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Environmental Education Through The Lens Of Diverse Elementary School Students In The United States: A Phenomenographic Study

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Dedication

To my husband who always believed in me, and will always believe in me.
To my children for their time that I will never get back.

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by

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Abstract

Global environmental change is occurring, putting our planet under pressure. Children need to understand not only why the environment is important, but also their role as citizens of a globalized society and their necessary contribution to solving global problems. Students carry their own perspectives about the environment and education, and these differing perspectives should be a significant topic for environmental education research. Recent research studies have included the conceptualization of nature and the environment through children's eyes; yet, no studies have examined the concept of environmental education through the eyes of diverse children. Minority voices and experiences are not frequently heard; therefore, research on minority children is needed to keep pace with our society's changing demographics in order for America to continue to be competitive in the next century. The research conducted in this study showed the qualitatively different ways elementary school students understand the phenomenon of environmental education, as told through the eyes of diverse children. This study took a qualitative, interpretive approach and used phenomenography as the research methodology. California was chosen as the setting for this study since it is the most diverse state in the United States and its population reflects our country's future demographics. Data was collected from interviews and students' written statements, and the different ways of experiencing environmental was represented in the form of categories of description. The outcome space resulted in four categories of description: environmental education is a subject (Category 1), environmental education is a place (Category 2), environmental education is living things (Category 3) and environmental education is to protect (Category 4). This study advanced the understanding of children in the field of environmental education and helps to fill the research gap concerning diversity in this area of study. Moreover, this study provides an alternative method in qualitative environmental education research, as a phenomenographic evaluation. Findings from this research, in the form of pools of meanings and categories of description, provided a clear picture of the impact that an environmental education program has on children.

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Chapter 1: Introduction

> Education is our job, but education in a new sense. Being theory as well as practice, political practice, education today is more than discussion, more than teaching and learning and writing. Unless and until it goes beyond the classroom, until and unless it goes beyond the college, the school, the university, it will remain powerless. Education today must involve the mind and the body, reason and imagination, the intellectual and the instinctual needs, because our entire existence has become the subject/object of politics, of social engineering. (Marcuse, 2005, p.85)

Global environmental change is occurring: humans have altered the environment directly or indirectly as a result of daily activities (Bowers, 1993; Disinger, 2001; Palmer, 1999; Princen, Maniates & Conca, 2002; Tammilehto, 2012). Deforestation, global warming, environmental disasters, and many other events are producing an environmental crisis, putting our planet under pressure (Bowers, 1993). Citizens must learn to understand current and future problems about the environment, and how local actions could have an impact at a global scale. Economic growth has increased the consumption of resources in industrialized countries. As a consequence, greenhouse gas emissions keep rising, leading to environmental deterioration (Aydin, 2010; Tammilehto, 2012). Pollution and waste, the rapid deterioration of renewables, and the "ever-expanding consumption puts strains on the environment" (UN Human Development Report, 1999, p.71). However, we cannot imagine a life without technology which "depletes nonrenewable resources and contributes to multiple forms of pollution" (Bowers, 1993, p.16). It is not the growing world population, nor the technology, but the "consuming" behavior that is triggering environmental degradation (Princen et al., 2002). As stated by Bowers (1993), "the direction of environmental change is unmistakable" (p.13). It is not the lack of technology, but the need for public awareness of environmental problems that will change our behavior and actions towards a greener planet. Therefore, it is vital to educate "Americans about their personal roles in generating environmental impacts, and empowering them to act responsibly" (Meyer & Munson, 2005, p.6).

Environmental education is fundamental to develop in our society a greater understanding of the relationship between humans and their activities, and how these affect our environment (Aguirre-Bielschowskya, Freeman & Vass, 2011). However, according to Palmer (1999) it remains a distant goal for education to help people understand their role, and she writes:

> If a fundamental aim of education is to help pupils and students understand, appreciate and care for the environment, then educational practitioners and policy makers should know the types of learning experiences that help to develop active and accurately informed minds. (p.386)

Environmental education must prepare and generate awareness in people, creating "autonomous thinkers" with knowledge to make their own decisions about environmental issues (Knapp, 2000). Furthermore, these decisions should start taking place in childhood, because "educating at an early age provides small, but vital, steps towards creating communities with high levels of environmental consciousness into the future" (McNichol, Davis & O'Brien, 2011, p.702). The idea of environmental education is not to worry children with environmental problems, but to let them contribute ideas for a better future (Mackey, 2012).

During the last decades, research in environmental education has focused on children's knowledge, awareness, and attitudes toward environmental issues (Barratt Hacking, Barratt & Scott, 2007; Bonnett & Williams, 1998; Hopwood, 2007). The majority of children's environmental education research has focused on high school and middle school students, and it is deficient in involving elementary students (Bonnett & Williams, 1998). Bonnet and Williams (1998) point out that "many experiences children have in primary school which are not ostensibly part of environmental education have considerable impact on their attitudes towards the environment" (p.159). Changing the attitudes of high school students becomes more difficult because attitudes solidify during the early teen years (Eagles & Demare, 1999). Consequently, it is important to instill in students at an early age pro-

environmental knowledge and attitudes because their choices will shape our future environmental practices.

According to Shepardson, Wee, Priddy, & Harbor (2007) "students' conceptualizations of the environment or their mental models of the environment shape the ways in which they understand an environmental issue and guides their environmental behaviors" (p.328). Thus, in order to change people's behavior, we need to understand their conceptions, and learning from children's perspectives will improve the teaching of environmental education (Hopwood, 2007; Malandrakis, 2008). Therefore, it is essential for researchers to understand children's concepts to add to environmental education curriculum and improve its instruction (Walker & Loughland, 2003).

Phenomenography obtains genuine statements from the students about learning or conceptions about particular phenomena (Ashworth & Lucas, 1998; Richardson, 1999). Phenomenography, a recent qualitative research method, was developed in Sweden from empirical studies of learning specifically in higher education (Ashworth & Lucas, 2000; Micari, Light, Calkins and Streitwieser, 2007; Richardson, 1999). The objective of phenomenographic research is "to capture the different ways in which people understand and describe phenomena" (Tynjälä, 1997, p.278). There is a growing interest in children's phenomenographic studies in environmental education, in topics such as conceptions of the environment, global warming, relationship with nature, and understanding of hazardous items and waste (Aydin, 2010; Kalvaitis & Monhardt, 2012; Loughland, Reid & Petocz, 2002; Malandrakis, 2008; Shepardson et al., 2007). So far, limited research has been done in the area of students' concepts of environmental education (Hopwood, 2007; Nagel, 2004). While some studies have been conducted on children's concepts of environmental issues, "there remains a need to look at this topic through the lens of culture, location, and socioeconomic groupings" (Kalvaitis & Monhardt, 2012, p.223). Furthermore, "other than a few examples, there seems to have been very little in the way of development of new research genres specifically aimed at understanding, characterizing and supporting racial and/or cultural diversity within much of mainstream environmental education" (Agyeman, 2003, p.81). And to this

date, no studies have actually included the voices of minority children in this body of research. Thus, there exists a need to conduct studies in environmental education to give a voice to diverse groups, particularly children which are rarely heard.

> Children are confused and doubtful; they are unable to see their role in environmental issues, they are not convinced of their potential in influencing the future and do not know what they can do for the environment. If culture and nature were more tightly linked in education, children could perhaps better understand their part in the web of life on this planet, and see that their actions are inseparable from the rest of the world. (Nordström, 2008, p.140)

The future of the United States will undoubtedly be linked to its minority populations. The United States has a "population diversity never before experienced by any nation—a population in which all races and ethnicities are part of minority groups that make up a complex whole" (Crouch, 2007, para.4). According to data from the U.S. Census Bureau (2011), the non-Hispanic white alone population is still the largest major race and ethnic group in America, but it is growing at the slowest rate. Conversely, the Hispanic and Asian populations have grown considerably, in part because of relatively higher levels of immigration. Moreover, just over one-third of the U.S. population reported their race and ethnicity as something other than non-Hispanic white alone (i.e. "minority"). The states with the largest minority population are California (22.3 million), followed by Texas (13.7 million) (U.S. Census Bureau, 2011). Addressing diversity in education has become a priority topic in recent years, because "today's schools face unprecedented challenges to educate an increasingly multicultural and multilingual student body in U.S. society" (Greenberg et al., 2003, p.467). Minority children are changing the demographics in the United States. There is no doubt that America is becoming more racially and ethnically diverse "from the bottom up" (Frey, 2011, p. 11).

> Initial results from the 2010 Census now make clear why the contributions of these groups are so important. With a rapidly aging white population, the United States depends increasingly on these new minorities to infuse its youth population—and eventually its labor force—with needed demographic heft and vitality. (Frey, 2011, p.2)

1.1 Statement of the Problem

> Although scholarly attention to children's environmental concerns has blossomed in recent years, only a small number of empirical studies have addressed these issues from the perspective of children themselves and almost all of the current research is based in countries other than the United States. (Strife, 2012, p.39)

Research on diverse children in environmental education is vital, particularly in the United States. Children need to understand not only why the environment is important, but also their role in a globalized society and contribution to solving problems. Further, they "need every opportunity to learn in a context relevant to their personal needs and societal issues" (Short, 2009, p.10). Students bring their own perspectives about the environment and education, making it a significant topic for environmental education research (Rickinson, 2001). There exists a need to conduct research on minority children to keep pace with our society's changing demographics and take steps to prepare children from diverse backgrounds to be competitive for the next century. However, minority voices and experiences are not frequently heard. Thus, there is a paucity of literature examining the contribution of underrepresented groups to environmental education. Mainstream environmental education needs to incorporate content from diverse groups, to develop a more culturally diverse and effective environmental education curriculum (Aguirre-Bielschowskya et al., 2011; Agyeman, 2003; Marouli, 2002; Nordström, 2008). Therefore, it is imperative to do research on diverse children's understanding of the phenomenon of environmental education to let them have a voice. Filling this gap in the literature will enrich our understanding of diverse students' experience of environmental education, as seen through the eyes of children.

1.2 Purpose of the Study

The purpose of this phenomenographic study was to identify the qualitatively different ways elementary school students understand and experience the phenomenon of environmental education

through the eyes of racially/ethnically diverse children. Therefore, the research question that framed the study was: what are the variations in the qualitatively different ways diverse students from elementary school understand and experience the phenomenon of environmental education? The goal of phenomenography is "not to find the singular essence of a phenomenon" (Kalvaitis & Monhardt, 2012, p.210), but the variation of student's concepts describing a phenomenon from their perspective (Ashworth & Lucas, 1998). Therefore, this research categorized the variation of conceptions of environmental education held by diverse elementary school students. Data was collected from interviews and students' written statements, and these different ways of experiencing environmental education were represented in the form of categories of description.

1.3 Research Question

> In his book, The Little Prince, (1945) Antoine de Saint-Exupery writes that grown-ups cannot, on their own, understand the world from the child's point of view and therefore they need children to explain it to them. This is wise advice indeed for childhood researchers. Only through listening and hearing what children say and paying attention to the ways in which they communicate with us will progress be made towards conducting research with, rather than simply on, children. (Christensen & James, 2008, p.9)

Diverse children's voices are worthy subjects of research, yet there is currently a paucity of literature examining both minorities and children in environmental education. To fill the research gap regarding children in environmental education, from the perspective of diverse elementary school students, the following research question is posed:

What are the variations in the qualitatively different ways diverse students from elementary school understand and experience the phenomenon of environmental education?

The study has been divided in two parts, with the following research sub questions:

1. What are diverse elementary school students' conceptions of environmental education prior to experiencing an environmental education program?

2. What are diverse elementary school students' conceptions of environmental education after experiencing an environmental education program?

1.4 Significance of the Study

> Environmental education ought to move towards "Multicultural Environmental Education" as the new global reality and the contemporary challenges require better understanding of culture, sincere appreciation of diverse worldviews, and increased access to and participation in environmental education and environmental decision making for all people. (Marouli, 2002, p.40)

As noted previously, the minority population in the United States has not been widely studied in environmental education, much less through the lens of children. Although recent research studies have included the conceptualization of nature and the environment through children's eyes, no studies have examined the concept of environmental education through the eyes of diverse children. Therefore, the main contribution of this research is to advance the understanding of children in the field of environmental education and help fill the research gap concerning diversity in this area of study. Findings from this work will provide environmental educators in the United States with information to design or redesign a more culturally-appropriate environmental education K-12 curriculum. Moreover, this will be the first phenomenographic study in environmental education to examine diversity and children simultaneously. For environmental educators it is vital to understand what experiences children are having while taking part of an environmental education program in an effort to develop exciting and innovative material into the curriculum (Aguirre-Bielschowskya et al., 2011; Kalvaitis & Monhardt, 2012). Better understanding of minorities and eliminating barriers to facilitate their success could lead to new strategies to engage diverse students in environmental education programs.

Chapter 2: Review of Literature

> In the 1970s environmental education in schools in various Western countries was an amorphous area of study in search of an identity, with numerous publications attempting to answer the question, 'What is environmental education?' In the 1990s there is still no consensus among educational professionals on a definition. (Lee & Williams, 2001, p.219)

There is a constant global debate on what should be the proper educational definition of environmental education: educating "about," "in," or "for" the environment. Short (2009) questions the definition of environmental education in this statement: "Could there ever have been two more nebulous concepts combined to produce one, synthetic, professional discipline?" (p.8). Many scholars argue now that the term "environmental education" should be replaced with "education for sustainability" so that the terms "environment, equity and economics [can] be considered as a whole and its values involve promoting all three together" (Paden, 2000, p.8). However, in the United States, this discussion will not "be effectively resolved until society adopts both a consensus environmental worldview and a consensus educational worldview" (Disinger, 2001, p.10). There is no time, nor curriculum space for environmental education in our schools (Disinger, 2001; Lee & Williams, 2001; Strife, 2010). For the first time in three decades, environmental education in our country is in decline, in light of test-driven accountability educational policies. Teachers are under pressure to meet academic requirements, preparing students to take exams rather than preparing them as responsible citizens of our society (Coyle, 2005; Stevenson, 2007b). Hug (2010) summarizes the apathy of teachers towards environmental education:

> The challenging environment for environmental education, teachers explained, stemmed from 'adding one more thing' to a crowded curriculum, feelings of inadequacy in content knowledge, not having enough time for training or activity preparation, and school policies that prevented them from taking their classes outside. The situation, teachers told me, worsened after the passage in the US of the 'No Child Left Behind' Act. (p.369)

More emphasis has been placed on the environmental part of environmental education, and the educational part appears in the background. But what should be the focus of environmental education is improving teaching methods that will "translate into a citizenry of thoughtful, effective problem-solvers who make significant environmental impacts later in life" (Short, 2009, p.10). As described by Hart and Nolan (1999): "education cannot remain insulated from contemporary social and environmental issues" (p.1).

> Underlying the idea of sharpening the profile of environmental education is the premise that not every educational activity related to the environment should be considered a part of environmental education. Environmental education is not mainly teaching about the environment. What should be in focus are the environmental issues man faces through his use of natural resources and the possibilities of overcoming and preventing them in the future. (Breiting & Mogensen, 1999, p.349)

As described by Robertson (1994) "on reviewing most published environmental education articles, one is often struck by the lack of references to educational literature, and there is an apparent lack of effort to make explicit the theoretical frameworks of the studies" (p.22). The approach of positivism has dominated many disciplines, including science and educational research. Yet, "research in education is a relatively new field of study compared with research in the sciences" (Robertson, 1994, p.22).

> While environmental education advocates learning that is holistic and co-operative, school learning tends to be atomistic and individual. In environmental education rhetoric students are active thinkers and generators of knowledge, but in schools students are usually in the passive position of spectators and recipients of other people's knowledge and thinking. (Stevenson, 2007a, p.147)

In recent years, there has been a shift towards qualitative studies in environmental education research, but these are limited in comparison to the prevalence of quantitative studies. In general, quantitative studies measure people's attitudes, behavior and factual knowledge about environmental issues (Hart & Nolan, 1999; Lee & Williams, 2001; Rickinson, 2001). So far, "attitudes of concern about the environment appear to be increasing, [yet] we have very little understanding about what this means, precisely" (Hart & Nolan, 1999, p.8). Previous studies analyzing the concept of environmental education from the children's perspective have focused on middle and high school students in particular. For example, in Hopwood's (2007) study, six English middle school students were interviewed regarding their experience of environmental education taught as part of a geography class. In a similar study carried out in England by Battersby (1999), six high school students were interviewed about their perception of learning environmental education during geography lessons. Additionally, in a phenomenographic study conducted by Nagel (2004), forty middle school students, from five schools in Australia, and five schools in Canada, were interviewed about how they experienced the phenomenon of environmental education. Still, these studies investigating the ways in which students understand the concept of environmental education have been carried out in other countries, not in the United States.

