to implement. What they got from the
publishers is very easy for them to implement. We have tried to parallel really
what they are used to, because the whole goal is to give them a tool that they can
easily use; that their principals are going to say, yes, that does the job that I expect
of you.

Anthony replies that the EEI’s straightforward presentation will allow it to be easy to use,

It teaches concepts that are directly reflected of what we have to decide and do
here in California.
It’s direct, a no-brainer, they have determined the way that this was written, how
the materials are presented to children; the assessment provided should guarantee
that it’s taught to mastery. It’s very direct and linear; it must be much easier to use
that way.

Unique collaborations. Almost half of those interviewed expressed that the
collaboration with private and public sectors, and various state agencies helped to
strengthen this curriculum. Lisa felt that this networking approach, with the “State Board
of Education, Department of Education, Curriculum Commission, and Office of the
Secretary for Education” was an “immeasurable benefit.” Francesca, “It connects to the
standards. That is a given, it has to be that way. It seems like there are some large state
agencies behind it. So, it comes with more of an official awe, then just some independent
organization. Hopefully, those connections with the state agencies will continue to
sustain it somehow.”

Susan commented that the formalization of the curriculum might ensure its
success,
It's great that EE is getting a little bit more formalized and accepted in the education, teaching and learning, and instruction. I think they've had some real environmental leaders involved in developing this, probably well thought out. It's always really hard to get something in the schools. This has an advantage because it sounds like it is more, ...EE is more of a mandate now, even though curriculum is not.

Sarah felt that there had been an effective effort in acquiring funds, "It has been successful in getting money. Funding is a huge accomplishment. I think that it has the development of the EP and C, which has provided a very thoughtful and intelligent framework for the project to operate within." In comparison to other EE programs, Francesca commented that it would be successful because, "this has the seal of California on it. It is state mandated, it is more official."

In conclusion, individuals felt that the strengths ranged from unique collaborations with public and private sectors, that it was standards-based, and that it would enhance environmental literacy. They had also mentioned that the EEI would provide an introduction to EE, a good environmental background for teachers, that it had good content, was more current than textbooks, offered for free, and that it has a long-term prospective from K-12 (Reagan, Francesca, and Harry).

**Challenges.** Question number 15 asked participants what challenges existed for implementing the EEI, if any, and how they would address these challenges. The responses to this question exposed an array of challenges, from the funding constraints to the professional development plan. Melinda and Wallace mentioned that the time constraints created a great amount of pressure to produce the curriculum. Also, during the interviews, other challenges arose, such as statewide implementation and pressures that teachers faced.
Pressures on teachers. This was quite a complex category. The initial understanding was that a specific number, six to eight, lessons was created in order to teach each of the standards to mastery. The general expectation of this curriculum is that it teaches the standards to mastery, rather than merely addressing the standards. However, the evidence revealed that there was a low expectation of whether all of the lessons in each unit would be taught. Bethany explained,

There are typically 6-8 lesson plans to teach one state standard, which can be very time consuming for teachers. Especially when the majority, at least in elementary teachers... they maybe teach science once a week, if you are lucky. This unit now turns into a 6-week plus unit, that spans over way more time then they typically have available to them.

Melinda elucidated, “another guideline is that, you can’t make this be really time-intensive for teachers, posed another challenge in the creation of the curriculum.”

Melinda shared a response from a teacher who felt burdened by a suggestion in the curriculum to acquire materials for the lesson, the “teachers were saying, I’m not collecting information about that, that is going to take me hours. They just don’t have the time to do it.”

Also, it appeared that the EP and C list was too broad, and thus needed an additional priorities list to explain what should be taught in detail about the principles and concepts. Bethany: “When it comes to the EP and C: some sort of an environmental priorities list would be very helpful. Because they are supposed to span across 14 topic areas, such as water, oceans, resource conservation, forestry, all these different topics.”

Lisa describes the issue from another perspective,

The law specified that the environmental principles and concepts, which are then translated into the curriculum, into the instructional materials, for the EP and C, a series of environmental topic areas have to be addressed. And so we always focused on those very broad areas, but if we look a little further, it’s important
also to not only address those broad areas, but what specifically would we deem the priorities in those areas. Because they are so broad. If you were to take oceans, for example, than what specifically should be taught be grade, in terms of developing a more defined upfront scope and sequence?

And ultimately, Susan says that the challenges of implementation will be the "same challenge that anything new faces: that teachers see it as one more thing." Richard concludes, that it "comes down to the quality of teacher. There is going to need to be an investment in teachers. That is tough right now."

**Funding.** Without a doubt, many participants mentioned the economic context that both California and the nation faced and how this context influenced the development and success of the EEI. Harry felt that the units would have to be produced in color to make it attractive for kids, demanding a considerable amount of money to produce all of those materials across the state at no cost to districts. There was recognition of the challenge that a restrictive budget posed, especially during a national recession, with a statewide economic crisis. Bethany mentioned that due to state budget cuts, work was stopped for a few months, without the allowance of a project extension. In addition to procuring the materials, funding would have to be allocated for professional development.

Francesca had a fascinating point, about what would happen to all of their hard work, if they were unsuccessful in disseminating the units, "Since it’s not mandated, they really have to promote it, or it’s going to die...It’s going to be this really slick website, with these really cool things, and every once in a while, some educator is going to go, ‘Oh my god, I’ve hit the Eureka, check out all this cool stuff!’"
Reagan described the challenge of distributing a new curriculum shortly after districts, with small budgets, "have spent thousands and thousands of dollars buying a new science or social science series. Now, we come down the road, and say, three years ago, you spent thousands of dollars on your Houghton Mifflin science series. Well, here is something we want you to think about doing instead of that or in addition to that."

**Professional Development (PD).** Not only would the state have to raise money for production of the units, and to support the costs related to PD, but also actually conducting the PD was seen as no small feat. Sarah described that producing the materials would actually be the easiest part, "Developing the materials is really only the first half of the job, and frankly it is the easier half. Supporting the implementation, and providing continuous PD, and working systemically with school districts, to incorporate the materials and ensure that they are a priority: is really at least as big of a job as developing the materials themselves." Sarah also contributed,

It is essential to view the EEI as a long-range project with part one being developing the materials and if not the easiest, certainly the cheapest part of the work. And supporting the implementation is certainly more expensive and maybe harder, and requires the same or greater focus, in terms of organizational support and maintaining the momentum. It won't just happen spontaneously. It needs to be managed, just like the curriculum development project needs to be managed.

Bethany explained that teachers will need direct support to provide teaching strategies to help correct any misconceptions related to the content, "how to incorporate the environment, without instilling fear." Patrice added that teachers will need planning time to develop a strategy for aligning the EEI with their other textbooks, and understanding how to fluidly shift back and forth between their textbooks, in order to teach all of the standards. The bottom-line that Lucy presented was that, "Getting school districts to
adopt the material" was essential because "that is the way the state of California functions."

**Implementation statewide.** After working in any agency that manages statewide education programs, Richard had many comments about the challenges and his recommendations for implementing this program across the entire state of California:

This can't be done California wide, one way. It needs to be done at a local level, or regional level at the largest. Implementation occurs at a local level. It cannot be dictatorial. This can't be, 'this is how we're doing it.' It should be like with the focus groups: How should we do it? Tell us so that we can provide that excellent service to you. I'm much more of a 'work with the field,' as opposed to, from Sacramento, we tell you how everything goes. We are too big. We are not New Hampshire. And so I think we need to look at it, at the local level and work with districts, because each of them has their various issues.

**Expectations.** This category emerged from the interview question, 'What are your hopes for the EEI, in terms of its influence in teaching and learning about the environment?' What was revealed upon asking this question was that there was a range of expectations, as well as some disappointments, from the respondents about the potential success of the EEI model curriculum in public schools. In this section, the participants' responses provided evidence for the gamut in which the public might receive this curriculum. Their responses about the EEI curriculum were sub-sorted into low, medium, high, and overly optimistic.

Surprisingly, the evidence showed that there were a relatively balanced number of comments in each of the three subcategories, ranked based on their level of optimism for the curriculum. In the low expectations group, five participants shared their comments. There were two participants, Susan and Sarah, both with experience in the EE field, who only shared responses in the low expectation category (as summarized in Table 5.)
In the medium expectation group, seven respondents included a significant comment. Out of these seven, two of them only shared in this level of optimism. The last group, high expectations, had the most feedback. Five out of seven of these individuals only responded with highly optimistic comments, regarding the influence of the EEI on teaching and learning about the environment.

Table 5. Range of expectations expressed by each respondent.

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<th>EXPECTATIONS</th>
<th>Low</th>
<th>Medium</th>
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<tbody>
<tr>
<td>Low</td>
<td>Susan, Sarah</td>
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<tr>
<td>Medium</td>
<td>Bethany, Harry, Patrice</td>
<td>Anthony, Reagan</td>
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| High         | Wallace, Melinda | Francesca, Rebecca, Richard, Lisa, Lucy |}

**High expectations.** Melinda described that her expectations for this curriculum were high, “It has potential to have huge impact, because it’s K-12. Because in theory, it creates a lot more exposure on a more continuation basis. It should theoretically, become a thread that students notice throughout their entire education.” Melinda also felt that it would increase their environmental literacy:

Even if it’s not a huge broad focus. They are going to hear it enough, it being that: the interaction between people and the environment. They are going to hear it enough that by the time they graduate, it should be impossible that that they don’t know their decisions have an impact on the world, on the local environment and the broader environment.

Lisa replied, “We don’t have data to support this, but we are very hopeful that academic achievement will improve with the implementation and utilization of these curriculum units.” Richard answered this question with, “EEI, in the brochures, has been described as the potential, national model. I think other states are definitely looking at our effort. If
we can pull something like this off in California successfully, than other states have a significantly better chance of doing this.” And, “One of the hopes is that if this is starting to do well in the schools overtime, than it will have a positive influence on EE programs that teach the adult population.” He continues to say, “I hope that other states do look at it as a national model, that groups like NAAEE or NAI, State Parks, all the providers, say this is good stuff, and then learn from it, and build relationships with teachers who are using the curriculum. It is going to be all about partnerships down the road.” Therefore, Lisa and Richard both clearly have high expectations for both the implementation in California, as well as the impact it will have nationwide in its influence.

Melinda commented that she hoped that the EEI would not only excite teachers but also expand out into higher use of EE programs, as a result, “I suppose I would like to see it broadly used. Teachers get excited about it, to see it prompt teachers to want to do more and go further. In other words, yes, let’s start those community problem solving programs and the outdoor programs.” Lisa described, “We want to ensure that we have done the best job possible to ensure that this can be utilized by teachers in California’s schools and classrooms.” Although Lisa had high expectations, she was also quite aware of the power of the different contexts that this curriculum was being created in,

From today’s classroom constraints and pressures on teachers [my hope is] that this will be used. That’s probably the biggest hurdle. We want to make it as usable as possible. Because the law defines that it is not, so to speak, a mandate for use. Although, we will work diligently with districts and county offices of education to facilitate that the EEI units, when they are...once approved by the State Board of Education in January 2010, that we have set the stage, that these will not sit on the shelf.

Wallace agreed that he expects a rise in environmental literacy, support, and usage:
The goal is to have 85 units, K-12, available statewide at no cost to hopefully school districts, but that is to be determined. The goal of the EEI is to get environmental literacy in the K-12 system, and this is one mechanism. Hopefully, you will have more buy-in from all sides, not just within education, but support from the outside. Personally, I want to see a K-12 EE program that is taught all the way through. It layers on each other, similar to what you learn in Kindergarten. It uses scaffolding. I hope that the school districts pick it up and use it all the way through. At this point in time, it is going to be optional.

Lucy described that her expectation is greater learning, which will result in an increased understanding of their world.

My interest is to give students a better education, to help them learn what we are attempting to get school students to learn, but to do it in a context that they understand, relate to, and engages them, so that they learn more effectively. At the same time, that they are learning about the world that they are living. It will give students the conceptual understanding of what’s going on in the world, it will expose them to a pretty wide variety of environmental topics that are currently... more present day issues, and also prepares them to look at, gather, and analyze issues, that you and I don’t have any idea of, that is going to hit us in the face in 5 years.

Rebecca detailed the many components that she feels will lead to the success of the EEI, including providing environmental knowledge, teaching the standards, and having the EEI units used in the textbooks.

It helps launch those students so they are well prepared, capable of critical thought, not brainwashes, but articulate in fundamental principles of how our planet works, how human communities work, how those two spheres interact, what are the consequences of our actions, and how can we make better decisions. Number two, it has been designed to integrate and bring to mastery specific content standards. The students will do just fine in spring assessment; but learn it at a much deeper level, because of the manner in which we’ve approached it. It’s interesting because if we are successful, the EEI actually goes away. Its’ ultimate goal is to become acculturated in the textbook adoption criteria, and in scopes and sequences.