Qualitative studies need to focus on humanizing environmental education, and then become a "useful starting point for environmental education programs in their mission to increase participation among diverse groups" (Strife, 2010, p.188).

> Whereas in the past it was argued that qualitative approaches could serve as precursors to more detailed quantitative analysis, we would argue that the reverse is true within environmental education research. Early attempts to establish relationships among discrete variables have been superseded by in-depth, context-specific analyses of narratives emanating from a variety of qualitative perspectives. However, we believe that within any given paradigm of research the methodology should be consistent with the canons of that paradigm. In other words, criteria for quality that exist within given paradigms are important means for conceptual consistency within a field that is often characterized as diverse and ambiguous. (Hart & Nolan, 1999, p.39)

Qualitative research allows understanding of the meaning of people's experiences, feelings and emotions, and captures how people make sense of the world (Willig, 2001). Moreover, "the basis of qualitative research lies in the interpretive approach to social reality and in the description of the lived experience of human beings" (Holloway & Wheeler, 2010, p.3). Thus, the researcher must provide a path to "those who are studied to speak for themselves" (Sherman & Webb, 1988, p.5). Studies using this approach commonly provide a great amount of detailed information about a small number of people (Patton, 2002). Qualitative research includes a variety of methods to collect data such as interviews, journal writing, observation, field notes, focus groups, case studies, analysis of documents, visual images, photographs and records, internet communication, etc. (Denzin & Lincoln, 2008; King & Horrocks, 2010; Patton, 2002; Silverman, 2004). Interpretative inquiry is one approach of qualitative research and can be described as "idiographic, which literally means describing aspects of the social world by offering a detailed account of specific social settings, processes or relationships" (King & Horrocks, 2010, p.11). As described by Robertson (1994) "individual learning does not occur in a social, political, or historical vacuum" (p.29). The ontological stance of interpretivism is "its particular understanding of the inter-subjective character of meaning and hence the social origins of the beliefs and understandings that inform our actions and the practices to which they give rise" (Hay, 2011, p.170). Interpretive research seeks to explain something through other people's eyes (Robertson, 1994). In contrast with positivism, people form part of the interpretivism approach (King & Horrocks, 2010). In science education, the interpretative approach has been used to see the students' perspective of a phenomenon, informing teachers of improvements in the educational practices (Robertson, 1994).

> Phenomenography has its roots in the general scientific tradition, not in philosophy or some specific school of thought. It represents a reaction against, and an alternative to, the then dominant tradition of positivistic, behavioristic and quantitative research. It makes its own ontological, epistemological and methodological assumptions with inspiration from and similarities to several older and concomitant traditions, without agreeing entirely with any of those. (Svensson, 1997, p.171)

Phenomenography is a qualitative research methodology that falls under the interpretivist approach. This is a recent research tradition that was developed in Sweden by Ference Marton in the 1970s, aiming to improve the process of student learning in higher education (Ashworth & Lucas, 2000; Richardson, 1999; Svensson, 1997). From the student's perspective, his research intended to enlighten the "way of experiencing a phenomenon", a term synonymous with conception, perceiving, conceptualizing, apprehending, level or depth of understanding and so on (Ashworth & Lucas, 1998; Cope, 2006; Marton & Booth, 1997; Svensson, 1997). This new approach emerged as an "attempt to provide an ad hoc and post hoc underpinning for the methodology that Marton and his colleagues had employed with such apparent success" (Richardson, 1999, p.72). Phenomenography aims to understand how the individual perceives and describes his own world, thus, "it must be grounded in the lived experience of its research participants" (Ashworth & Lucas, 1998, p. 417). Moreover, there is no correct or incorrect answer in describing knowledge in terms of one's own understanding (Svensson, 1997). The results of phenomenographic research are named categories of description, which are the qualitatively different ways people understand a phenomenon at a collective level (Åkerlind, 2003; Ashworth & Lucas, 2000). Thus, gathering knowledge about the collective learning "entails building knowledge, potentially accumulative, which can be a factor contributing to societal change" (Collier-Reed, Ingerman, & Berglund, 2009, p.340).

> Phenomenography as a research tradition is located broadly within an interpretive epistemological orientation and focuses on the variation in how a phenomenon is experienced by a group of individuals. It is underpinned by a focus on the relational nature of human experience, a non-dualistic ontological perspective, an explicit focus on the experience of the phenomena, and the adoption of a second-order perspective. (Collier-Reed et al., 2009, p.340)

The ontological stance of phenomenography is that is 'non-dualistic," meaning that "there is only one world for an individual, the world the individual comes to experience" (Cope, 2006, p.19). Thus, we understand the world because we are part of the world. The researcher then takes a second-order perspective by investigating other people's understandings based on their own words. This means that

"we learn about physical objects by observing them, but we learn about other people's experience of those objects by asking them" (Richardson, 1999, p.67). It is paramount that phenomenographic results show the "qualitatively different meanings individuals interpret through experiences, and in particular contexts, not on the prevalence on a particular conceptualization among a group of people" (Robertson, 1994, p.28). This is an "interpretive (and thus by definition not objective) process describing individual's experience of a phenomenon and not the phenomenon itself" (Collier-Reed et al., 2009, p.343). Categories of description, or results, are "internally related or, more precisely, intentionally related to the statements expressed by the individuals investigated. This is because, as the researcher is a human being, he/she is always intentionally related to the research object" (Sandbergh, 1997, p.208). This means that results will always depend on the researcher's interpretation. Figure 2.1 shows how phenomenography differs from other research inquires.

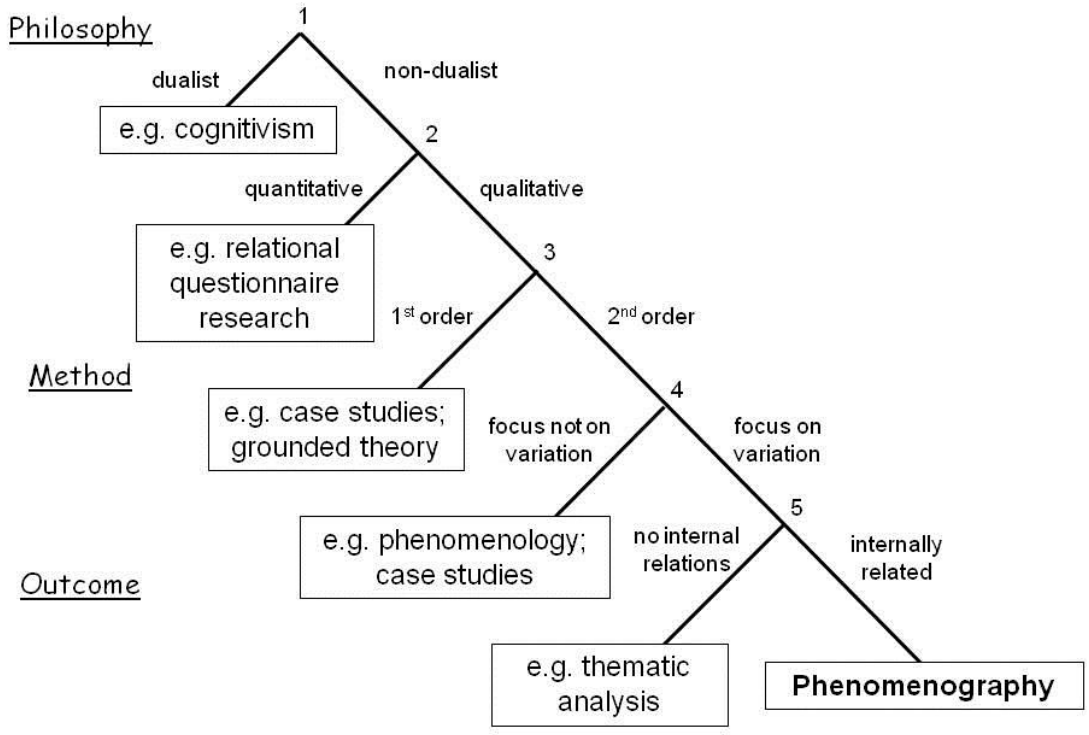


Figure 2.1 Defining Phenomenography. From Trigwell, 2006, p.369

The epistemological assumption of phenomenography is that "knowledge is essentially a relation between the learner and the phenomena being learned – between the knower and the known, the learner and the learned" (Booth, 2008, p.451).

> Marton distinguishes phenomenography from cognitivist perspectives by highlighting "the variance in experience" as the unit of analysis. Rather than looking at or into the individual through a description of behavior or cognitive structures, the phenomenographic researcher, through a description of experiences, looks with the individuals to see the world as seen by them. In this way phenomenography presents itself as nondualistic: there are no two worlds, i.e., an objective world and an internally constructed subjective world, but one world, the world as experienced by the individual learners. (Malcolm & Alant, 2007, p.77)

According to the behaviorist perspective, the learner accumulates facts "through externally imposed stimuli and feedback," and in contrast, cognitivists view learning as "forming internal schema or structures of knowledge that can be retrieved heuristically as needed" (Booth, 2008, p.451). Phenomenography discovers the qualitatively different ways people experience the world, "while cognitive studies seek to uncover mental representations and changes in them" (Tynjälä, 1997, p.278). Learners under the constructivism approach obtain knowledge from "an individually constructed world and on the other a real world divorced from this individually constructed world" (Marton & Booth, 1997, p.8). Similarities can be seen between phenomenography and social constructivism, in that both aim to describe people's experiences of reality from their own perspective. Yet, they differ on that the former values collectivity, and the latter emphasizes individuality. Table 2.1 shows some aspects of learning as seen from different research approaches.

Table 2.1 Comparison of different perspectives on learning with regard to some key aspects of variation. From Cope, 2006, p.27

Perspective	Change	World/learner relation	Nature and location of knowledge
Behaviorist	In behavior	Not considered	Fixed body of knowledge external to the individual
Cognitivist	In mental model which mirrors reality	Dualistic	Fixed body of knowledge in the world
Constructivist	In mental model which represent individual's	Dualistic	In the mind of the individual
Phenomenographic	In complexity of way of experiencing phenomenon	Non-dualistic - one world, the world as experienced	Different body of knowledge for each individual. Located in individual's internal relationship with world

Phenomenology is a philosophical method that has "human experience as its object of research" (Marton & Booth, 1997, p.116). Phenomenography is often misidentified as phenomenology, and although they both want to describe human experience, phenomenography is interested in the collective meaning, not the individual experience (Barnard, McCosker & Gerber, 1999). Phenomenography is related to ethnography in that they are both interested in the social and cultural perspectives. Yet, phenomenography is "more interested in knowing and learning in individuals than in cultures, and more in a pedagogical context than in an historical context" (Booth, 2008, p.451). While many researchers recruit participants from their own educational institutions, phenomenography differs from ethnography in that it does not involve "the analysis of social processes by involvement in day-to-day experience" and that the students' interpretations are accepted at a 'face value', rather than skeptically" (Richardson, 1999, p.58).

2.1 Literature Review Summary

As the literature review has shown, a great deal of research remains to be done on how children, in terms of diverse racial/ethnic groups, see the world around them. While there is a growing body of quantitative research regarding children in environmental education, there is a lack of research examining children's conceptions of environmental education using a qualitative lens. Moreover, this research has been conducted mostly in England, Canada and Australia and has been predominantly focused on middle and high school students. But to date, no study has been conducted from the perspective of elementary school students in the United States. Finally, to achieve the aim of understanding diverse children's conceptions of environmental education, a qualitative research approach was deemed appropriate. Hence, phenomenography was the methodology chosen to guide this study.

Chapter 3: Methodology

> In research as in art there can be no single, ideal standard. Beauty no less than "truth" is in the eye of the beholder. (Patton, 2002, p.12)

3.1 Research Question

Children can offer unique perspectives on how they see the world around them. To fill the research gap of diverse children in environmental education, the following research question is posed: What are the variations in the qualitatively different ways diverse students from elementary school understand and experience the phenomenon of environmental education? The study has been divided in two parts, with the following research sub questions:

1. What are diverse elementary school students' conceptions of environmental education prior to experiencing an environmental education program?
2. What are diverse elementary school students' conceptions of environmental education after experiencing an environmental education program?

3.2 Theoretical Framework

Research studies oriented in phenomenography obtain people's descriptions of how they understand and experience their own world (Ashworth & Lucas, 2000; Richardson, 1999). In Booth's (2008) words, the "methodological assumption of phenomenography is that there is a limited number of qualitative distinct ways in which people experience phenomena they meet in their everyday lives" (p.451). Since the purpose of this study is to identify the qualitatively different ways elementary school

students understand and experience the phenomenon of environmental education through the eyes of diverse children, a qualitative design utilizing phenomenography as the research methodology will be deemed appropriate. Phenomenographic research is summarized in the following manner:

> If the basic research question to be addressed is "How do people experience Φ?", a way of experiencing Φ is the unit of research, and the results of a study are expressed as qualitatively distinct units, categories of description, structured in an outcome space, which tell of the variation of ways in which people experience Φ. The approach is essentially inductive and methods can vary according to the actual research question, research context and the phenomenon. How the results are deployed thereafter depends on the overall research question being addressed. (Booth, 2008, p.451)

Qualitative interviewing allows the researcher to communicate with people, letting them share their personal experiences (King & Horrocks, 2010). Accordingly, interviews are the method most commonly used to collect data in phenomenographic studies (Booth, 2008), and the majority follow the use of semi-structured questions (Barnard et al., 1999; Collier-Reed et al., 2009). Usually, a small group of individuals are interviewed, and their collective contribution will generate a "pool of meaning with regard to the phenomenon" (Cope, 2004, p.6). Thus, phenomenographic interviews "aim to explore the range of meanings within a sample group, as a group, not the range of meanings for each individual within the group" (Åkerlind, 2005, p.323). Qualitative variation of concepts can also be analyzed using written statements (Crawford, Gordon, Nicholas, & Prosser, 1998). To improve the validity and reliability of this phenomenographic study, the researcher collected data from a written statement as a triangulation method (Denzin & Lincoln, 2008; Patton, 2002).

3.3 Phenomenographic Procedures

According to Trigwell (2006), the number of participants in phenomenographic studies ranges between 10 and 30 people. Interviews using this approach are "typically audio taped and transcribed

verbatim, making the transcripts the focus of the analysis" (Åkerlind, 2005, p.323). Analysis in phenomenography involves reading and re-reading transcripts, trying to identify similarities or differences in meaning across them. The researcher breaks down these transcripts in fragments and groups them in categories of description according to similarities and differences (Åkerlind, 2005; Barnard et al., 1999; Booth, 2008; Trigwell, 2006). Thus, "the whole process is a strongly iterative and comparative one, involving the continual sorting and resorting of data" (Åkerlind, 2005, p.324). The researcher must keep in mind to analyze the transcripts as a collective group, and not individually to create the categories of description. As clarified by Åkerlind (2005), "this means that no one interview transcript can be understood in isolation from the others" (p.323). Studies in phenomenography usually involve a small group of participants. Enough participants are needed to elicit variation, yet, it is difficult to analyze a large amount of data and look at the collectiveness of more than 20 interview transcripts at one time (Åkerlind, 2005). The researcher has the ability to determine the number of categories of description (Ashworth & Lucas, 1998). In contrast, categories of description cannot be pre-assumed by the researcher; rather, these are created during the analysis (Prichard & Trowle, 2003). Results are presented as "an outcome space made up of categories of description of the phenomenon" (Cope, 2004, p.6), showing the different ways of experiencing the world from the point of view of the interviewee (Ashworth & Lucas, 2000; Marton, 1981; Micari et al., 2007). These experiences are described at a collective level, where "individuals contribute fragments of an interview conversation to a 'pool of meaning' after which categories of description are constituted" (Collier-Reed et al., 2009, p.349).

3.3.1 Validity and Reliability

Researchers are not looking for the "ultimate truth, but to be able to defend their interpretation of the data to the 'outside world'" (Collier-Reed et al., 2009, p.348). In the majority of scientific based investigations, variables are defined before conducting the study. When using a phenomenographic approach, this could lead the results to be quantitative in nature (Marton, 1981). Based on the positivist

tradition, research is expected to prove the validity and reliability of its process (Åkerlind, 2005), and in qualitative studies the researcher must prove their credibility (Creswell & Miller, 2000). Nonetheless, as stated by Cope (2004), "ensuring the rigour of qualitative research has been a contentious and unresolved issue" (p.5).