Rebecca also had high expectations for a larger educational vision, in terms of the EP and C that were created, to unify the messages of state programs:
It’s part of a much bigger machine. As opposed to banging your head against the wall, and saying, please try EEI for just Earth Day month. This is a total different monster. The textbooks are already starting to reflect the language of the EP and C. Harcourt Pratt, two years ago, already had them all in their textbook and so the students will continuously see these principles and concepts. They will be taught according to them. Their textbooks will reflect them. Hopefully their districts’ scope and sequence will reflect them. So that ultimately, they will be doing this because it is a part of an administrative decision and it’s part of the textbooks that are adopted in the State of California. I hope it’s successful, widely disseminated and implemented. And those principles and concepts also become the framework by which all state programs develop their programs, so we no longer get contradictory messages from state agencies, that are each doing their own program. And that these EP and Cs really become a framework that helps unify program approaches, so that the same messages are being received by students, over and over again, as opposed to a bombardment of differing messages. Ultimately, my hope is that EEI becomes widely, universally and systemically integrated into the classroom.

Francesca, who works in the non-formal EE field had high hopes for the EEI, “In this context, in a curriculum that isn’t mandated, I feel that this is the only way that it is going to work, that teachers will use it. If they are able to teach other things, in the context of environmental learning.” Fundamentally, Francesca hoped that the EEI would enhance students’ experiences, “I hope that students will get to know their local environment and to get to know their local environment in a learning context related to what they are supposed to be learning, in terms of what a teacher is responsible for teaching.”

Moderate expectations. In this category, participants shared that they were pleased with certain aspects of the curriculum, but disappointed in others. Such as Bethany, who expressed,

It doesn’t necessarily meet our intent as authors. We were striving for more environmental content to be incorporated in it, but it is a great first step. But the materials, I think, will be very effective for teaching the state standards to mastery, as well as using the environment as a basis for understanding those state
standards, but not necessarily including all of the environmental concepts that we would have liked to have seen in it. Based on the author's intent, we wanted the EEl to lead in kind of a universal environmental literacy in the state. Instead, we got more of 85 units that really meet the goal of teaching the California state standards to mastery, in a number of areas. They do address many of the topic areas that were included in the law, but not necessarily to the level of environmental content or really achieve environmental literacy in these students, as what we initially hoped. Again, it is that first step. We still believe that overall it is good. And it is going to be very beneficial, to promoting environmental literacy, but that it is an initial step, and from there, that we will grow and build upon it. Just like we have scaffolding in school, that's what we will do with the environment.

Bethany suggested that the EEl may open doors for teaching about the environment:

That it is going to encourage the Department of Education, districts, administrators, and teachers to not be afraid to incorporate the environment in their standard teaching practices and strategies, and that they will be able to see its benefits, and how it does engage students and increase an interest in learning and want to be at school, and do more hands-on, experiments, and just being engaged really. I really hope this will help that and bridge the gap between the non-formal and formal education world, and see how beneficial they both are and see how they can work together to increase student learning.

Participants such as Harry were complacent in the fact that they only expected so much of the EEl in the first place, even if they had higher hopes in an environment-based curriculum:

They are not going far enough, and saying, 'What next steps have to be taken to make things better?' But that, I think, was what the philosophy was of this program, was that they were going to give kids the background to become knowledgeable, and that is the first step, and that is a big, huge first step for California, compared to the rest of the country.

Harry also contributed, from a teacher's prospective of feeling a sense of urgency to get environmental content into the schools, that "it’s an uphill climb" and at least it’s a start, in a country where change happens very slowly. He also said that the EEl could add suggestions for how to include more inquiry-based learning as a next step.
Patrice agreed that there is no one solution to solve all of the problems, and this is like real life, where you have to offer multiple approaches for different people.

“This is a great solution for that approach in the classroom; to get more teachers who aren’t familiar with EE maybe exploring the options now, teaching environmental literacy, so to speak.” Patrice also revealed her expectations for collaboration with non-formal EE programs:

Something that I am going to look to is seeing how the non-formals get engaged with this and enhance this. I am hoping that we will get to have local, county resources that will help support these efforts, so that teachers that are teaching this, they can go to the local museums, or use restoration projects in their community.

I think the main thing is understanding that it is just one tool. I don’t thing anyone is intending this to be a replacement for anything, anyone’s programs or saying this is any better than anyone’s approach to EE.

Wallace also mentioned his feeling of urgency, and again the sentiment that this was a start, “The ultimate goal is to get it in there, as a start, and I see it as a start.”

I hope it does [create an environmentally literate citizenry], because they are our future voters. And a lot of the issues that we vote on anymore are related to our environment.

Anthony responded about the inclusion of EE providers as well, “I don’t foresee that any of the existing programs will become null and void, it will be more beneficial. Teachers will be looking for more hands-on things for children to do. If it draws more attention to EE, then it will be fabulous.” Reagan was hopeful about the curriculum but explained the three reasons why it might not reach all students,

You are asking for the bottom line here. I think it will help. It is not going to make it all good. Not everyone will come out as a tree hugger. A lot more kids will become educated about their environment. Hopefully, care more about their environment. And be willing to act on that concern and care. It is not going to get to everyone because A: it is not a required series of standards and B: because it is a voluntary thing. Here it is; you can use it if you want.
C: here is this unit, but the reality is that they may do one or two lessons from the whole unit, so it is not going to have the full potential impact that it could have if they were doing everything that we suggested. It will be one more tool in our toolbox, but it is not going to solve the problem itself. It is unrealistic to have 6-8 lessons on one standard, but that was what was required to do. But, if we were required to have 2-3 lessons on one standard, we could have written them so they could have worked together better...Our goal is to impact not some, but most. Even if they don’t implement all 6-8 lessons, just one or two lessons, then that’s one to two more than they would have done before. Over time, that accumulates.

Reagan summarized the conflict regarding the number of lessons, pressures on teachers, and the reality of implementation.

They will get this 100-page booklet, with all kinds of nice pretty pictures, and graphics, and all this stuff, for teaching one standard, in 6-8 lessons. I think the idea would be really nice if they had time to do that. I think the reality is that they will say, here is a lesson and here is a lesson, and these are a couple of lessons that I will do to try to teach these standards. I don’t think they will get used as originally intended.

Patrice similarly responded that the intention for this curriculum was to have as wide of an impact, and therefore, “We want it to become mainstream, and not just this niche type of teaching. It has to be easy for teachers to use, and otherwise teachers won’t use it. This is an important part of disseminating this info.” Melinda affirmed that this curriculum was not a huge change from current modes of teaching, “We’re not so totally moving away from a textbook-type atmosphere. We’re not asking you to take your kids outside and solve world problems. Its’ got some familiarity, it’s not going to seem all together different. We’re not asking you to develop all new skills.”