Creswell and Miller (2000) suggest that validity is "governed by two perspectives: the lens researchers choose to validate their studies and researchers' paradigm assumptions" (p.124). For this study, the lens chosen by the researcher is phenomenography, under the assumption of an interpretivist paradigm. Validity terms used in interpretive approaches are labeled as trustworthiness, credibility, dependability, authenticity, etc. (Creswell & Miller, 2000). In phenomenographic studies, validity or trustworthiness of results are shown by creating categories of descriptions from the interviews. As defined by Collier-Reed et al. (2009), trustworthiness is: "the amorphous fluid that forms the shape giving relevance to the structure of an outcome, and guides the ways in which it may interact with the broader pedagogical, social and epistemological contexts of the world" (p.353). To ensure trustworthiness, the researcher needs to document every step taken to analyze the outcome space, and explain how he or she determined the results by developing the categories of description. A structured description of the analysis will "inform the reader of the researcher's concern for the validity of the research process" (Cope, 2004, p.14). Phenomenography describes an individual's experiences or understandings of a phenomenon at a collective level. Hence, participants "will generally not be able to recognize 'their' contribution to the outcome space" (Collier-Reed et al., 2009, p.349). Consequently, in contrast to other qualitative approaches, "seeking feedback from interviewees is not regarded as an appropriate phenomenographic validity check" (Åkerlind, 2005, p.330).

Replicability is another way to measure reliability of results (Sandbergh, 1997). Cope (2004) proposes to use interjudge communicability as a method to validate reliability and to ensure the "rigour of phenomenographic research approaches" (p.10). Based on the positivist approach to research, interjudge reliability is the "idea of categories being recognized by others, and forms the basis for a

practice widely practiced in phenomenography" (Collier-Reed et al., 2009, p.350). However, Sandbergh (1997) argues that reliability in phenomenographic studies cannot be established by using interjudge reliability since, "having an individual recognize the legitimacy of the constituted categories of description is inherently problematic in a phenomenographic study and runs counter to its methodological underpinning" (Collier-Reed et al., 2009, p.349). In phenomenographic research, findings appear as an outcome space composed by categories describing a phenomenon. Therefore, creating "categories of description is a form of discovery, and discoveries do not have to be replicable" (Sherman & Webb, 1988, p.147). Accordingly, "replication of outcome spaces by different researchers is unlikely and not necessary" (Cope, 2004, p.9). The researcher's unique background in phenomenographic studies adds up to the "difficulty in finding co-judges who are as well versed in the subject matter under investigation (Collier-Reed et al., 2009, p.351). In summary, reliability can be defined as stated by Cope (2004):

> Reliability in qualitative research in general and phenomenographic studies in particular is not considered to have the same sense as reliability in quantitative research. Reliability as a scientific concept refers to the replicability of results. In phenomenographic studies, this interpretation would refer to replicability of the outcome space(s). That is, given a particular set of data, would different researchers report the same outcome space? The general consensus in the phenomenographic literature is that this is not a reasonable question to ask. (p.9)

3.3.2 Role of the Researcher

The researcher's background also plays an important role in ensuring reliability or dependability of these studies. He or she must be familiar with the topic under investigation to determine what and how data must be collected, maintaining a consistent interpretation when analyzing data and when constructing the categories of description (Collier-Reed et al., 2009). The researcher had the opportunity to work for two years as an elementary school tutor at an after school program in Fresno, California. The community of qualitative researchers could challenge the rigor of the findings "should a researcher not

be completely familiar with the subject matter" (Collier-Reed et al., 2009, p.347). Patton (2002) describes the role of the researcher in the following manner:

> In qualitative inquiry, the researcher is the instrument. The credibility of qualitative methods, therefore, hinges to a great extent on the skill, competence, and rigor of the person doing fieldwork – as well as things going on in a person's life that might prove a distraction. (p.14)

The role of the researcher in phenomenographic studies is to describe and understand participants' concepts and experiences of phenomena. Thus, the researcher's commitment is to "find and systematize forms of thought in terms of which people interpret aspects of reality" (Marton, 1981, p.180). According to Ashworth and Lucas (1998), "the investigator must begin by bracketing or setting aside prior assumptions about the nature of the thing being studied" (p.418). In other words, the researcher must keep their own thoughts apart and be open-minded to grasp the idea of the many possible ways of looking at the world from other peoples' perspective. The researcher's unique background and knowledge of the subject matter is essential to conduct a phenomenographic study (Cope, 2004). Nonetheless, it is necessary to "suspend one's own understanding of the topic, so that the categories of description constituted from the data are not influenced by the researcher's bias" (Collier-Reed et al., 2009, p.347).

3.4 Research Context

In phenomenography the collective experience of participants is what will be analyzed; therefore, to ensure the complete variation of qualitatively different ways of experiencing a phenomenon is best achieved by the selection of the participants of the study (Åkerlind, 2003). The growing diversity among the United States' children provides the perfect background for this study. Diverse children have a unique way of understanding the world because they come from a variety of ethnicities, races, cultures and religions, assuring the maximum spectrum of answers to a phenomenon. As summarized by

Ashworth and Lucas (2000): "The often-stated aim of phenomenography is to obtain a range of experiences. And, indeed, selecting interviewees who seem intuitively likely to have different lifeworlds and, within these, different experience of the putative research phenomenon, is worthwhile" (p.302).

California is the most diverse state in the United States and its population reflects our country's future demographics (U.S. Census Bureau, 2011). In addition, California is the state with the largest number of school-age children (Carroll, Krop, Arkes, Morrison & Flanagan, 2005). Therefore, the researcher purposively selected California as the setting for this phenomenographic research to ensure the maximum racial/ethnic diversity among elementary school students in the United States. The selected location for this study was Fresno, the largest city in California's Central Valley, which is the fourth largest school district in California, exceeded only by Los Angeles, San Diego and Long Beach (Fresno Unified School District [FUSD], 2009). According to data from the 2010-2011 academic year, Fresno Unified School District has an enrollment of 74,831 students from kindergarten through grade 12 (California Department of Education [CDE], 2012). Its student population is composed by 13.9% White, 60.2% Hispanic, 10.8% African-American, 13.4% Asian, and 1.5% others. Many of the students come from culturally and linguistically diverse backgrounds, with over 54 different home languages represented in its schools (FUSD, 2009).

This research was conducted during out of school time, in an effort to not interfere with school academic priorities. Fresno County Office of Education [FCOE] gave the researcher written permission (see Appendix A) to conduct a phenomenographic analysis of elementary school students during after school hours, under supervision of FCOE's Department of Safe & Healthy Kids. This department provides after school programs through the Fresno Recreation, Enrichment, and Scholastic Help [FRESH] After-School Partnership, which is the third largest after-school consortium in California and the fifth largest in the nation. FRESH provides after school programs to 132 school sites serving over 30,000 students throughout Fresno County, providing multiple locations to conduct this research (Fresno County Office of Education [FCOE], n.d.). Funded by the state of California through the After School

Education and Safety Program, resulting from Proposition 49 approved in 2002, after school programs provide free enrichment and academic support while providing a safe place for students in kindergarten through ninth grade during out of school time (CDE, 2011).

3.5 Ethical Consideration

The population under study is elementary school students from California from first to sixth grade, with ages ranging from six to twelve years old. Because this qualitative research involves children, the participants are considered to be a vulnerable population. For this reason, full clearance to conduct this study was granted by the Institutional Review Board (IRB) of The University of Texas at El Paso on the 9th of July 2012. A detailed protocol, as well as documents such as the participant and parental consent forms were created by the researcher and submitted to the IRB to comply with its guidelines. Copies of these documents can be found in Appendix B. The California Department of Education Code Section 48985 states that:

> If 15 percent or more of the pupils enrolled in a public school that provides instruction in kindergarten or any of grades 1 to 12, inclusive, speak a single primary language other than English, as determined from the census data submitted to the department pursuant to Section 52164 in the preceding year, all notices, reports, statements, or records sent to the parent or guardian of any such pupil by the school or school district shall, in addition to being written in English, be written in the primary language, and may be responded to either in English or the primary language. (CDE, 2013, para.1)

As previously mentioned, Fresno County has a 60.2% Hispanic student body population. Therefore, to comply with the CDE's code, consent and assent letters were translated into Spanish, as shown in Appendix C.

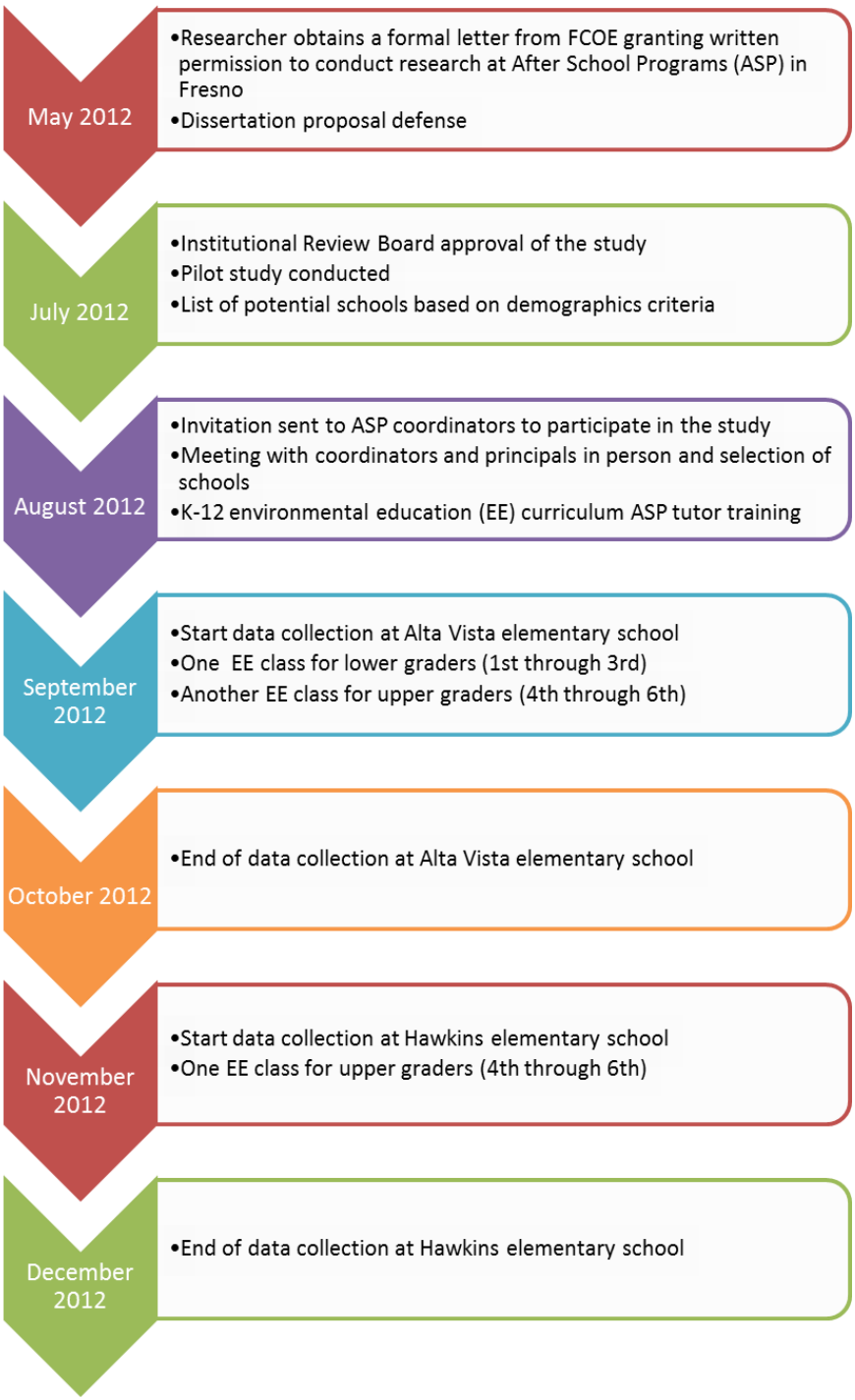
To ensure confidentiality and anonymity for this research, no individual or school site was identifiable by name in the dissertation. Student names were replaced by codes and school names were replaced by pseudonyms. The researcher conducted all data collection and data analysis personally. No other researcher had access to the students, or material collected from the students. All data and materials collected during this research were securely stored at all times, except during analysis. Data will be stored and permanently deleted after the required period of three years.

Chapter 4: Data Collection

4.1 Chronology of the Study

The following table provides a timeline and an overview of the activities performed during data collection.

Table 4.1 Chronology of the Study



4.2 Setting

Purposeful sampling, using the maximum variation sampling strategy, enables the researcher to obtain the maximum variation of outcomes describing a theme from participants (Patton, 2002). The aim of this study was to select participants who could describe the phenomenon of environmental education in a maximum of qualitatively varying ways. The researcher for this study purposively selected elementary school sites in Fresno, California that had the most diverse student body population in terms of race and ethnicity. In this manner, the researcher selected a sample that provided the best data to ensure full variations of the phenomenon. In the 1990s, California had the largest pupil-teacher ratio in the nation, with an average of 29 students per class for elementary students. Currently, California continues to have a high ratio of students per teacher with about 20.9 students to one teacher compared to the U.S. average of 16.1 (Carroll et al., 2005). Research for this study was conducted during after school program hours. The norm for after school programs in California is a 20 to 1 pupil-to-staff member ratio (CDE, 2011). Thus, the researcher estimated recruiting around 40 after school program students from at least two different school sites. Based upon the likely response rate from this initial group, the researcher had the opportunity to stay in range of participants between the 10 to 30 people of many phenomenographic studies (Trigwell, 2006).

4.3 Pilot Study

The researcher must carefully phrase the interview and follow up questions, to avoid introducing new ideas or aspects not previously mentioned by the participant (Åkerlind, 2003). Marshall and Rossman (2011) describe the purpose of a pilot study in the following manner:

> Pilot interviews help in understanding oneself as a researcher. Even without a pilot study, the researcher can demonstrate her ability to manage qualitative research by describing initial observations or interviews. These experiences usually reveal fascinating questions and intriguing patterns. Piloting will yield a description of initial

observations useful to demonstrate not only one's ability to manage research but also the strengths of the genre for generating enticing research questions. Thus, describing a pilot study or initial observations strengthens a proposal. (p.96)

A pilot study was conducted in July 2012 to test the design of the interview protocol. The participants were four elementary school students who participated in an after school program in Fresno County during the summer of 2012. Informed consent from parents, as well as the informed assent of the students was obtained before conducting interviews. Interview questions were tested during the pilot study, and improvements and adjustment were made to better frame and refine the interview guide structure. The preliminary interview guide consisted of thirty questions; after the pilot study, the interview questions were condensed to thirteen questions. Difficult questions which resulted in no answer were eliminated from the interview guide. Additionally, the researcher had the opportunity to test the recording equipment. In summary, the pilot study helped to prepare the researcher with valuable information for the development of the full study.

4.4 Selection of school sites

The researcher examined student demographic data from school sites in Fresno County. Data is publicly available from the California Department of Education website. After performing the analysis of data, ten after school programs met the criteria set by the researcher for the most diverse student body population in terms of race/ethnicity. In August 2012, an email was sent to all ten after school program (ASP) coordinators inviting them to participate in the research. Three ASP coordinators accepted the invitation to participate. A meeting with every ASP coordinator and school principal was set up to discuss further details about the participation in the study. After the meetings were finalized, the researcher narrowed down the selection to two school sites, Alta Vista Elementary School and Hawkins Elementary School for conducting the study. Because of timing, and to comply with the proposed schedule submitted to the IRB, it was impossible to schedule more than two schools during the time

frame allowed for data collection. The schools presented in this research are under pseudonyms to ensure confidentiality.

4.5 K-12 Environmental Education Curriculum

This study employed the newly developed K-12 Environmental Education Curriculum that was mandated under California's legislations AB 1548 and AB 1721, and approved by the State Board of Education in 2010. This environmental education curriculum is composed of 85 units of science and history-social science that is aligned with California's academic standards (California Environmental Protection Agency, 2012). The researcher was in constant communication with staff from the California Environmental Protection Agency Office of Education and the Environment, and received DVDs, printed material, booklets and posters of the K-12 Environmental Education curriculum to use at the school sites. During August 2012, the researcher trained three after school program tutors on how to use the lesson plans and materials from K-12 Environmental Education curriculum; two ASP tutors were from Alta Vista Elementary School and one tutor from Hawkins Elementary School. An in-person meeting took place in September 2012 between the researcher and Kirk Amato and Roni Java, personnel from the Office of the Education and the Environment to discuss further details about the use of this material in Fresno County.

4.6 Recruitment of Participants

With the help of the after school program (ASP) coordinators, the researcher was able to distribute the consent and assent forms to potential participants before conducting any interview. The assent and consent forms explained in detail the research's purpose and clearly indicated the voluntary participation in the study, as shown in Appendix B. Every student had the opportunity to take the environmental education class without taking part in this study. It involved no penalty, due to the fact that the after school program classes are not graded; therefore, the lack of participation from students

would have no impact on their school grades. Consent forms from parents were signed, as well as assent forms from students, assuring the utmost confidentiality from the researcher. Parents and students were asked permission in both letters for the researcher to record the interview sessions on audio tape. Parents received copies of both signed consent and assent forms.

4.7 Data collection procedures

In phenomenographic research, semi-structured interviews are the most commonly used method of data collection (Barnard et al., 1999; Collier-Reed et al., 2009). This research used semi-structured interviews as the primary data collection method. In addition, student written statements were used as a triangulation method to establish validity, by providing "corroborating evidence collected through multiple methods" (Creswell & Miller, 2000, p.127). In qualitative studies, it is recommended that interviews are fully audio or video-recorded. However, the most common method used in phenomenographic studies is audio recording. Audio recording is essential in phenomenographic studies to obtain "a full, accurate record of what the participant said" (King & Horrocks, 2010, p.47). Therefore, interviews were tape-recorded, helping the researcher to avoid manually taking notes, and fully engage in the conversation (Speer & Hutchby, 2003). By recording the interviews, the researcher had the opportunity to access and review data at any time. Audio-taped recordings from the interviews, and students' written statements were transcribed into text form verbatim, providing raw data for the initial analysis. Many after school students were part of the environmental education class; however, only students whose parents signed the consent form were selected to be a part of this study.

The researcher personally conducted one-on-one, face-to-face interviews, which took place at the school site, during out of school time. A total of 34 diverse elementary school students were interviewed: 21 students from Alta Vista Elementary School, and 13 students from Hawkins Elementary School. Prior to the interviews, participants were given a brief introduction explaining the study and its purpose. The students were selected if the parents agreed for their child's participation in this study.

However, the participant's permission had to be obtained as well. Each participant who agreed to become part of the study was requested to read and sign the assent form that had been approved by the Institutional Review Board. In this form, the purpose of study was clearly outlined and it was made clear that the information collected would be treated confidentially. The participants were also informed that they could decline to answer any question and could also stop the interview at any time.

Data collection for this study consisted in two parts that took place during the same session: (1) to answer a written statement: 'In my own words, I think environmental education means:", and (2) an oral interview consisting of semi-structured questions related to environmental education terms. The interview guide is shown in Appendix D. The study was divided into two phases: (1) collecting data from the participants' understanding of environmental education before undertaking an environmental education class, and (2) collecting data from the participants' understanding of environmental education after two months of taking an environmental education class.

4.7.1 Alta Vista Elementary School

Alta Vista Elementary School is located in Fresno County, ten miles from Fresno, California. According to data from the California Department of Education (CDE), it serves students in kindergarten through the eighth grade, with an enrollment of approximately 350 students, and the following demographics: White not Hispanic: 29%, Hispanic: 63%, Asian: 6%, African American: 1%, Others: 1%. 75 percent of students in the school qualify for free and reduced school lunch, and 30 percent are English language learner students. Funded by a California State Department of Education 21st Century Community Learning Centers grant, Alta Vista Elementary School provides a free after school enrichment and academic program for one hundred students, under supervision of Fresno Recreation, Enrichment, and Scholastic Help (FRESH). The purpose of after school programs is to provide children ranging from kindergarten to high school with structured activities, while providing a safe place to stay during non-school hours. State-funded after school programs start at the end of the

regular school day and stay open until 6:00 pm, encouraging student success by providing homework, academic and enrichment learning support activities (CDE, 2011).

The environmental education class was taught to after school program students as part of the enrichment component of the program. Therefore, the EE classes were taught for a length of time of sixty minutes per day. Examples of after school program enrichment activities include arts and crafts, dance, science, music, etc. At Alta Vista Elementary School, enrichment classes are rotated every four to eight weeks. Enrichment classes are announced, and students can select to join a class from a variety of enrichment activities. The after school program coordinator successfully advertised the environmental education (EE) class among the students as "Earth Wise". Due to the high demand for this EE class, and to comply with the after school program 20 to 1 student ratio, two classes of approximately 20 students each were created. Ms. G taught the EE class for lower graders (1st through 3rd grades), with ages ranging from six to nine years old. Another EE class was created and Ms. A was the teacher. She had students between the ages of eight to eleven and they were upper graders (4th through 6th grades). Fifteen lower graders and six upper grader students volunteered as participants for this study at Alta Vista Elementary School.

4.7.2 Hawkins elementary school

Hawkins Elementary is a school in Fresno County, twelve miles from Fresno, California. It has a total student body population of 600 students from kindergarten through sixth grade, with the following demographics: White not Hispanic: 20%, Hispanic: 50%, Asian: 16%, African American: 11%, Others: 3%. Hawkins Elementary School has 69 percent of students that are eligible for the free and reduced school lunch, and 10 percent are classified as English language learner students. Around ninety students are currently enrolled in Hawkins after school program, also under supervision of FRESH, as well as a state-funded after school program free of charge. One environmental education class was taught at Hawkins Elementary School during the enrichment component of the after school program. This EE

class consisted of sixty minutes of lesson time per day. Mr. R taught the K-12 environmental education curriculum for a class of approximately 20 students. A total of thirteen upper grader students (4th to 6th grade) volunteered to participate in this study.

4.8 Limitations

Although every after school program (ASP) needs to comply with state requirements providing homework, academic and enrichment components, every ASP is managed differently according to the school's specific needs. The environmental education (EE) class at Alta Vista Elementary School took place daily Monday through Thursday. On the other hand, at Hawkins Elementary School, the EE class took place on Tuesdays, Wednesdays and Thursdays. The researcher took the role of passive participant, which allowed her to join the children during the environmental education classes and learn more about the children participating in this study. However, the researcher was limited at Alta Vista Elementary School by the fact that two environmental education classes were taught simultaneously. Therefore, she visited each classroom every other day, which did not allow enough time to connect with the students. On the other hand, Hawkins Elementary School had only one EE class, allowing the researcher to become better acquainted with the students' personalities.

Chapter 5: Data Analysis and Results

5.1 Characteristics of the Sample

Qualitative data was collected from two elementary school students, in the form of interviews and written statements and was transcribed verbatim in Microsoft Excel by the researcher. However, after all data was gathered, the researcher had mostly students' written statements from Hawkins Elementary School for data analysis. The researcher was able to collect both written statements and interviews from the participants at this school. On the other hand, the researcher was able to obtain interviews from all the participants at Alta Vista Elementary School, but only a few written statements from the students. The majority of participants from Alta Vista Elementary School were lower graders, and when asked to answer the written question, they left the page blank, or drew pictures, as shown in Appendix E. Children from the younger age group had difficulty expressing their conceptions of environmental education in writing. Therefore, due to the lack of answers at Alta Vista Elementary School from the written statements, the researcher included only students' interviews for data analysis from this school. The proposed sample size was achieved by obtaining written statements from 13 students and interviews from 34 students. The majority of the subjects were female (55.88%), compared to male (44.12%). The distribution by grade level was composed by the following: 1st grade (14.71%), 2nd grade (23.53%), 3rd grade (5.88%), 4th grade (23.53%), 5th grade (11.76%), and 6th grade (20.59%). The race/ethnicity of the participants included the following distribution: Asian (5.88%), Black (8.82%), Hispanic (58.83%), White (17.65%) and mixed race/ethnicity (8.82%). Table 5.1 presents the characteristics of the participants by race/ethnicity, gender and grade from Hawkins Elementary School.

Table 5.1 Participants' Demographics from Hawkins Elementary

Race/Ethnicity	Gender	Grade
Asian	Female	5
Black	Male	6
Black	Male	6
Hispanic	Female	4
Hispanic	Female	4
Hispanic	Female	6
Hispanic	Male	5
White	Female	6
White	Female	6
White	Male	6
White/Asian	Female	6
White/Hispanic	Female	5
White/Native American	Male	4

A comparison from the race/ethnicity from Hawkins Elementary School versus California, according to data from the 2010 U.S. Census, is shown in Figure 5.1.

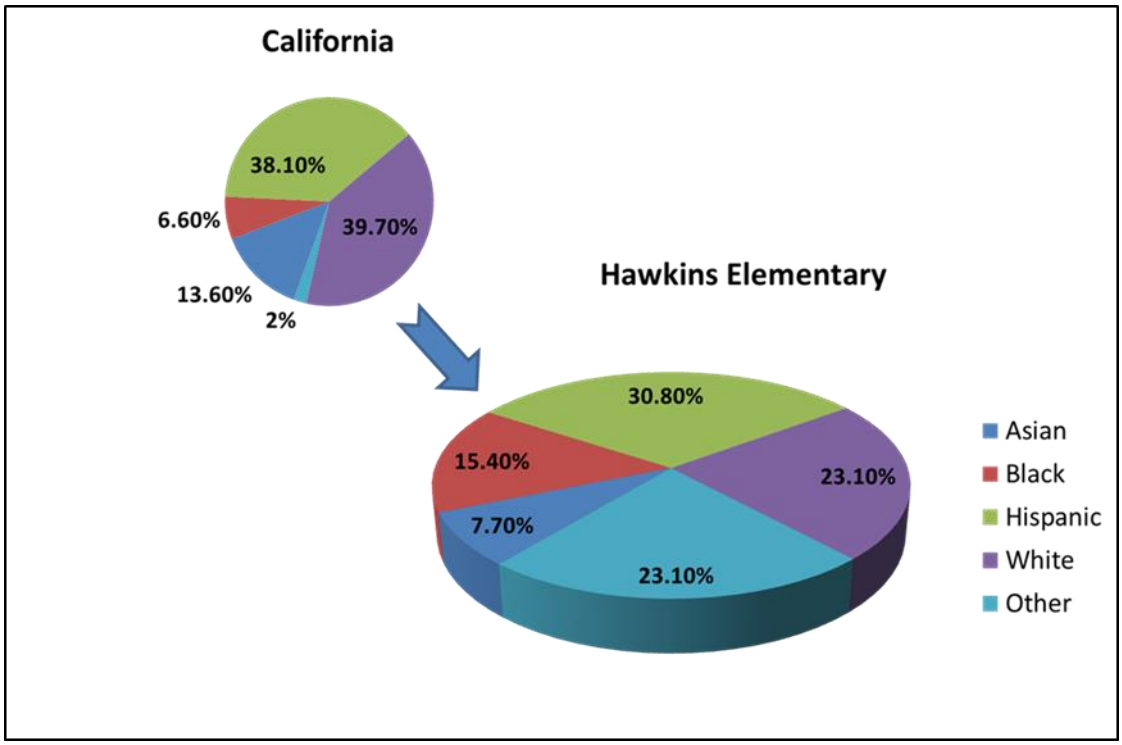


Figure 5.1 Hawkins Elementary Participants versus California, Race/Ethnicity

Table 5.2 shows the participants' demographics from Alta Vista Elementary School by race/ethnicity, gender and grade.

Table 5.2 Participants' Demographics from Alta Vista Elementary

Race/Ethnicity	Gender	Grade
Asian	Female	4
Black	Female	4
Hispanic	Female	2
Hispanic	Female	2
Hispanic	Female	2
Hispanic	Female	4
Hispanic	Female	4
Hispanic	Female	5
Hispanic	Male	1
Hispanic	Male	1
Hispanic	Male	1
Hispanic	Male	1
Hispanic	Male	2
Hispanic	Male	2
Hispanic	Male	2
Hispanic	Male	3
Hispanic	Male	3
Hispanic	Male	4
White	Female	1
White	Female	2
White	Female	2

A comparison from the race/ethnicity from Alta Vista Elementary School versus California, according to data from the 2010 U.S. Census, is shown in Figure 5.2.

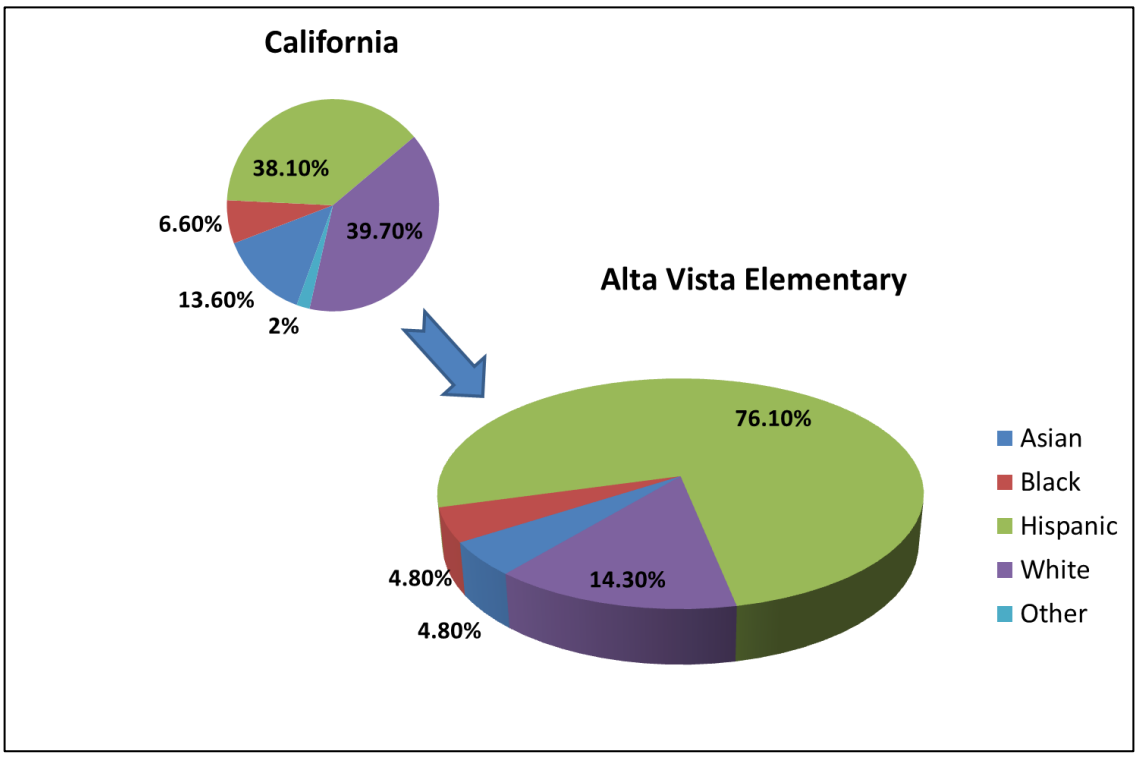


Figure 5.2 Alta Vista Elementary Participants versus California, Race/Ethnicity

5.2 Data Analysis Procedures

The analysis process was composed by examining the students' written statements and interviews prior to and after participating in an environmental education class. It is important to mention that the analysis was not started until all interviews and written statements were collected, to avoid predetermining categorization by the researcher. The interviews were audio-recorded and subsequently transcribed along with the written statements, with Microsoft Excel as the data analysis software being utilized to examine the data. The first step of the data analysis was line-by-line reading of the transcripts, considering the transcripts as a whole. Interviews and written statements were checked for accuracy by comparing them to the transcribed notes. The average interviewing time was 3:36 minutes in length, with individual interviews ranging from 1 to 10 minutes. Transcripts in which the children did not provide a description about environmental education were not included in the analysis. The researcher read the transcripts several times to answer the following question: What are the different qualitative

ways in which children describe the concept of environmental education? The aim of this research is to look at the variation of environmental education collectively. The researcher sorted concepts by coding and grouping them where common themes emerged after being reviewed. After the reading and re-reading, comparing and contrasting from transcripts, this iterative process resulted in the formation of pool of meanings. In summary, the process of data analysis involved sorting and re-sorting similarities and differences among pool of meanings, and this resulted in a final outcome set of categories of description.

5.3 Pool of Meanings

> All of the material that has been collected forms a pool of meaning. It contains all that the researcher can hope to find, and the researcher's task is simply to find it. This is achieved by applying the principle of focusing on one aspect of the object and seeking its dimensions of variation while holding other aspects frozen. (Marton & Booth, 1997, p.133)

From data analysis, pool of meanings describing the different conceptions of environmental education held by diverse elementary school students in California emerged. The following sections illustrate a graphic representation of the pool of meanings individually, which emerged from written statements and interviews, before and after taking an environmental education class. Individual excerpts from students' transcripts are included as supporting evidence of how the pools of meanings were defined by the researcher.

5.3.1 Written statements prior to an environmental education class

Diverse elementary school students were asked to answer the following written question: Please answer the following question the best you can. There is no right or wrong answer to this question. "In

my own words, I think the word environmental education means:" The pool of meaning from students' written statements before taking an environmental education class is depicted in Figure 5.3.