Low expectations. Bethany shared an element of disappointment that she noticed with the EEI:

When we talk about the environment, it’s always been beneficial to include all aspects and components of it, not just that the environment exists, or how we use
it, and the resources we use from it, but also to discuss impacts of resource use. And then of course ways for reducing or improving, or taking action to try to reduce any impacts that are out there; more of a full circle. Where I think some of these units, we would have liked to have pushed it, taken it to the next step, incorporating some of those next components, understanding more of the impacts, and more of the solutions to those impacts, more critical thinking in some of those areas. It's never too... of course you vary your level of how deep you go into some of these topic areas, but it's never too early to introduce some of these concepts, it's just the approach that you take to do it.

Although some participants commented that the discussion of impact was important,

Bethany revealed that the reality was that it was not a strong point of the curriculum.

Bethany continued,

The next step is publishers. To what degree will they incorporate these EP and C? Because the one negative is that EP and C are broad based, so there is a little bit of a fear, on my side, that some of the textbook publishers will say that they are already doing it. They will just say, we're doing principle one, without truly adjusting their materials, based on the intent of the EEI; which is to incorporate more environmental content. That is my personal fear.

Bethany brings up a very interesting question. After the EEI has completed and produced this quality set of materials, will the Department of Education hold them accountable for committing to incorporate the material, as it was originally created?

I don't think all of a sudden, they would go beyond their required hands-on and engaging lessons that they are allowed to have in there. I don't think all of a sudden this will make the textbooks have 75% hands-on learning. No, I'm sure it would be just the basic content of what is in there, will be adjusted. Maybe they would provide a specific case study with some critical thinking questions or they may elaborate on an existing experiment that they have, with a slight twist, so that it meets the EEI stronger, but I don't think too much more would happen.

Harry was disappointed in learning that the EEI was not mandated, and therefore doubted whether teachers would actually use it, especially if schools had to print the materials themselves from the Internet. Patrice shared a disappointment she had heard from non-formal providers,
People were expecting something bigger. I say to them that it is classroom curriculum. It’s not like for you to do at your outdoor education school, but it’s really for classroom instruction. It seems like there is some disappointment with it, and then when they see what it is, they go, ‘Oh, that makes sense.’

Susan explained that she had been keeping track of this project from afar and was surprised by the correlation between the budget and the final product.

This project has cost millions and millions of dollars, and it never gets in the hand of teachers. That is why I’m so concerned with the looks. I would look at this and say, this is not current. Just the way it’s laid out, is soooo, just. I’d be looking for something that its’ content and look says we are in a new century. This isn’t the 60s or 70s.

Susan credits her disappointments to the leadership of the project, and lack of a clear vision. From the early stages, she observed that, “it kept changing its’ whole direction, multiple times. I don’t think we had a clear vision.” She recommended that the project needed, “A person or group of people who have a strong enough vision, who can take all that input, and than critically apply it, in a way that is visionary, that moves us forward. Looking at that, it doesn’t look like it’s moving us forward, not like it’s really creating a new vision, of learning about the environment.” She had expectations that it would be more “revolutionary” and have a “systems approach.” She hypothesized that perhaps, “because they have to go through all of the state resource agencies, to get approval, it just got dumbed down. It got so it was much more traditional, and kind of abandoned its’ few years of looking like it was really going to leap us ahead.” With that said, Susan still had hopes that this final product would give “teachers the material, the what they need, to be allowed to teach about the environment, even encouraged to, give it the validity, to address this in the classroom using instructional minutes.”

Sarah felt hopeful that teachers could use the EEI to become more aware of the environment and more effectively teach the core subjects, “It adds to the great
experiences that students can have” but cautioned against the chance that it would
“replace or squeeze out other worthy experiences. I don’t necessarily think that that will
happen, but in that particular case of using the EEI modules in replacement of FOSS
lessons, I think that needs to be looked at very carefully.”

Both Sarah and Anthony’s feedback suggested that EE and science education
providers were in some way marginalized during the creation of the units, but hope that
the EEI will bring attention to the field of EE. Also, these responses from Anthony
reveal that there was potential for the spectrum of knowledge, awareness, and action to be
integrated into a classroom setting, while teaching the standards. Anthony describes,

There were great gaps in what is available, what’s available in already created
materials and standards that were designed to teach the EEI. There could have
been an effort to work on that narrower project. If a lot of the programs had been
asked to participate, then there would have been a huge amount of cohesion that
would have been made, among all the different EE providers and programs, and
filling in the gaps with what could have been helped to do that.
There is PLT, WILD, WET, and all these activities that can teach standards just as
well as the EEI. Looking to see what they can offer, and having them participate,
in the delivery of a standards-based education such as EEI, and then filling in the
gaps with creating curriculum could have saved a lot of money, and created more
connectivity with the EE providers, rather than be marginalized, and asked to
participate but not be directly involved.
WET, WILD, and PLT, when the principles were developed and standards were
picked out and the principles, we did a correlation of what our materials offered,
and we found there was a tremendous overlap for one thing, for certain standards
and some gaps.

Apparently, the evidence shows that non-formal EE programs, such as WET, WILD, and
PLT made an effort to correlate their existing curriculum with state standards. When
asked why their attempt to collaborate with the EEI failed, Anthony answered, “The folks
that were in charge, that was their decision. It was purely that, those in charge at the
time, they probably felt, they wanted to create something exclusively California focused,
a no-brainer, to identify clearly as a California product; and that’s my impression.”
This section described the range of perspectives of individuals' judgments of the merit of the EEI curriculum. Overall, people demonstrated satisfaction, optimism, disappointment, as well as neutral attitudes about what was created in the EEI curriculum, and the process to develop the materials.

**Compromises.** Participants were asked whether or not compromises were made from the initial plan for the curriculum. From this question, information was revealed about how outsiders experienced the evolution of the EEI and its creation. Also, many people expressed that certain compromises were made based on the limitations of the legislation. This section revealed the different perspectives from the three different groups of participants, those directly involved in the legislative process, experts in the EE and education fields who consulted for the project, and professionals in the EE field who were familiar with the project.

**Prioritizing standards.** Due to the climate of California's education system, addressing academic content standards was a priority of the EEI curriculum. The participants described the influence that the standards played on the decisions made during the creation of the EEI. Bethany explained, “Our overall goal with the EEI is to improve environmental literacy in California, for our students, K-12th grade. Instead, we have more of 85 units of curricula that meet the goals of teaching the California state standards, because that is a huge focus, to make sure it teaches the state standards to mastery.” There was a decision to not revise the current “untouchable” state standards to include EE standards, but to teach the current standards with an environmental context. Sarah voiced her perspective on this situation,

In the very early stages, there was an initial vision to revise the California science standards to include more environmental education concepts. That was quickly
taken off the table because of the complexity of the standards in California. So they went this route of teaching the existing standards through the context of the environment. I don’t know if that was a compromise or if it was a strategic decision that everybody thought was the best approach. It may well be the case that California standards are untouchable. So, it could well have been a failed effort to put a lot of energy to revise the California science standards. And on the other hand, really, the standards are what drive what teachers teach and so I guess I would see it as a compromise, and maybe a necessary one.