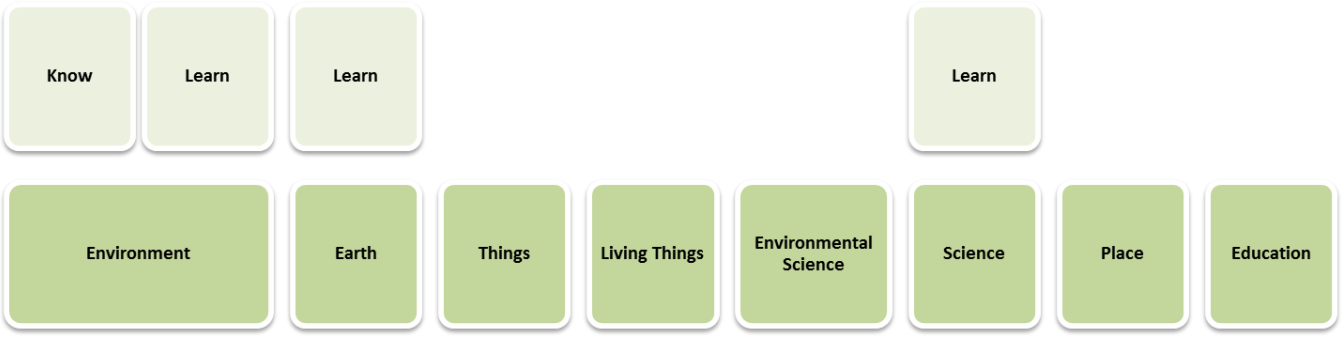


Figure 5.3 Pool of Meanings—Written Statement before EE class

Students' written statements representative of this group were:

DVAHV5: "To know about the environment"

EMCHV5: "I get to be in something outside"

KCHHV6: "Learning about the earth"

JHEHV5: "To learn science"

PBEHV4: "I think it is environmental science"

LGRHV6: "Learning about the environment and what lives in it"

5.3.2 Interviews prior to an environmental education class

Interview data about the concept of environmental education held by elementary school students was analyzed and resulted in the formation of a pool of meaning, as portrayed in Figure 5.4. Fragments from the students' interviews prior to an environmental education class are presented to exemplify this category.

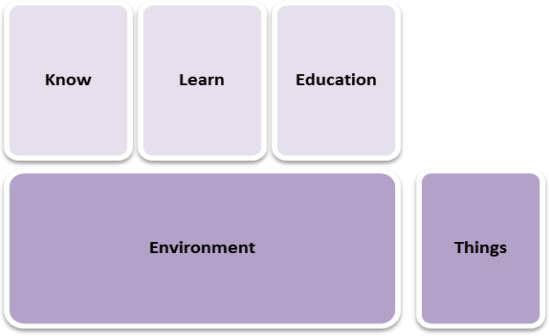


Figure 5.4 Pool of Meanings—Interviews before EE class

Environmental education was defined by diverse elementary school students as:

BGEHV6: "Like education, like classes or something that might teach you about the environment a little bit more"

CESHV6: "Maybe a contract?"

DVAHV5: "Where you know or learn about the environment"

GJIAU2: "Kind of the same as the environment"

XHEAU4: "Environmental education is education that is about the environment"

5.3.3 Written statements after an environmental education class

Two months after completing the environmental education class, the students answered the written statement for a second time. The pool of meaning that emerged from data analysis is shown in Figure 5.5.

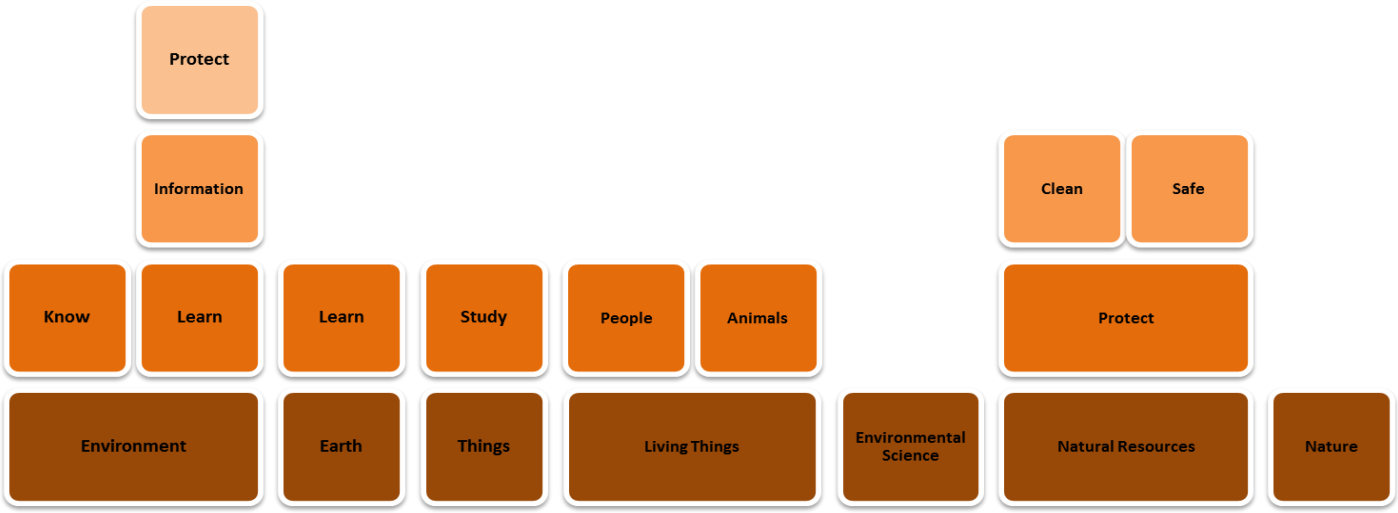


Figure 5.5 Pool of Meanings—Written Statement after EE class

Illustrative examples of this category are:

EMCHV5: "That I will learn about the environment. Then this information will help me protect it"

LGRHV6: "Things involving the earth and its people and animals"

JCOHV6: "I think environmental education is natural resources and how to keep it clean and safe"

BGEHV6: "I think environmental education is when you learn about the environment and nature"

5.3.4 Interviews after an environmental education class

The researcher summarized the students' concepts after an environmental education class, in the form of a pool of meaning, as depicted in Figure 5.6.

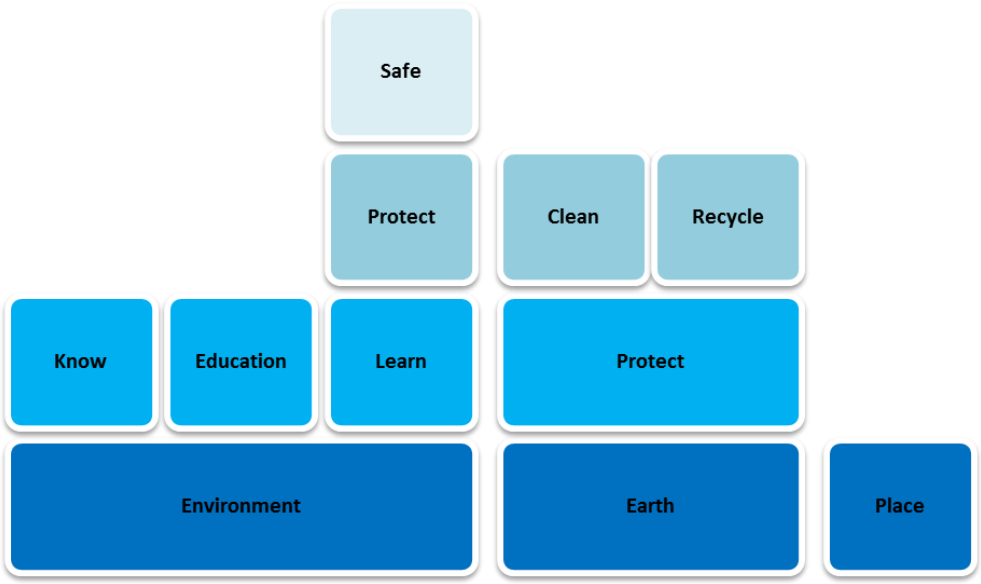


Figure 5.6 Pool of Meanings—Interviews after EE class

Examples representative of this category were:

JCOHV6: "Environmental education is learning about, like how to keep the environment safe"

KCHHV6: "It's talking about the Earth, like how to keep it clean, and recycle"

DVAHV6: "To know a lot about the environment"

XHEAU4: "Environmental education is like education outside sometimes it means that, like education about the environment"

5.4 Results

> The results of a phenomenographic analysis are presented in the form of an outcome space made up of categories of description of the phenomenon and the relationship between the categories. An individual category of description represents one way of experiencing the phenomenon. The differences between categories of description are distinct ones with regard to the possible ways the phenomenon can be experienced. (Cope, 2004, p.6)

The final step of data analysis is to define the categories of description, which according to Sandbherg (1997), "categories of description are always the researcher's interpretation of the data obtained from the individuals about their conceptions of reality" (p.208). Therefore, the categories of description are the researcher's conclusions from data analysis, and will constitute the outcome space. In phenomenography, the outcome space identifies and presents as few categories of description as possible (Marton & Booth, 1997; Svensson, 1997). For this research, the outcome space represents the number of qualitatively different ways elementary school students understand the concept of environmental education.

5.4.1. Outcome Space

Table 5.3 describes the outcome space which consists of four qualitatively different categories of description that are linked together, but are distinct from each other. This table also defines the point in time where the category of description emerged. The resulting hierarchy of these categories increases in complexity, from 1 to 4, according to the ways diverse elementary school students understand the concept of environmental education. The following section after Table 5.3 describes the characteristics of each category.

Table 5.3 Outcome space of the concept of environmental education

Category	Description	Pre-Written	Pre-interview	Post-Written	Post-Interview
1	Environmental education is a **subject**	X	X	X	X
2	Environmental education is a **place**	X			X
3	Environmental education is **living things**	X		X	
4	Environmental education is to **protect**			X	X

Category 1. Environmental education is a <u>SUBJECT</u>

Environmental education is described in this category as a noun, in terms of being a subject to be learned or studied. The majority of students' responses that belong to this category were in the form of

nouns and short sentences. Table 5.3 displays that this category was present in all pre-and post-written statements and interviews.

Category 2. Environmental education is a PLACE

This category emerged twice, before and after the students took the environmental education class. Category 2 was present on the pre-written statement and on the post-interviews. Even though this category had limited students' responses, it is so distinct that a category was deemed to be formed. Once again, the concept of environmental education is defined by students as a noun.

Category 3. Environmental education is LIVING THINGS

This category is composed by living things according to the students' definition of environmental education. Although words such people and animals appear in this category, the focus is still on describing the concept of environmental education as a noun. Category 3 was present on the pre- and post-written statement.

Category 4. Environmental education is to PROTECT

This category is the most complex way students described their understanding of the concept of environmental education. Category 4 emerged only after the students took the class, on both the written statement and interviews. What distinguishes category 4 from the others is that there is a transformation in the students' understanding of environmental education: it evolves from a noun to a verb. In other words, the students' perspective changes from simply describing a concept to defining environmental education as an actionable project.

Chapter 6: Discussion and Conclusions

> Research literature is sparse about how children learn about 'going green' and what they do understand needs to be done in order to conserve and sustain our planet's resources. More applied research is also needed on innovative ways for teachers to help children to become participants in helping the earth (Honig & Mennerich, 2013, p.173).

6.1 Summary of the Study

In the United States, the debate still continues about the definition, importance, and goals of environmental education. In spite of this, the environmental education momentum has completely halted for the last seven years. According to a meeting summary from the National Environmental Education Advisory Council (NEEAC), which is a federal advisory committee to the U.S. Environmental Protection Agency (EPA), the last report on the state of environmental education in the United States was developed in 2005 and a new report will be ready and shared to the Congress by December 2014 (National Environmental Education Advisory Council [NEEAC], 2012). There is no doubt that there is a growing support from the public on the idea of incorporating environmental education into the K-12 curriculum. According to Coyle (2005), 95% of Americans support environmental education as a subject to be learned in our schools. Adults are aware and supportive of environmental issues, yet, "we know little about what children think of global warming or conservation of earth's resources" (Honig & Mennerich, 2013, p.171). To date, there is a significant gap in literature regarding environmental topics from the perspective of children (Hopwood, 2007; Strife, 2012). Furthermore, the voices of minority children appear to be forgotten in this body of research.

Phenomenography allows producing data about the individuals' understanding of concepts and experience of phenomena from their own perspective rather than from the researcher's point of view (Malcolm & Alant, 2007; Micari, et al., 2007). This dissertation presents a phenomenographic approach

to describe the different conceptions of environmental education held by elementary school students before and after undertaking an environmental education class. The study was guided by the following research question: What are the variations in the qualitatively different ways diverse students from elementary school understand and experience the phenomenon of environmental education? The participants for this study were 34 elementary school students (19 female and 15 male) from diverse races and ethnicities. California was chosen as the setting for this study because it is the most diverse state in the nation. For two months, a K-12 environmental education curriculum was implemented for this study, and these EE classes took place during after school program hours. Data collection consisted of students' written statements and interviews, divided in two parts: prior to and after undertaking an environmental education class. Findings from this research are presented in the form of an outcome space composed by categories of description.

6.2 Discussion

The outcome space of the qualitatively different ways diverse students from elementary school understand and experience the phenomenon of environmental education that emerged after data analysis is composed of four categories of description:

Category 1. Environmental education is a ***subject***

Category 2. Environmental education is a ***place***

Category 3. Environmental education is ***living things***

Category 4. Environmental education is to ***protect***

Category 1. Environmental education is a SUBJECT

Category 1 was the most predominant among all the categories, and was present prior to and after the students took an environmental education class. Environmental education is described by diverse elementary school students in a limited way, using nouns and short sentences, as a subject to

acquire information. Findings of a phenomenographic study conducted in Australia by Loughland et al. (2002) showed that "primary-aged children mostly described the environment in terms of nouns or lists of things" (p.191). There are similarities between the findings in this study expressed in terms of nouns and verbs and those described by Loughland et al. (2002), defined as an object and relation view, and they claim that:

> The students that report a *relation* view will tend to integrate their actions towards the environment from this perspective. The converse is also likely: students that report an *object* view may not even see the need for themselves to take any responsibility for the environment (p.195).

Overall, the majority of children in this study described their understanding of environmental education in the terms of a noun. Thus, if these results are in line with findings from Loughland et al. (2002), then children need to transform their understanding of environmental education from a noun to a verb in order to become personally involved as environmentally responsible citizens. Ballantyne, Connell and Fien (2006) urge environmental educators on the importance of engaging students in lifelong learning of environmental experiences, and they stress that:

> The challenge that faces environmental educators is to develop strategies which help individuals, irrespective of age, become competent and motivated to act in an environmentally responsible manner as well as to share their informed views and skills with others (p.421).

Category 2. Environmental education is a <u>PLACE</u>

This category emerged only on the students' written statements prior to the undertaking of an environmental education class. There was limited data as a collective experience supporting the construction of this category of description. Yet, it was worthy of a new category because it was so distinct in comparison to the other concepts of environmental education. In this category, students

explain their definition of environmental education as a place to be: outside. Research literature has shown a significant decrease in the time that urban children spend outdoors (Karsten, 2005). As summarized by Kimbro, Brooks-Gunn, and McLanahan (2011) "children are spending too little time playing outdoors and too much time watching television, and furthermore that low levels of outdoor play are due to mothers' concerns about neighborhood safety" (p.668). Therefore, it is not surprising that only a few students' responses of the description of environmental education included being outside in their definition. This category is related to Category 2 because the language used by students to describe the concept of environmental education is a noun.

Category 3. Environmental education is <u>LIVING THINGS</u>

Category 3 was present before and after the environmental education class, on the pre- and post-written statements. The inclusion of people and animals is a defining aspect of category 3 because it was absent from the previous categories. Once again, the students' concept of environmental education is still centered on the description of living things as a noun. An interesting finding was that the living things category was described by students to be composed exclusively of human beings and animals. In this study, plants were not mentioned by diverse elementary school students as being part of living things. Yet, California's Central Valley is among the most productive farming areas in the world, growing crops such as grapes, nuts, tomatoes, tree fruits and citrus (Faunt, 2009). Findings presented here about the lack of mention of plants in the category of living things according to the students' definition of environmental education are consistent with previous work. Extensive research literature has reported that children hold the idea that plants are not living things, and it is further explained by the work from Leddon, Waxman and Medin (2009) about children's concept of living things:

> We propose that children do have burgeoning knowledge of an overarching concept linking humans, non-human animals, and plants, but use of the word "alive" masks their appreciation of it. "Alive" in English is ambiguous; it does not uniquely or even primarily map onto the Western science-inspired biological interpretation that is the focus

of research on this topic. While it technically applies to humans, non-human animals, and plants, in practice its use is often aligned with animate beings only, thus excluding plants. Its entry in Merriam-Webster's Online Dictionary illustrates this well. Among the 6 definitions listed, the primary definition, "having life," seems apt because it picks out all (and only) living things. But this definition is immediately qualified with "not dead or inanimate," thus explicitly excluding inanimates and therefore plants. This clearly reveals the tension between the technical meaning of "alive" and a more colloquial animate sense. The other Merriam-Webster entries underscore this animate meaning, as they generally relate to liveliness ("look *alive*," "his face came *alive* at the mention of food") or degree of activity ("streets *alive* with traffic," "keep hope *alive*"). Of course, we are not suggesting that children learn word meanings from dictionary definitions. Nonetheless, these entries are telling because they likely reflect something about adult usage, and therefore provide a glimpse of the cues to meaning that adults provide spontaneously, and unwittingly, to children (p.464).