Lucy described the reason that state standards must be included in the curriculum. “If you have a set of partners that have a responsibility to teach the state standards, you have to do what you are trying to do in terms of their goals and objectives, not just yours. And our goal is to teach the EP and C, and those goals have to work together.”

Essentially, Lucy described that Heal the Bay co-authored a legislation, which did not consider the audience, but instead prioritized their advocacy needs in teaching about ocean conservation issues. Lucy felt that the skill set of being open to client’s objectives, which in this case was to teach the standards, was essential for approval of the curriculum. Lucy adds, “I would tell you that that skill set, of being open to who is the audience and what is their need, not just what are my needs and desires, has disappeared from the EE community, and I think it is pretty much gone.” Lucy continued to describe what she sees is the reality,

[Heal the Bay] is an advocacy group, and they said, standards don’t do anything about the oceans, so, let’s get in there and rewrite the standards. Because what we’re interested in is the most important thing on the planet. My point isn’t whether that is true or not. My point is if you go into a discussion where you expect to achieve something, you need to be open to actually listening to the other people involved, and to attempt to work your goals into theirs and to get them to join ideas.

So, you lose things, everybody loses things when you are trying to make something broadly functional, and not just make everyone happy. I don’t think that actually, even if I put on my civical hat, that, ultimately, the limits, especially in regard to what you are talking about, experiential, hands-on, all the things that
you and I both know make education stronger... I don’t think it was about the happy part; that was part of that limit. It wasn’t the State Board of Education, or DOE, Curriculum Commissioner, or any of those people saying, no, go back to reality in a second, don’t do that. But in fact... The previous framework said there shall be no more than 20% hands-on activity going on in science, no more. When this framework was revised and adopted in 2007, or 2008, the state board did a 180 and then said that there should be a minimum of 25%, not a maximum of 20% hands-on learning. So the reason that this curriculum doesn’t have kids going on field trips or unless there is possibility. This is one of the reasons, why we have informed NGOs and other organizations that do education outside the classroom, that support nature. It is not because the State Board of Education said don’t do that. So, I know, don’t put on that cynical hat, which I normally would. That wasn’t the limit. The limit was to make it functional statewide, and whatever school setting it was potentially going to be used in.

Reagan imbued her point-of-view about the importance of including an element of advocacy in an environmental curriculum, “The problem that I have with the EEl: it’s not really advocating for particular viewpoints or actions. If you look at the language, to me it seems that they have to do a lot of compromises in order to get the language okayed. It’s kind of stilted language.” Furthermore, the reason for this was, “I think that everybody in the state/ in the world in the state had to sign off on, ‘This isn’t going to offend anybody or get anybody upset,’ so I think that sort of watered down some of the things I wanted to say.”

Approval by the DOE and school districts. Respondents claimed that the pressure of the State Department of Education, as well as the legislation’s wording determined the course of the content and pedagogy of the EEl’s model curriculum. In addition, a common sentiment was that teachers have a considerable amount of content to teach, so this curriculum cannot be seen as just another ‘thing’ to teach. This section depicts how the teachers’ feedback impacted the EEl as well as the influence of the DOE’s final stamp of approval played on the development of the curriculum. Anthony said that, “they are stuck with the mandate, with the legislation that calls for... Anytime
you prepare materials for teachers in California, you have to prepare the materials, you have to have a budget, if you tell teachers to go out and plan a garden, you have to provide materials to do that.” Bethany inserted, “They are not taking the next step because within the law, one of the components of it is that it has to be approved by the DOE and the curriculum commission, so because of that, I think their main focus is that it teaches state standards to mastery.” Also, Bethany shared a rationale about why the pedagogy did not include experiential learning, “When you have such a massive project like this, you are also limited in how innovative and cutting edge you can be when it comes to those types of things. If you are trying to produce such a mass product, that have very specific goals, that need to be addressed first so that it can be approved by the DOE.” After receiving approval by the DOE, the EEI consultants would have to be prepared to effectively disseminate the curriculum into the school districts.

One consultant, Melinda, described, “My philosophy is that you want everybody doing this. And this is a handholding method of getting people who wouldn’t do it otherwise, to do it. And if you want environmental education to be school wide, or kids to be brought into environmental education, in more than the one class that the teacher was interested in it, then this is a very strong tool for doing that.”

Harry included, “I’m sure they have had to [make compromises]. Time wise and money wise, and trying to please the teachers, by not making it be another thing, trying to fit in this way and that way. They are trying to make it as least intrusive as possible.”

Melinda explained that teachers “don’t have time to do what we are asking, and [so we] had to keep cutting things back. You felt like you were sacrificing good lessons, but the reality is that they weren’t going to do it. But you aren’t sacrificing anything; if the reality is that it won’t be done. So I think financial and time constraints are going to hurt
it.” These respondents offered that it was crucial to find the right niche for this curriculum, so that teachers would in fact use it, if the State Board approved it.

Francesca commented on the challenge of teachers using a new curriculum, “Teachers are afraid to go outdoors with their kids, if this does and I don’t even know if this even takes kids outdoors. There are teachers that are teaching content that they started teaching 15 years ago.” As a result of the current paradigm that suggests that teachers cannot go outside with their kids, specific consequences occurred. Rebecca explained, “It can’t [have experiential learning]. We tried where we could. It wasn’t that we were diametrically opposed to it. We simply had the reality of, this is a classroom-based curriculum project.”

**Length of units.** Another common theme was that compromises made regarding the length of the units, as well as the quantity of lessons present in each unit. The responses varied from describing why the total number of units was decreased, to the realities of implementing 6-8 lessons per unit, and the experience of creating 85 units in total. Richard said that the project goal did go down in scale from 150 to 85 units, “because the curriculum was harder to write than expected” and “as a result of the unknown challenges that did present themselves.” He continued to explain that quality was better than quantity, “They would have liked for it to be more, but I get it. It’s better to have what you’ve got, and make it really good.”

Both Melinda and Wallace explained that the constraint was the time they had to develop the units as well as contract freezes that occurred. The compromise to cut the project’s goal almost in half insured that they did not jeopardize the quality of the units.
Even producing as many as 85 units was challenging, Lucy explained, "Having to develop 85 units, causes you to act like a publisher, which means that you have the reality of space constraints, structural constraints. The reality of, 'we write this background and attempt to teach the teachers everything that they really, really need to know.' Well, that takes a shelf."

Bethany, "I would like to have seen them shorter, not being 6-8 lessons long. However, since they are that long, I think it would beneficial to also include some kind of a quick guide. So, if teachers only had two days to teach the state standards; Which are the two lessons that are most important to teach the standard to mastery and to incorporate the EP and C, that it says it is meeting (kind of a scaled down version of it)? Because teachers are going to have to do that anyways on there own."

Therefore, teachers may choose to only teach two of the six to eight lessons. Would these two lessons teach the standard to mastery in themselves? The EEI consultants had to make some editorial decisions, Melinda explained, which were justified as changes for the sake of time and teachers' abilities:

Sometimes during piloting, and sometimes you just knew, you would look at a lesson, and just know, there is no way that an average teacher would... Sometimes is would be happening in the SEER office, sometimes ...I would look at something and say, 'It's just not going to work.' I might, I didn’t pull a lot, but I did pull some things that were just too complex. We also kept getting more and more restrictive as time when on, because of input we got from teachers who were doing field-testing. Lessons were too long; they don’t have time to do it. They are not going to take... most of the units, we started out as a maximum of 8 lessons, and it became a maximum of 6 lessons. For the lower grades, it became, preferably, 4 or 5 lessons. It started out, where they could be any length. And then, it ended up being 30-45 minutes for the primary grades, and hours longer for older grades. You couldn’t go longer because teachers couldn’t do it. Teachers would say, I can’t spend two weeks on one standard. So the reality constrains what ideally you would like do. Yet, that is the reality, so if you want to do something, you have to function within that reality.
Rebecca provided more evidence concerning the decisions made by the consultants,

So, there was a lot of compromise in developing the material. For the most part, it is impressive... I don’t think [the compromises] are a big deal. There aren’t a gazillion of them. We were down to the wire. We had to get these units out. We could edit until we are dead. But that isn’t the point of the EEI and it is now under review by the curriculum commission. We absolutely had to stop editing. Part of it was time, part of it because some people perhaps wanted a concept introduced at an earlier age, and so it is there but it’s not necessarily something that everyone agrees is a good idea. That occasionally happens. It was really challenging to write the global climatic change unit because there had to be reflection on the state policies, through all of these units. So, we had to be responsible in setting the tone for each of the units, and make sure that we were reflecting state policy. For the most part, the state has a pretty radical science-based policy. We didn’t have to water things down. Sometimes, we had to refine them even further, because we were told we had to keep pushing. We had to make sure that we were reflecting policy. It was just hard, that’s all, it wasn’t impossible. I never, ever, felt that I had to sell out. The day that I have to sell out is the day I stop working on this. So that never happened.

Lucy claims that, in her opinion, an author of a curriculum never really has the opportunity to completely express what they want to be included. In other words, the limitations of the variables presented demanded that certain compromises were made.

I’ve always struggled that there is a pragmatic mechanism for getting involved with the audience, in that case, the school system student. Just like now with the EEI, and so, the reality is that one doesn’t get to express, and make everything that they want, in terms of what might be a pure program, in terms of educating people about the environment.

**Limitations of pedagogy.** Melinda described the combined limitation of creating a statewide curriculum with place-based pedagogy,

It is hard to create a statewide curriculum that is really place based locally, because they have to cater to the whole state. So that is another frustration that you run into at times. Well, we are not setting this up so that teachers can go out and focus on their own park down the street. It’s because we can’t write something up that provides them whatever info they need about every park down every street in California. You just can’t do it.

Lucy, “We did a good job of actually going to the limits. I don’t especially like the limits. Just because we couldn’t do more hands-on, doesn’t mean I don’t wish we
could have....No, with the context of realities that we had to operate in [compromises were not made]”, Lucy explained. However,

Yes, in terms of... I don’t especially believe in book-based learning. Is that a compromise?... I think we did a darn good job within the reality of doing what’s in the constraints of reality, to try to make it so that teachers could implement it, within the minutes, all the entities would actually support it. Because it ultimately doesn’t do you any good, if the only thing you can paint the Mona Lisa, but only two people can see it. Those constraints are real and that limits. We all know this is limited.

An unanticipated comment came from one of the consultants about the expertise of those in implementation roles for the EEI. Melinda shared,

Certain topics, like pedagogy are just not what some of the participants are thinking about or what their expertise is and that is something that is interesting about the project in general. You have people in implementation roles that don’t have that background.

Patrice illustrated how the non-formals would be expected to fulfill the absence of these EE pedagogies in the EEI curriculum, “But because it is statewide curriculum, you are not going to necessarily be able to accomplish place-based education to the degree that one would want to. So, the non-formals are going to be our place-based folks.

**Role of non-formal EE providers.** There were numerous indications that non-formal EE providers would still play an integral role in the big picture of teaching about the environment. However, Patrice provided this factor, “We just have to see if the funding is there to make these connections. And there is not funding for that right now.”

Wallace mentioned that this connection would fall on the teachers,

Hopefully, at the end of each unit, there are additional resources. They can tie to the CREEC website, and they can find out the local EE activities. Basically, the way this is set up, it’s pretty much in classroom, because that’s pretty much all we can do. You can’t write something for the people in Barstow and Ft. Bragg... totally different experiences.
From the perspective of a non-formal EE professional, Anthony elucidates the reality of the role that non-formals have played thus far:

I think there could be another effort made to join hands together with all the other stuff that exists and then fill in the gaps. If you join hands with all that other stuff that exists, you could have probably adequately taught standards, and embraced more inquiry-based learning, and outside and experiential learning and developed things that we see developed for the EEI. That is just my fantasizing.

EEI staff members state that the EEI curriculum would provide replacement units. They suggest that educators replace portions of their existing curriculum with the EEI textbook curriculum. Sarah suggests that this could result in removing existing hands-on, experiential learning opportunities with lessons utilizing reading analysis as the primary pedagogy. As discussed in the ‘Expectations’ section, Sarah had commented on her disappointment of replacement units, and how this might affect pedagogy used in the classroom. Sarah stated, “Well, it looks like the decisions have already been made. In the modules that were on display, there are instructions to replace particular chapters of textbooks and particular lessons in FOSS modules.”

In regards to how the EEI might affect EE providers, Richard cautioned,

We need to make sure that providers that are teaching programs that may not necessarily be aligned to the EEI units, that they are still excellent programs, and that there is a place for them.
EEI is not the end-all, it is one slice of the pie, but it can be a real pivotal slice that we can leap from, in terms of trying to garner more support for environmental education programs, that are supplemental in nature to this curriculum.

Summary

Fifteen experts in the fields of education, science and public policy shared their stories regarding the history of the EEI. Their words paint a picture of how the EEI was created: the limitations, expectations, and benefits of such a curriculum, culminating in
an oral history of the EEI. The eight themes that emerged from the data serve as a backbone to this historical analysis, and are summarized as follows.