*Category 4. Environmental education is to **PROTECT***

This category emerged only after the environmental education class was taught, appearing on both students' written statements and interviews. Diverse elementary school students' concept of environmental education changes from being just describing a concept, to protect or take action. It is this "action" that distinguishes category 4 from the others. The students' concept of environmental education evolves from a noun to a verb, making it a significant finding. More than simply describing a concept, there is a shift in the students' perspective after they took an environmental education class. The students analyze the concept of environmental education, the importance of learning, transforming knowledge and expressing it in the form of a verb, meaning an intention to take an action. The following excerpt exemplifies the transformation of a student's concept of environmental education:

EMCHV5: "That I will learn about the environment. Then this information will help me protect it"

6.2.1 Students knew about environmental education prior to a class

Data analysis from diverse elementary school students' written statements and interviews revealed that children already had an understanding about the concept of environmental education prior to taking an EE class. This finding corroborates the ideas of Palmer (1999), who stated that "young people (including the very young) are capable of far more complex thinking about environmental issues than many may suppose" (p.388). In addition, Rickinson (2001) pointed out that "school pupils cannot be assumed to have a tabula rasa, but rather are likely to have considerable knowledge about the science of environmental issues developed through 'informal sources such as personal observations and the media'" (p.220). The influence media has on children regarding environmental topics has been widely discussed in previous investigations (Bonnett & Williams, 1998; Coyle, 2005; Eagles & Demare, 1999; Nagel, 2004; Strife, 2012). Thanks to the advances in technology, children are now more aware about many of our society's problems. Nevertheless, this can be "inaccurate or partial knowledge that pupils may hold in their minds and, above all, building upon what is there in their minds" (Palmer, 1999, p.388). Moreover, information received from media can lead children to become pessimistic towards environmental issues. "In fact, over 70% of children discussed television, news and movies as a central source of their fear about environmental problems" (Strife, 2012, p.46). Children have their own ideas about the world from their point of view. The task is now on educators to map children's understanding of concepts. As summed up in this famous quotation from Ausubel, "the most important single factor influencing learning is what the learner already knows. Ascertain this and teach him accordingly" (as cited in Robertson, 1994, p. 25).

6.2.2 Students described environmental education as a noun

In this study, the outcome space identified diverse elementary school students' understanding of the concept of environmental education. After data analysis, four categories emerged, and from these, three categories were described by students in the terms of a noun. Many years of research have

concluded that verbs are harder to learn compared to nouns (Maguire, Hirsh-Pasek & Golinkoff , 2006). Golinkoff and Hirsh-Pasek (2008) stated that "the fact that verbs label dynamic events and processes poses a special learning problem for young children. In particular, children must take the ever-changing events in the world and transform them into a categorical system represented by language" (p.397). Therefore, the results obtained from diverse elementary school students describing their understanding of environmental education in terms of a noun are consistent with those of other studies. In few words, it is easier for children to describe a concept in the form of a noun than as a verb. White and Gunston (1992) assert in their statement about people's understanding, that "everyone understands to some degree anything they know something about" and that "understanding of a concept is not a dichotomous state but is a continuum" (as cited in Robertson, 1994, p.28). Maguire et al. (2006) developed the SICI continuum, as illustrated in Figure 6.1, which is "an acronym for the many factors that scale the difficulty of learning a particular word (shape, individuation, concreteness, and imageability)" (p.375). This figure portrays the evolution of how children learn nouns, before verbs, and concrete concepts before abstract.

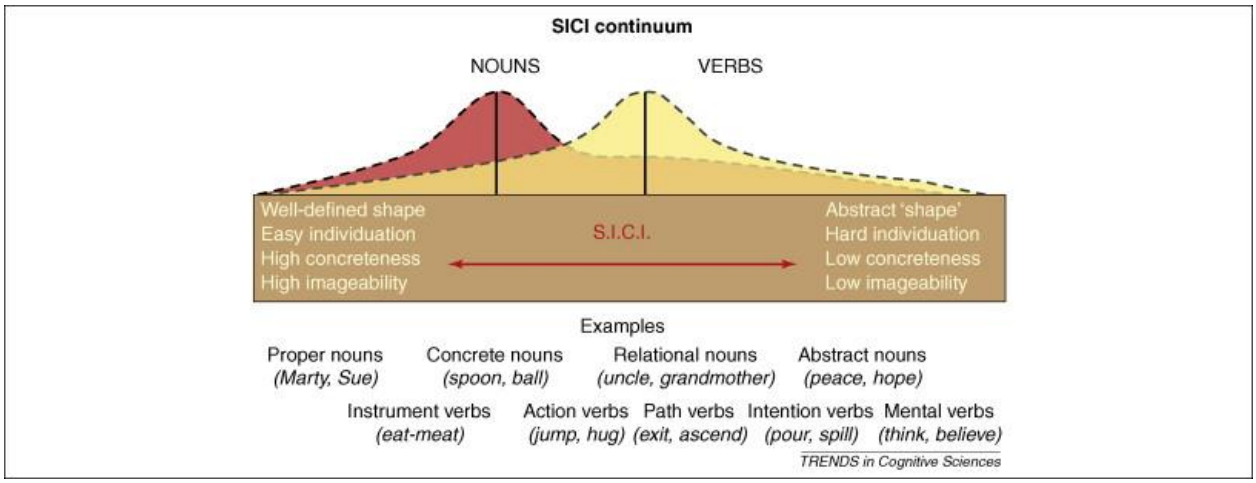


Figure 6.1 SICI continuum. From Golinkoff & Hirsh-Pasek, 2008, p.400

6.2.3 An environmental education class had an impact on students

Findings from this research showed that diverse elementary school students had a limited range of conceptions prior to undertaking a two-month environmental education class. A comparison among the pool of meanings, prior to and after the EE class, indicates an increased range of conceptions. Therefore, exposure to an EE class seems to have led the students to expand their concept about environmental education, as a collective, as illustrated on the pool of meanings. This is consistent with the results from reviewed studies by Rickinson (2001) who claims that there is "evidence of a positive effect of certain environmental education initiatives on students' environmental knowledge, attitudes and/or actions" (p.263). Moreover, category 4 emerged only after the students undertook an environmental education class. According to diverse elementary school students' descriptions of environmental education, this is no longer another subject to be passed, but rather the concept evolved to protect; and, as previously discussed before, from a noun to a verb. Thus, it can be inferred that after experiencing an environmental education class, students in this study felt empowered to protect our planet. Students expressed in their words a need to protect, and this shows their increased affinity towards environmental issues. In a study conducted by Ballantyne, Fien & Packer (2001), the impact of two environmental education programs was explored, one conducted on elementary school students (ages 9 to 12), and the other on middle school students (aged 13 to 14). Ballantyne et al. (2001) claim that:

> It is encouraging that the students who participated in these case studies, even as young as 10 years of age, considered the environment to be an important topic and that it was relevant to their lives. These two programmes were clearly successful in engaging students in thinking and learning about environmental issues. In some cases, the impact of the programme was such that students said that they changed their behaviour and/or carried discussion of the issue beyond the bounds of the classroom (p.34).

Findings from this study revealed that an environmental education class, even for a short period of time, has a substantial effect on children. This is in agreement with Hart and Nolan (1999), which

recognizes that environmental education programs lead to a "change toward more positive environmental attitudes among people of all ages after exposure to some form, almost any form, of environment-related or even in-class environmental education experience whether short or longer term" (p.7).

6.3 Implications

> Diversity in environmental education research is compounded when one considers the various cultures, epistemologies and research traditions that often inform the field of environmental education. This complexity also accounts for a range of forms for environmental learning whether it occurs in formal, informal or non-formal contexts. Still, published research accounts do not always mirror the complexity inherent in the broader field. For any research, it is important to consider two important and linked aspects of diversity: 1) diversity of voice and 2) diversity of method (Zandvliet, 2009, p.1).

This study adds to the literature on environmental education in both diversity of voice and diversity of method. First, although children's ideas is an emerging field in environmental education, there is a gap in research through a qualitative lens (Hart & Nolan, 1999, Rickinson, 2001), and, further, is lacking studies from the perspective of diverse children. Moreover, "outside of a few examples, there seems to have been very little in the way of development of research genres aimed at understanding, characterizing and supporting cultural diversity within much of mainstream environmental education" (Zandvliet, 2009, p.2). Therefore, this study contributes by providing a range of conceptions about environmental education held by diverse elementary school students in California.

Second, the majority of studies regarding environmental education use a quantitative approach (Hart & Nolan, 1999; Rickinson, 2001). Rickinson (2001) proposes to find another lens to measure environmental education programs, because the most common method is based on quasi-experimental, pre- and post-test design, and the "research questions being asked are of a closed nature such as `To what extent does treatment x change students' attitudes towards y?', rather than open questions such as

`What impact does initiative x have upon y students?'" (p.223). This phenomenographic study can be an alternative method for the evaluation of educational outcomes. It can provide guidelines for the design of qualitative evaluations in environmental education. Micari et al. (2007, p.472) describe the advantages of using a phenomenographic approach in program evaluation:

- It is broadly applicable and does not place a burden on teachers or evaluators
- Might be used to evaluate a new unit in a course or extracurricular programs
- To gain information about what learners know and insight into how they know it
- Qualitative data collection is better when time and resources are limited
- Move beyond measuring performance to measuring how people think
- A small sample of people allows to discover far more about individual experience than would be available in performance-based measures alone

This study, as phenomenographic evaluation, provided a clear picture of the impact of an environmental education program. Findings in the form of pool of meanings and categories of description demonstrate that the educational outcomes of an environmental education class are significant. After participating in an environmental education class, there was an increase in the students' understanding of environmental education, and this can be seen as the base for future environmental education classes to be built upon. In the words of Micari et al. (2007),

> If what we really care about is improving learner's ability to think, we should be measuring that. Put another way, to provide meaningful information about how well students are learning, assessment must capture student thinking, and not just student performance (p. 459).

6.4 Suggestions for Future Research

This investigation focused exclusively on elementary school students' concept of environmental education. Future investigations might also examine the ways elementary school teachers understand the concept of environmental education. A comparison between the teachers and students understanding could be analyzed to develop better pedagogical strategies of the teaching of K-12 environmental education. An area for further inquiry is the analysis of children's drawings of the concept of environmental education. In this study, the majority of data collected from written statements were answered by students from first to third grade by drawing a picture of their understanding of environmental education. Drawings, in conjunction with written narratives, have been used as a research method in a previous study regarding children's ideas of nature (Kalvaitis & Monhardt, 2012).

This was a short-term environmental education class conducted during out- of-school time. A longitudinal study conducted during regular school hours would be useful to completely analyze the impact of the K-12 environmental education curriculum. According to Schusler and Krasny (2010), an outcome from environmental education programs has been linked to positive youth development (PYD). The term PYD is frequently mentioned in out- of-school literature, and it promotes the "development of social and decision-making skills, caring adult and peer relationships, self-confidence, positive self-image or identity, a sense of caring and compassion for others, and a sense of right and wrong, among others" (Stern, Powell & Ardoin, 2010, p.110). Results from this study showed the ability of successfully integrating an environmental education curriculum during out of school time. If the goal of environmental education is to create environmental responsible citizens, then more research should be done to find the connection between EE and PYD, as described by Schusler and Krasny (2010):

> Recognition that environmental action promotes PYD can be useful for engaging youth development organizations in EE, for example in after-school and summer youth programs, thereby expanding EE's reach while advancing youth development organizations' goals. It can also help environmental educators to expand their impacts with youth by incorporating PYD principles in program planning, implementation, and evaluation (p.210).

6.5 Limitations

This was qualitative, phenomenographic research that involved only a few participants. The sample was purposefully selected, and limited to participants enrolled in after school programs in California. Therefore, attempts to generalize findings would yield different results in another setting. Further research should be done in other states to provide a comparison among states of student's conceptions of environmental education, and such studies would provide a better understanding of the status of environmental education in the United States. Another limitation was the age of participants. Elementary school students from the younger age group answered the interview questions, but they were not able to respond to the written statement. Further studies should include children's drawing analysis for younger age groups.

6.6 Final Thoughts

> Conceptions are the by-products of our thoughts, experience, education, culture, history, and the ideals and values that society insists on so that we can actively participate. Why is it important to identify our conceptions? Why is it necessary to expose the intellectual map that is our experience? The answer lies within the fact that conceptions determine our judgment, direct our inquiry, and are the explanations for our everyday lives and practices. To be aware of conceptions is to be aware of our social reality and ourselves (Barnard et al., 1999, p.219).

Today's children are part of the digital era and they develop minds of their own at an increasingly early age. Children are overloaded with information, but information is not the equivalent of knowledge. In fact, many people have falsely attributed Albert Einstein with the quote: "information is not knowledge" and yet, the famous remark available on the internet has not been validated to be true (Jackson & Jamieson, 2007). In today's society access to information is a valuable tool. Yet, parents and educators are the foundation for providing children with the correct information against the bombardment of false and/or inaccurate information available in their daily lives. Children should listen

to parents and educators because they have more knowledge and experience, and they should be the guides that enable children to make their own decisions in life, whenever they are ready to. On the other hand, are we, the 'adults' listening to children? Understanding children's ideas will help to understand the multiple factors that are having an impact on their daily lives. Children's learning should not be only memorizing facts and accumulating knowledge, but learning how to become lifelong active participants of this world. Teaching is not a one-way road, where the teacher transmits knowledge to the learner. Instead, education should be a highway of flowing information between the teacher and the learner.

Environmental education is much needed in America's school system. Environmental education not only involves conservation of natural resources or environmental problems; it also involves the people and the social, economic and political factors that affect our daily lives. Therefore, children are part of the picture, and they can greatly contribute to solve environmental problems with minimal efforts such as turning off the light or water when not in use. Adults need to plant the seed of environmental responsibility in children. Thus, it is crucial for children to experience environmental education programs at an early age so they can become environmental responsible citizens of the world. Because of the inundation of information available through modern technology, today's children are not naïve like previous generations. They are more aware than ever of our society's many problems, and they want to express their concerns. However, children's voices are rarely heard. The following popular phrase leaves no room for argument: 'today's children are tomorrow's leaders.', and yet we continue to ignore them.

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Appendix A

Larry L. Powell
Superintendent

fresno county
office of education

FRESH After-School Partnership

May 3, 2012

Christian Meissner, Ph.D.
Chair, UTEP Institutional Review Board
ORSP Admin-209
El Paso, TX 78868

Dear Dr. Meissner:

The purpose of this letter is to grant Brissa Quiroz, a graduate student at the University of Texas at El Paso, permission to conduct research at Fresno County Office of Education-Department of Safe & Healthy Kids FRESH (Fresno County's Recreation Enrichment and Scholastic Help) after-school partnership. The project, "Environmental education through the lens of diverse elementary school students in the United States: A phenomenographic study", entails gathering of qualitative data from 20 elementary school students by performing face-to-face interviews and from examining student journals written during an environmental education enrichment class during after-school time. Fresno County Office of Education was selected because of the significant diversity within the FRESH after-school programs. As Director of the FRESH after-school partnership, I grant permission for Brissa Quiroz to conduct her research in the FRESH after school programs, under the condition that she will be fingerprinted and will have signed parent permission to interview students and examine journals.

Sincerely,

Alix Frazer
Director

Alix Frazer, *Director*
1111 Van Ness Avenue • Fresno, CA 93721-2000
(559) 497-3887 • TDD (559) 497-3912 • URL:www.fcoe.k12 ca.us • FAX (559) 497-3704

Appendix B

THE UNIVERSITY OF TEXAS AT EL PASO
Office of the Vice President for Research and Sponsored Projects
Institutional Review Board
El Paso, Texas 79968-0587
phone: 915 747-8841 fax: 915 747-5931

FWA No: 00001224

DATE:	July 9, 2012
TO:	Brissa Quiroz, Graduate Student
FROM:	University of Texas at El Paso IRB
STUDY TITLE:	[337108-1] Environmental education through the lens of diverse elementary school students in the United States: A phenomenographic study
IRB REFERENCE #:	337108-1
SUBMISSION TYPE:	New Project
ACTION:	APPROVED
APPROVAL DATE:	July 9, 2012
EXPIRATION DATE:	July 9, 2013
REVIEW TYPE:	Expedited Review

Thank you for your submission of New Project materials for this research study. University of Texas at El Paso IRB has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a study design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

This study has received Expedited Review based on the applicable federal regulation.

Please remember that informed consent is a process beginning with a description of the study and insurance of participant understanding followed by a signed consent form. Informed consent must continue throughout the study via a dialogue between the researcher and research participant. Federal regulations require each participant receive a copy of the signed consent document.

Please note that any revision to previously approved materials must be approved by this office prior to initiation. Please use the appropriate revision forms for this procedure.

All SERIOUS and UNEXPECTED adverse events must be reported to this office. Please use the appropriate adverse event forms for this procedure. All FDA and sponsor reporting requirements should also be followed.

Please report all NON-COMPLIANCE issues or COMPLAINTS regarding this study to this office.

Please note that all research records must be retained for a minimum of three years after termination of the project.

Based on the risks, this project requires Continuing Review by this office on an annual basis. Please use the appropriate renewal forms for this procedure.

If you have any questions, please contact Athena Fester at (915) 747-8841 or afester@utep.edu. Please include your study title and reference number in all correspondence with this office.

University of Texas at El Paso (UTEP) Institutional Review Board
Informed Consent Form for Research Involving Human Subjects

Protocol Title: Environmental Education Through the Lens of Diverse Elementary School Students in the United States: A Phenomenographic Study

Principal Investigator: Brissa Y. Quiroz

UTEP: Environmental Science and Engineering

In this consent form, "you" always means the study subject. If you are a legally authorized representative (such as a parent or guardian), please remember that "you" refers to the study subject.

Purpose of Research

The purpose of this study will be to explore the different ways elementary school students understand and experience environmental education through the eyes of diverse children. Approximately, twenty elementary school students will be enrolling in this study at an after school program from Fresno Recreation, Enrichment, and Scholastic Help [FRESH] After-School Partnership. You are being asked to be in the study because you are an elementary school student from California enrolled in an after school program. All students have access to the environmental education class whether they participate in the study or not. If you decide to enroll in this study, your involvement will last about eighteen weeks.

Procedures

If you agree to take part in this study, you will take part in an environmental education class during after school program hours that will take place during August 2012- December 2012. You will be interviewed twice by the investigator during the eighteen-week period, for about thirty minutes in each sitting. The interviews will consist of questions regarding the experience of an environmental education class. These interviews will be audio recorded, and will be accessible only to the investigator, Mrs. Brissa Y. Quiroz. No one else will have access to the recorded interviews. These audio records will be stored under lock and key in the investigator's home. The audio recording of interviews will be transcribed into text form, and the transcripts will be used for further analysis. After the audio recordings have been transcribed completely, and at the end of the project, after all the analysis has been completed, the audio recordings will be permanently destroyed by deleting the files from the audio recorder. The computer software program that will be used for the analysis will have the recordings attached to the transcribed text until the completion of the analysis. After all analysis is completed, these recordings will be de-linked from the text files and only the text transcripts will be retained. In addition, the investigator will request your participation in answering a written question about environmental education two times during the period mentioned above. These written questions will be accessible only to the investigator, and will be stored under lock and key as mentioned above.

Risks

There is no major risk to you from participating in this study. Risks are minimal and may only impact a few of the study's participants, such as possible boredom or interview anxiety. Another minor risk is potential loss of confidentiality of your responses to your interview questions. The investigator will take utmost precautions in handling your data and ensuring complete confidentiality of what you say in the interviews and written questions. All interview and written questions data will be presented at a collective level. Therefore, your name will not be identified and associated with any of these data.

Benefits

There will be no direct benefits to you for taking part in this study. This research may help us to provide knowledge that can be used to improve environmental education curriculum and instruction for future students.

Compensation

There will be no monetary compensation for this study. However, as an incentive for taking part in this research, the participant will be allowed to choose a toy from a treasure chest at the end of the study.

Right to Refuse or Withdraw

Taking part in this study is voluntary. You have the right to choose not to take part in this study. If you do not take part in the study, there will be no penalty.

Confidentiality

Your participation in this study is confidential. The collected data will be reported as group data and not as individual responses. All research data will identify you by code name rather than real name, and the names corresponding to code numbers will only be known to the investigator. Absolute confidentiality cannot be guaranteed since research documents may be disclosed if required by law. Research records may be inspected by UTEP Institutional Review Board and/or state and federal agencies. Also, results of this research study may be presented at meetings or in publications; however, your identity will not be disclosed in those presentations.

Mandatory reporting

If information is revealed about child abuse or neglect, or potentially dangerous future behavior to others, the law requires that this information be reported to the proper authorities.

Questions/Contact Information

You may ask any questions you have now. If you have questions later, you may contact Brissa Quiroz at 1-800-654-9999 or byquiroz@miners.utep.edu. If you have questions or concerns about your participation as a research subject, please contact the UTEP Institutional Review Board (IRB) at (915-747-8841) or irb.orsp@utep.edu.

Authorization Statement

I have read each page of this paper about the study (or it was read to me). I know that being in this study is voluntary and I choose to be in this study. I know I can stop being in this study without penalty. I will get a copy of this consent form now and can get information on results of the study later if I wish.

Participant Name:_____ Date:_____

Participant Signature:_____ Time:_____

Parent/Guardian Signature:_____

Please mark (X) in the appropriate box corresponding to your authorization:

☐ Yes, I agree to be audio-recorded for this study

☐ No, I do not agree to be audio-recorded for this study

Consent form explained/witnessed by:_____
Signature

Printed Name:_____

Date:_____ Time:_____

Demographic Information

Please answer the following demographic information about the participant in this study:

Gender: ☐ Male ☐ Female

Age: _____ Grade: _____

Race/Ethnicity: (Please mark all that apply)

☐African-American/Black ☐Asian ☐White/Caucasian ☐Hispanic ☐Native American ☐Pacific Islander

☐Other:_____

University of Texas at El Paso (UTEP) Institutional Review Board
Assent Form for Research Involving Human Subjects

Protocol Title: Environmental Education Through the Lens of Diverse Elementary School Students in the United States: A Phenomenographic Study

Principal Investigator: Brissa Y. Quiroz

UTEP: Environmental Science and Engineering

I am being asked to decide if I want to be in this research study because I am an elementary school student from California enrolled in an after school program.

I know that to be in this study I will:

- Participate in an environmental education class during after school hours that will take place during August 2012-December 2012.
- Answer a written question about environmental education two times.
- Be interviewed twice about my experience in this class. The interview will be audio recorded, and will last about 30 minutes.

I asked and got answers to my questions. I know that I can ask questions about this study at any time.

I know that I can stop being in the study at any time without anyone being mad at me. I will not get in trouble if I stop being in the study.

I know that only the people who work on this research study will know my name.

I want to be in the study at this time. I can ask about what happened in the study.

Please answer the following by marking (X) in the appropriate box:

☐ Yes, I agree to be audio-recorded for this study

☐ No, I do not agree to be audio-recorded for this study

Child's Printed Name:_____

Child's Signature:_____ Date:_____

Witness or Mediator:_____ Date:_____

I have explained the research at a level that is understandable by the child and believe that the child understands what is expected during this study.

Signature of Person Obtaining Assent:

_____ Date:_____

Approved on: 07/09/2012
Expires on: 07/09/2013
Study Number: Quiroz 337108-1

University of Texas at El Paso (UTEP) Institutional Review Board
Pilot Informed Consent Form for Research Involving Human Subjects

Protocol Title: Environmental Education Through the Lens of Diverse Elementary School Students in the United States: A Phenomenographic Study

Principal Investigator: Brissa Y. Quiroz

UTEP: Environmental Science and Engineering

In this consent form, "you" always means the study subject. If you are a legally authorized representative (such as a parent or guardian), please remember that "you" refers to the study subject.

Purpose of Research

You are being invited to take part in a pilot study to validate an interview guide which will be used to conduct a research study that will explore the different ways elementary school students understand and experience environmental education through the eyes of diverse children. Approximately three to five elementary school students will be enrolling in this study at a summer school program from Fresno Recreation, Enrichment, and Scholastic Help [FRESH] After-School Partnership. You are being asked to be in the study because you are an elementary school student from California enrolled in a summer school program.

Procedures

If you decide to enroll in this study, your involvement will be a one time sitting for an interview of approximately 30 minutes or less during summer school program hours. The interview will consist of questions regarding the understanding of the concept of environmental education. The interview will be audio recorded, and will be accessible only to the investigator, Mrs. Brissa Y. Quiroz. No one else will have access to the recorded interview. The audio record will be stored under lock and key in the investigator's home. The audio recording of the interview will be transcribed into text form, and the transcripts will be used for further analysis. After the audio recording has been transcribed completely, and after all the analysis has been completed, the audio recording will be permanently destroyed by deleting the files from the audio recorder. The computer software program that will be used for the analysis will have the recording attached to the transcribed text until the completion of the analysis. After all analysis is completed, the recording will be de-linked from the text files and only the text transcripts will be retained.

Risks

There is no major risk to you from participating in this study. Risks are minimal and may only impact a few of the study's participants, such as possible boredom or interview anxiety. Another minor risk is potential loss of confidentiality of your responses to your interview questions. The investigator will take utmost precautions in handling your data and ensuring complete confidentiality of what you say in the interviews and written questions.

Benefits

There will be no direct benefits to you for taking part in this study. This research may help us to provide knowledge that can be used to improve environmental education curriculum and instruction for future students.

Right to Refuse or Withdraw

Taking part in this study is voluntary. You have the right to choose not to take part in this study. If you do not take part in the study, there will be no penalty.

Confidentiality

Your participation in this study is confidential. All research data will identify you by code name rather than real name, and the names corresponding to code numbers will only be known to the investigator. Absolute confidentiality cannot be guaranteed since research documents may be disclosed if required by law. Research records may be inspected by UTEP Institutional Review Board and/or state and federal agencies. Also, results of this research study may be presented at meetings or in publications; however, your identity will not be disclosed in those presentations.

Mandatory reporting

If information is revealed about child abuse or neglect, or potentially dangerous future behavior to others, the law requires that this information be reported to the proper authorities.

Questions/Contact Information

You may ask any questions you have now. If you have questions later, you may contact Brissa Quiroz at 1-800-654-9999 or byquiroz@miners.utep.edu. If you have questions or concerns about your participation as a research subject, please contact the UTEP Institutional Review Board (IRB) at (915-747-8841) or irb.orsp@utep.edu.

Authorization Statement

I have read each page of this paper about the study (or it was read to me). I know that being in this study is voluntary and I choose to be in this study. I know I can stop being in this study without penalty. I will get a copy of this consent form now and can get information on results of the study later if I wish.

Participant Name:_____ Date:_____

Participant Signature:_____ Time:_____

Parent/Guardian Signature:_____

Please mark (X) in the appropriate box corresponding to your authorization:

☐ Yes, I agree to be audio-recorded for this study

☐ No, I do not agree to be audio-recorded for this study

Consent form explained/witnessed by:_____
Signature

Printed Name:_____

Date:_____ Time:_____

Demographic Information

Please answer the following demographic information about the participant in this study:

Gender: ☐ Male ☐ Female

Age: _____ Grade: _____

Race/Ethnicity: (Please mark all that apply)

☐African-American/Black ☐Asian ☐White/Caucasian ☐Hispanic ☐Native American ☐Pacific Islander

☐Other:_____

University of Texas at El Paso (UTEP) Institutional Review Board
Pilot Assent Form for Research Involving Human Subjects

Protocol Title: Environmental Education Through the Lens of Diverse Elementary School Students in the United States: A Phenomenographic Study

Principal Investigator: Brissa Y. Quiroz

UTEP: Environmental Science and Engineering

I am being asked to decide if I want to be in this research study because I am an elementary school student from California enrolled in a summer school program.

I know that to be in this study I will:

- Be interviewed once about the concept of environmental education during summer school program hours.
- The interview will be audio recorded, and will last about 30 minutes or less.

I asked and got answers to my questions. I know that I can ask questions about this study at any time.

I know that I can stop being in the study at any time without anyone being mad at me. I will not get in trouble if I stop being in the study.

I know that only the people who work on this research study will know my name.

I want to be in the study at this time. I can ask about what happened in the study.

Please answer the following by marking (X) in the appropriate box:

☐ Yes, I agree to be audio-recorded for this study

☐ No, I do not agree to be audio-recorded for this study

Child's Printed Name:_____

Child's Signature:_____ Date:_____

Witness or Mediator:_____ Date:_____

I have explained the research at a level that is understandable by the child and believe that the child understands what is expected during this study.

Signature of Person Obtaining Assent:

_____ Date:_____

Approved on: 07/09/2012
Expires on: 07/09/2013
Study Number: Quiroz 337108-1

Appendix C

University of Texas at El Paso (UTEP) Institutional Review Board
Forma de Consentimiento Informado para Investigaciones en la que participan Seres Humanos

Titulo del Protocolo: Educación Ambiental a través del Lente de Estudiantes de Entornos Diversos a Nivel Primaria en los Estados Unidos: Un estudio fenomenográfico.

Investigador Principal: Brissa Y. Quiroz

UTEP: Ingeniería y Ciencias Ambientales

En esta forma de consentimiento, "usted" siempre se refiere al sujeto de estudio. Si usted es el representante legal autorizado (tal como el padre o tutor legal), por favor recuerde que "usted" se refiere al sujeto de estudio.

Propósito de la Investigación

El propósito de este estudio es explorar las diferentes maneras en la que los estudiantes a nivel escolar de primaria entienden y experimentan la educación ambiental a través de los ojos de estudiantes de entornos diversos. Aproximadamente, veinte estudiantes a nivel escolar de primaria participarán en este estudio que estén inscritos en un programa después de escuela del programa de Ayuda Escolar, Enriquecimiento y Recreación de Fresno [FRESH.] A usted se le pide participar en este estudio porque usted es un estudiante a nivel primaria de California inscrito en un programa después de escuela. Todos los estudiantes tendrán acceso a una clase de educación ambiental, sin importar si participan en el estudio o no. Si usted decide registrarse en este estudio, su participación tomará alrededor de dieciocho semanas.

Procedimientos

Si usted acepta tomar parte en este estudio, usted tomará parte en una clase de educación ambiental durante horas del programa después de escuela que se llevará a cabo durante Agosto-2012-Diciembre 2012. Usted será entrevistado dos veces durante el periodo de dieciocho semanas, y tomará alrededor de treinta minutos por sesión. Las entrevistas consistirán en preguntas con respecto a la experiencia de una clase de educación ambiental. Estas entrevistas serán grabadas en audio, y solamente serán accesibles al investigador, Sra. Brissa Y. Quiroz. Nadie más tendrá acceso a las entrevistas grabadas. Estas grabaciones en audio serán guardadas bajo candado y llave en la casa del investigador. Las entrevistas serán grabadas en audio y después se transcribirá los datos en forma de texto, y las transcripciones serán usadas para el análisis correspondiente. Una vez que las grabaciones en audio sean transcritas completamente, y al final del proyecto, después de que todos los análisis hayan sido terminados, las grabaciones en audio serán permanentemente destruidas borrando los archivos de la grabadora de audio. El programa de computación que será utilizado para el análisis tendrá estas grabaciones enlazadas con el texto transcrito hasta la conclusión del análisis. Una vez que todo el análisis haya finalizado, estas grabaciones se desenlazarán de los archivos de texto y solamente las transcripciones de texto serán retenidos. Además, el investigador pedirá su participación en contestar una pregunta escrita sobre educación ambiental dos veces durante el periodo antes mencionado. Estas preguntas escritas serán accesibles solamente al investigador, y se guardarán bajo candado y llave como fue antes mencionado.

Riesgos

No existen riesgos mayores en que usted participe en este estudio. Los riesgos son mínimos y pudieran afectar solamente a algunos de los participantes del estudio, tales como aburrimiento o ansiedad por la entrevista. Otro riesgo menor es la posibilidad de la perdida de la confidencialidad de las entrevistas. El investigador manejará con sumo cuidado la información, asegurando la completa confidencialidad en lo que usted diga en las entrevistas y preguntas escritas. Todas las entrevistas y preguntas escritas serán presentadas a un nivel colectivo. De tal manera, que su nombre no será identificado ni asociado con ninguna de esta información.

Beneficios

Tomar parte en este estudio no conlleva beneficios directos para usted. Esta investigación pudiera ayudar a proporcionar información que pudiera ser usada para mejorar el plan de estudios de educación ambiental y la enseñanza de futuros estudiantes.