An important aspect of the original legislation, AB 1548, was modifying the academic content standards to include EE standards. Assembly bill 1548 was revised by the EEI leadership team. The new bill, AB 1721, prioritized teaching the current academic content standards to mastery through the use of the environmental principles and concepts (Pavley, Chapter 581, Statutes of 2005). There were many key players involved with the creation of the EEI, including a unique collaboration between public and private agencies, scientists and educators who consulted on various aspects of the project, as well as the writers of the instructional units. In addition to the goal of teaching the standards to mastery, the objective was to use the environment as a context to teach the standards, with the hopes of creating environmentally literate citizens in California.

A major emphasis was placed on the content of the EEI, but core EE pedagogies were not included. Some of the decision-makers for the EEI explained that they simulated experiential learning, through the use of maps and connecting the material to California, although they admitted that this could not replace ‘the real thing’. When asked about the critical components of EE pedagogy, the overall perspective was that hands-on learning, experiential learning, and learning in the field were the most effective ways to learn about the environment. However, many participants expressed that these were not possible within the limitations of a textbook-based curriculum. The EEI was described as a “traditional curriculum” by many individuals, which equated to being textbook-based, including worksheets, assessments, and simple lessons. Although the
teacher is expected to be the dispenser of the knowledge, many felt that there were still opportunities for critical thinking, and occasionally inquiry-based learning.

Conversely, members of the EE community argued that hands-on learning was possible, and that there was plenty of evidence to demonstrate that fact, but that these views were not taken into account when creating the EEI. Others felt that these pedagogies were essential, but they would have to be integrated into a curriculum apart from the classroom curriculum, taught by non-formal EE programs. There was no mention of a commitment to assuring that non-formal EE programs would be included in the state’s plan for environmental literacy.

There were no interview questions directly related to defining the term, environmental education. However, this became a topic of conversation in more than two-thirds of the interviews, which was similar to its occurrence in the literature review. The aspect of this discussion that was most relevant was how the EEI fits into the context of the field of EE. Essentially, the EEI does not fulfill the entire spectrum of a traditional EE curriculum, which includes knowledge, leading to awareness, and resulting in action (NAAEE, 2001). The EEI provides one component of EE, in that it teaches environmental knowledge, through the use of a textbook-based curriculum. Many interviewees referred to the benefits of using the environment as a context for learning. However, evidence that correlates academic and behavioral achievement as a result of EE, are a result of comprehensive EE programs which include at least one component of traditional EE pedagogy, such as place-based/involvement in the community, learning in the field, or hands-on learning.
The variables that existed for the creation of this curriculum were very influential. The power of the context was apparently too pervasive for the EEI leadership team to not prioritize. One of the most prevalent comments was in reference to the educational climate, including accountability of schools to teach academic content standards and pass standardized tests. In addition, another prominent theme was creating a curriculum in such a diverse state. As a result of this variable, the curriculum developers expressed that they had no choice but to consider the needs of all school districts and students, in urban, rural, suburban settings, and create a textbook-based curriculum that any educator could easily use, anywhere in the state.

During the interviews, each of the experts had a list of strengths to share about the creation of the EEI, the instructional units, and its possible affect on the California students. Individuals commented that the EEI curriculum would provide an important environmental background for students, which would result in an environmentally literate society. Also, there was feedback that the structure of this curriculum was created in such a way that it would not be seen as extraneous, but rather an integrated part of the classroom curriculum, mostly due to the fact that it would teach the standards to mastery. Another common strength mentioned was the unique collaboration between private and public sectors, as well as the potential stamp of approval by the State Board of Education, confirming its validity.

Some of the challenges that were mentioned contradicted the strengths that had been illustrated about the EEI. For example, although it was a common idea that the EEI was made to be easy to implement, many felt that the pressures placed on teachers were so great, that a new curriculum might be experienced as a burden. Also, because the goal
was to teach the standards to mastery, this required having six to eight lessons for each unit. Many individuals admitted that it was unrealistic for teachers to spend so much time on each standard, resulting in some EEI lessons being omitted, and therefore, not accurately teaching the standards to mastery. During the entire process of creating the EEI, funding was a challenge. Implementing a curriculum statewide and procuring instructional units as well as professional development funding were additional challenges that were illustrated.

There was a relatively even range of expectations about the impact that the EEI would have on students in California. Regardless of the challenges, many participants in the study had high expectations that the EEI model curriculum would be effective in its objective to teach the standards to mastery with an environment-based context. Other respondents expressed moderate expectations, in which they felt hopeful of the outcomes, but observed certain weaknesses, such as the pedagogical choices or a lack of emphasis on improving current environmental conditions. Most of the disappointment came from experts who were not directly involved with developing the EEI. These individuals were disappointed that the EEI was a textbook-based curriculum, that the instructional units had an out-dated appearance, and/or that the EEI would replace existing hands-on, inquiry-based curriculum units.

Throughout the decision making process, compromises were made to create a statewide curriculum that satisfied the needs of all those involved. When the decision was initially executed to prioritize teaching the academic content standards to mastery, those in charge viewed core EE pedagogies as lower priorities. A reoccurring theme was that the pressure to create a curriculum that the DOE and school districts would approve
was very strong. This pressure restricted the ability to create a cutting edge curriculum that exemplified effective EE pedagogies. In addition, there was mention of the fact that the total number of units was reduced in half, a compromise that many agreed was challenging but resulted in a higher quality over quantity. Another predominant compromise was the limit to the pedagogy, for example, creating local, place-based learning, while catering to the entire state. The last theme that arose was the affect on the role of non-formal EE providers. There was a hope that these programs would not be jeopardized, but instead given recognition and support. Although, there was no assurance that funding is available to make the connections between schools and EE programs, in order to teach students about the environment using effective EE pedagogy.

Chapter Five: Conclusions

In the next few years, we may witness a dramatic shift in the history of EE, due to the implementation of the Education and the Environment Initiative (EEI), a statewide, environment-based curriculum in California. This initiative has the potential to affect statewide environmental literacy. In order to understand the content, pedagogy, and development of the EEI's model curriculum, a historical analysis was conducted. The lens used for this historical analysis was directed by the question: What are the most effective ways to teach children about the environment? Fifteen experts in the fields of education, environmental policy and EE provided evidence of the accomplishments and limitations of the EEI. In addition, current literature within these fields of study informed this analysis. This study demonstrates how the EEI represents both an accomplishment and a missed opportunity for EE.
Current research in the field of education, specifically regarding EE, was reviewed. The review of related literature provides insight into pedagogies for teaching children about the environment and fostering environmental literacy. Some of the core components of EE pedagogy that were highlighted in the literature include hands-on, experiential, and inquiry-based learning, as well as place-based education, and learning in the field. However, most of these pedagogies were not represented in the EEI curriculum. Gruenewald (2005) critiqued the trend of integrating EE, without the core pedagogical components of the EE field, with the standards-based educational system, and describes how it undermines the outcomes of EE. During this integration, EE pedagogies are compromised, and Gruenewald argues that this could result in diluting EE’s “transformative education goals, such as improving the quality of the environment through experience, study, and action” (p. 273).

The results of this study offer insight into how the EEI consultants confronted the question concerning how children should learn about the environment, and ultimately resulted in the model curriculum that was created. The experts interviewed for this study also provide various perspectives regarding the most effective ways to teach students about the environment. One of these includes facilitating students to learn directly in the environment and exposing them to outdoor settings, where they experience the environment through inquiry and interdisciplinary learning. Although all of the individuals interviewed for this study expressed that the core EE pedagogies were effective ways to teach students about the environment, these were not prioritized when creating the curriculum. The priority was to teach the academic content standards to
mastery, using the environment as a framework, through a textbook-based curriculum, as evidenced by the interviewees' responses.

In many ways, the EEI represents an impressive accomplishment for the field of education. An array of individuals from both public and private agencies collaborated to procure funding, design current environmental principles and concepts to function as a framework, and then create an extensive curriculum based on these EP & C and the state legislation. The curriculum was successfully piloted, revised, and likely will be approved by the State Board of Education to be made available for all California public schools. In addition, the curriculum provides units for all grades K-12, with age-appropriate, interesting environmental subject matter, which is unique to California. Lastly, for many individuals, the most impressive accomplishment was creating an environment-based curriculum that teaches the standards to mastery.

These accomplishments occurred despite the numerous factors that influenced the direction of the EEI. Some of the factors that directed the decision-making process included educational budget cuts and California’s emphasis on accountability in schools. In addition, the EEI was required to meet the expectations of the State Board of Education, receive approval by school districts, and provide a useful resource for educators, in order to be implemented statewide.

The EEI also reflects a missed opportunity for the field of EE. For example, “nature deficit disorder” has been suggested as a concern for children, due to their inadequate amount of exposure to the natural environment (Louv, 2006). Although there was a substantial amount of resources spent on creating the environmental content for the EEI, there was minimal emphasis placed on pedagogical considerations, which would
provide solutions to this issue. Since environmental literacy requires a depth of knowledge and imparting actual skills, a correlation can be observed between the lack of exposure to the natural environment and decreasing environmental literacy, although this needs further research (Coyle, 2005). Also, in the interviews, experts from the field of EE expressed disappointment that non-formal EE providers were not valued or consulted for their expertise on key decisions during the development of the EEI. Furthermore, existing EE programs that were suggested as useful educational models, such as Project Learning Tree and Project WILD, were not integrated into the statewide curriculum. There was an opportunity to utilize both the wealth of professional knowledge and materials that have already been created from these EE programs, as foundations to build on for a statewide curriculum.

**Recommendations for Future Research**

In January of 2010, the EEI curriculum will be brought before the State Board of Education for approval. If it is approved, the EEI model curriculum will be disseminated into schools the following year. In order to understand the impacts of the curriculum, comprehensive studies should be conducted, both by the EEI research team, as well as by third party entities. The three most essential studies should include: a study on the environmental literacy advancement for K-12th grade students, the impact to EE programs in the state, as well as a study demonstrating the effects, if any, on educators using the curriculum.

Improving environmental literacy is a predominant goal of the EEI. The first group of kindergarteners to receive this education should be evaluated from initial
exposure through high school graduation. There should be a range of cohorts of participants, consisting of students from across the state, ranging in demographics and any existing EE experience at the school. There should be a sufficient sample size to compensate for attrition. The study should assess any environmental literacy changes of students.

Many participants expressed that non-formal EE programs would continue to play an integral role in providing students EE, regardless of the implementation of the EEI. However, there is also a possibility that EE programs could become under utilized. The relationship between EE programs and the EEI should be studied to learn whether the relationship is complementary or deleterious. Therefore, a qualitative study should be conducted to reveal the impacts of the EEI on the use of EE programs in the state.

The EEI was created for straightforward use by educators, without EE training, and implementable in any school across the state, due to its generic textbook based nature. A study should be conducted to analyze the impact that the EEI may have on educators. Will the environmental content background provided in the units inspire educators to receive additional training in EE? As a result of the EEI curriculum, will educators expand on the lessons and teach students about the local area, using hands-on pedagogies? Will states increase the amount of EE that teaching credential students receive? A longitudinal study conducted on the impacts on educators would assist other states in understanding the impacts that a state-based environmental literacy curriculum has on educators, and allow other states to prepare sufficiently so that the educators are adequately trained to teach the material.
The EEI is a beginning. Many people may be grateful that students receive environmental-based learning as part of their K-12 education, in hopes that it will improve environmental literacy, and eventually lead students to become well-informed citizens. Others may consider the EEI a disappointment and claim that it was a missed opportunity for the field of EE. The impact of the EEI is difficult to project, however, one thing that is certain is there are urgent environmental problems that need to be resolved. In order for students to make informed decisions and understand the consequences of their actions, and how they effect the environment, it will be beneficial to improve their environmental literacy. In the interview with Sarah, she expressed one of her core philosophies regarding environmental literacy and its impact: “A deeply loved place is more cared for and cherished and therefore will be protected.”
Chapter Six: References


Chapter Six: Appendices

Appendix A-Questionnaire

1. What do you know about California’s Education and the Environment Initiative (EEI)?
2. What is your role in the EEI, if any?
3. Explain your interest in using the environment as a context for learning.
4. Describe your environmental education teaching experience, if any?
5. How is your philosophy of EE represented in the EEI curriculum?
6. What do you see in EEI as the role of teacher and role of student/learner?
7. In your opinion, what are some of the most effective ways that kids can experience environmental education?
8. Does the EEI address experiential learning in its pedagogy? If so, how?
9. In what ways does this curriculum promote inquiry-based learning?
10. Is the EEI interdisciplinary in its design?
11. How important is it to have a place-based environmental education curriculum?
12. What impact do you feel the EEI curriculum will have on creating an ecologically literate citizenry in California?
13. What are the strengths of the EEI?
14. If you could change anything about the EEI as it stands now, what would you change?
15. What are the challenges for implementing EEI in public schools?
16. If there are any challenges, how do you think leaders like yourself are addressing these/ would address these?
17. Do you think the initiative has had to make any compromises from its initial vision? If so, what were the compromises, in your opinion?
18. What current resources have influenced the progress of the EEI?
19. What elements do you think are essential for the implementation plan of the EEI?
20. What are your hopes for the EEI, in terms of its influence in teaching and learning EE?