Compensación

No habrá compensación monetaria para este estudio. Sin embargo, como incentivo por tomar parte en esta investigación, al participante se le dejará escoger un juguete del baúl de tesoros al finalizar este estudio.

Derecho de Abstención o Retiro

La participación en este estudio es completamente voluntaria. Usted tiene el derecho de abstenerse a participar en este estudio. Usted no será penalizado por no participar en el estudio.

Confidencialidad

La participación en este estudio es confidencial. La información recolectada será reportada como datos en grupo y no como respuestas individuales. En todos los datos de la investigación se le identificará por nombre de código antes que usar el nombre verdadero, y los nombres correspondientes al código serán conocidos únicamente por el investigador. La confidencialidad absoluta no se puede garantizar debido a que los documentos de la investigación pueden ser difundidos si son requeridos conforme a la ley. Los archivos de la investigación pueden ser inspeccionados por el Comité de Revisión Institucional de UTEP y/o agencias estatales y federales. Además, los resultados de este estudio pueden ser presentados en conferencias o en publicaciones; sin embargo, su identidad no será difundida en esas presentaciones.

Informe Obligatorio

Si se revela información acerca de abuso infantil o negligencia, o posible futuro comportamiento peligroso hacia otros, conforme a la ley se requiere que esta información sea reportada a las autoridades correspondientes.

Preguntas/ Información

Usted puede preguntar cualquier pregunta que tenga ahora. Si después tiene preguntas, usted puede contactar a Brissa Y. Quiroz al 1-800-654-9999 o byquiroz@miners.utep.edu. Si usted tiene preguntas o dudas acerca de su participación como sujeto de estudio, por favor contacte al Comité de Revisión Institucional de UTEP (IRB) al (915-747-8841) o irb.orsp@utep.edu.

Declaración de Autorización

Yo he leído cada página de este documento sobre el estudio (o me fue leído). Yo entiendo que la participación es voluntaria y yo elegí estar en este estudio. Yo entiendo que puedo retirarme de este estudio sin ninguna penalidad. Yo obtendré una copia de esta forma de consentimiento ahora y puedo obtener información sobre los resultados del estudio después si así lo deseara.

Nombre del Participante:_____ Fecha:_____

Firma del Participante:_____ Hora:_____

Firma del Padre/Tutor Legal:_____

Por favor marque con una (X) en la casilla correspondiente con su autorización:

☐ Si, yo estoy de acuerdo en ser grabado en audio para este estudio

☐ No, yo no estoy de acuerdo en ser grabado en audio para este estudio

Forma de consentimiento explicada/atestiguada por:_____
Firma

Nombre Impreso:_____

Fecha:_____ Hora:_____

Approved on: 07/09/2012
Expires on: 07/09/2013
Study Number: Quiroz 337108-1

Información Demográfica

Por favor responda la siguiente información demográfica sobre el participante en este estudio:

Genero: ☐ Masculino ☐ Femenino

Edad: _____ Año Escolar: _____

Raza/Etnicidad: (Por favor marque todo lo que corresponda)

☐Afro-americano/Negro ☐Asiático ☐Blanco/Caucásico ☐Hispano ☐Indoamericano ☐Isleño Pacifico

☐Otro:_____

University of Texas at El Paso (UTEP) Institutional Review Board
Forma de Asentimiento para Investigaciones en la que participan Seres Humanos

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Titulo del Protocolo: Educación Ambiental a través del Lente de Estudiantes de Entornos Diversos a Nivel Primaria en los Estados Unidos: Un estudio fenomenográfico.

Investigador Principal: Brissa Y. Quiroz

UTEP: Ingeniería y Ciencias Ambientales

Se me ha pedido decidir si yo quiero estar en este estudio de investigación porque soy un estudiante de primaria de California inscrito en un programa después de escuela.

Yo entiendo que en este estudio:

- Participaré en una clase de educación ambiental durante horas del programa después de escuela que se llevará a cabo durante Agosto 2012-Diciembre 2012.
- Contestaré una pregunta escrita dos veces sobre educación ambiental.
- Seré entrevistado dos veces acerca de mi experiencia en esta clase. Esta entrevista será grabada en audio, y tomará alrededor de 30 minutos.

Yo pregunté y recibí respuestas a mis preguntas. Yo entiendo que puedo preguntar sobre este estudio en cualquier momento.

Yo entiendo que puedo dejar de participar en el estudio en cualquier momento sin que nadie se enoje conmigo. Yo no tendré problemas si decido no formar parte del estudio.

Yo entiendo que solamente la gente que trabaja en esta investigación conocerá mi nombre.

Yo quiero participar en el estudio ahora. Yo puedo preguntar sobre lo que sucedió en el estudio.

Por favor marque con una (X) en la casilla correspondiente:

☐ Si, yo estoy de acuerdo en ser grabado en audio para este estudio

☐ No, yo no estoy de acuerdo en ser grabado en audio para este estudio

Nombre Impreso del Niño(a):_____

Firma del Niño(a):_____ Fecha:_____

Testigo o Mediador:_____ Fecha:_____

Yo he explicado esta investigación a un nivel que es comprendido por el niño(a) y creo que el niño(a) entiende lo que se espera de el/ella durante este estudio.

Firma de la Persona que obtiene el Asentimiento:

_____ Fecha:_____

University of Texas at El Paso (UTEP) Institutional Review Board

Forma Piloto de Consentimiento Informado para Investigaciones en la que participan Seres Humanos

Titulo del Protocolo: Educación Ambiental a través del Lente de Estudiantes de Entornos Diversos a Nivel Primaria en los Estados Unidos: Un estudio fenomenográfico.

Investigador Principal: Brissa Y. Quiroz

UTEP: Ingeniería y Ciencias Ambientales

En esta forma de consentimiento, "usted" siempre se refiere al sujeto de estudio. Si usted es el representante legal autorizado (tal como el padre o tutor legal), por favor recuerde que "usted" se refiere al sujeto de estudio.

Propósito de la Investigación

Usted ha sido invitado a tomar parte en un estudio piloto para validar un guión de entrevistas que será usado para llevar a cabo un estudio de investigación en el cual se explorarán las diferentes maneras en la que los estudiantes a nivel escolar de primaria entienden y experimentan la educación ambiental a través de los ojos de estudiantes de entornos diversos. Aproximadamente, de tres a cinco estudiantes a nivel escolar de primaria participarán en este estudio que estén inscritos en un programa de escuela de verano del programa de Ayuda Escolar, Enriquecimiento y Recreación de Fresno [FRESH.] A usted se le pide participar en este estudio porque usted es un estudiante a nivel primaria de California registrado en un programa de escuela de verano.

Procedimientos

Si usted acepta participar en este estudio, usted será entrevistado una vez, y esto será una sesión que tomará alrededor de treinta minutos durante horas del programa de escuela de verano. La entrevista consistirá en preguntas con respecto al entendimiento del concepto de educación ambiental. Esta entrevista será grabada en audio, y solamente será accesible al investigador, Sra. Brissa Y. Quiroz. Nadie más tendrá acceso a la entrevista grabada. La grabación en audio será guardada bajo candado y llave en la casa del investigador. Se transcribirán los datos de la grabación de audio en forma de texto, y las transcripciones serán usadas para el análisis correspondiente. Una vez que la grabación en audio sea transcrita completamente, después de que todos los análisis hayan sido terminados, las grabación en audio será permanentemente destruida borrando los archivos de la grabadora de audio. El programa de computación que será utilizado para el análisis tendrá esta grabación enlazada con el texto transcrito hasta la conclusión del análisis. Una vez que todo el análisis haya finalizado, esta grabación se desenlazará de los archivos de texto y solamente las transcripciones de texto serán retenidos.

Riesgos

No existen riesgos mayores en que usted participe en este estudio. Los riesgos son mínimos y pudieran afectar solamente a algunos de los participantes del estudio, tales como aburrimiento o ansiedad por la entrevista. Otro riesgo menor es la posibilidad de la pérdida de la confidencialidad de la entrevista. El investigador manejará con sumo cuidado la información, asegurando la completa confidencialidad en lo que usted diga en la entrevista.

Beneficios

Tomar parte en este estudio no conlleva beneficios directos para usted. Esta investigación pudiera ayudar a proporcionar información que pudiera ser usada para mejorar el plan de estudios de educación ambiental y la enseñanza de futuros estudiantes.

Derecho de Abstención o Retiro

La participación en este estudio es completamente voluntaria. Usted tiene el derecho de abstenerse a participar en este estudio. Usted no será penalizado por no participar en el estudio.

Confidencialidad

La participación en este estudio es confidencial. En todos los datos de la investigación se le identificará por nombre de código antes que usar el nombre verdadero, y los nombres correspondientes al código serán conocidos

únicamente por el investigador. La confidencialidad absoluta no se puede garantizar debido a que los documentos de la investigación pueden ser difundidos si son requeridos conforme a la ley. Los archivos de la investigación pueden ser inspeccionados por el Comité de Revisión Institucional de UTEP y/o agencias estatales y federales. Además, los resultados de este estudio pueden ser presentados en conferencias o en publicaciones; sin embargo, su identidad no será difundida en esas presentaciones.

Informe Obligatorio

Si se revela información acerca de abuso infantil o negligencia, o posible futuro comportamiento peligroso hacia otros, conforme a la ley se requiere que esta información sea reportada a las autoridades correspondientes.

Preguntas/ Información

Usted puede preguntar cualquier pregunta que tenga ahora. Si después tiene preguntas, usted puede contactar a Brissa Y. Quiroz al 1-800-654-9999 o byquiroz@miners.utep.edu. Si usted tiene preguntas o dudas acerca de su participación como sujeto de estudio, por favor contacte al Comité de Revisión Institucional de UTEP (IRB) al (915-747-8841) o irb.orsp@utep.edu.

Declaración de Autorización

Yo he leído cada página de este documento sobre el estudio (o me fue leído). Yo entiendo que la participación es voluntaria y yo elegí estar en este estudio. Yo entiendo que puedo retirarme de este estudio sin ninguna penalidad. Yo obtendré una copia de esta forma de consentimiento ahora y puedo obtener información sobre los resultados del estudio después si así lo deseara.

Nombre del Participante:_____ Fecha:_____

Firma del Participante:_____ Hora:_____

Firma del Padre/Tutor Legal:_____

Por favor marque con una (X) en la casilla correspondiente con su autorización:

☐ Si, yo estoy de acuerdo en ser grabado en audio para este estudio

☐ No, yo no estoy de acuerdo en ser grabado en audio para este estudio

Forma de consentimiento explicada/atestiguada por:_____
Firma

Nombre Impreso:_____

Fecha:_____ Hora:_____

Información Demográfica

Por favor responda la siguiente información demográfica sobre el participante en este estudio:

Genero: ☐ Masculino ☐ Femenino

Edad: _____ Año Escolar: _____

Raza/Etnicidad: (Por favor marque todo lo que corresponda)

☐Afro-americano/Negro ☐Asiático ☐Blanco/Caucásico ☐Hispano ☐Indoamericano ☐Isleño Pacifico

☐Otro:_____

Approved on: 07/09/2012
Expires on: 07/09/2013
Study Number: Quiroz 337108-1

University of Texas at El Paso (UTEP) Institutional Review Board
Forma Piloto de Asentimiento para Investigaciones en la que participan Seres Humanos

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Titulo del Protocolo: Educación Ambiental a través del Lente de Estudiantes de Entornos Diversos a Nivel Primaria en los Estados Unidos: Un estudio fenomenográfico.

Investigador Principal: Brissa Y. Quiroz

UTEP: Ingeniería y Ciencias Ambientales

Se me ha pedido decidir si yo quiero estar en este estudio de investigación porque soy un estudiante de primaria de California inscrito en un programa de escuela de verano.

Yo entiendo que en este estudio:

- Seré entrevistado una vez sobre el concepto de educación ambiental durante horas del programa de escuela de verano. acerca de mi experiencia en esta clase. Esta entrevista será grabada en audio, y tomará alrededor de 30 minutos.
- Esta entrevista será grabada en audio, y tomará alrededor de 30 minutos o menos.

Yo pregunté y recibí respuestas a mis preguntas. Yo entiendo que puedo preguntar sobre este estudio en cualquier momento.

Yo entiendo que puedo dejar de participar en el estudio en cualquier momento sin que nadie se enoje conmigo. Yo no tendré problemas si decido no formar parte del estudio.

Yo entiendo que solamente la gente que trabaja en esta investigación conocerá mi nombre.

Yo quiero participar en el estudio ahora. Yo puedo preguntar sobre lo que sucedió en el estudio.

Por favor marque con una (X) en la casilla correspondiente:

☐ Si, yo estoy de acuerdo en ser grabado en audio para este estudio

☐ No, yo no estoy de acuerdo en ser grabado en audio para este estudio

Nombre Impreso del Niño(a):_____

Firma del Niño(a):_____ Fecha:_____

Testigo o Mediador:_____ Fecha:_____

Yo he explicado esta investigación a un nivel que es comprendido por el niño(a) y creo que el niño(a) entiende lo que se espera de él/ella durante este estudio.

Firma de la Persona que obtiene el Asentimiento:

_____ Fecha:_____

Appendix D

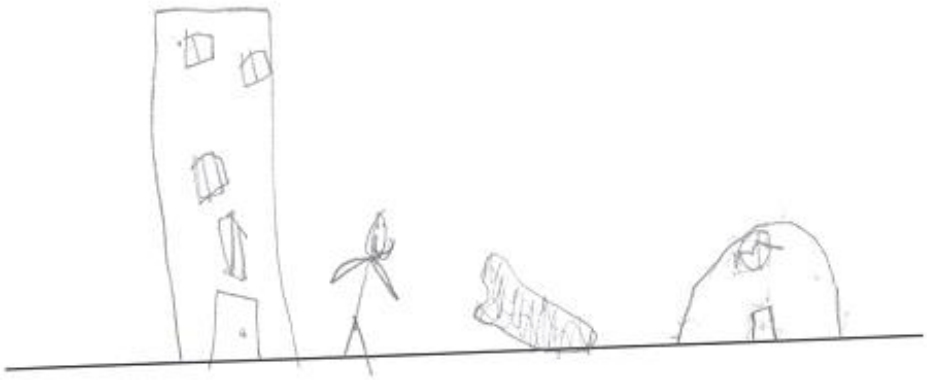
Semi-structured Interview Questions

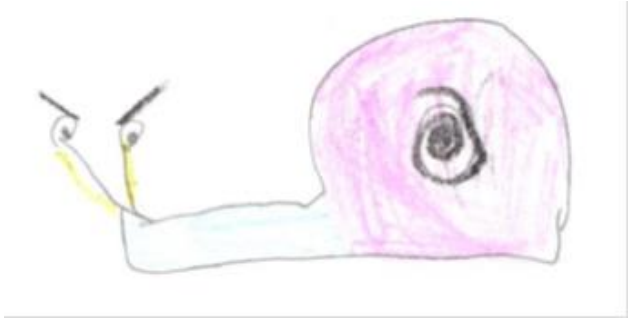
I will ask you questions about what you say. There is no right or wrong answers. You can say anything you want. While we are talking together, I am going to record it just so I can take notes later. Your answers will help me understand what children think. You are free to choose to participate. Please feel free to answer only the questions you wish to answer. If you decide you do not want to participate anymore, or if you do not want to answer any more questions, it is okay to stop at any time.

1. How old are you?
2. What grade are you in?
3. What is recycling? Where did you learn about recycling? Where did you hear or read about recycling? (At school, outside school, other people)
4. What are pesticides and chemicals? Where did you learn about pesticides and chemicals?
5. What is pollution? Where did you learn about pollution?
6. What are endangered species? Where did you learn about endangered species?
7. What are natural resources? Where did you learn about natural resources?
8. What does the word environment mean to you? Where did you learn about the word environment?
9. What does the word environmental education mean to you? Where did you learn about environmental education? Where did you hear or read about environmental education? (At school, outside school, other people)
10. Have you taken an environmental education class before? What did you learn? What do you think you will be learning at an environmental education class?
11. Do you know of environmental problems in your city? Where did you learn about these problems?
12. What are you doing to help the environment?
13. Is there anything else about the environment or environmental education that you want to tell me?

Appendix E


Please answer the following question the best you can. There is no right or wrong answer to this question.
"In my own words, I think the word environmental education means:"





Vita

Brissa Yazmin Quiroz Enriquez was born in Ciudad Juarez, Mexico in 1979, and she is the oldest daughter out of three siblings from Mario Arturo Quiroz and Alicia Enriquez. She earned her Bachelor of Engineering degree in Industrial Engineering from The University of Texas at El Paso in 2002. She received her Master of Science degree in Industrial Technology in 2004 from California State University, Fresno.

This dissertation was typed by the author.